



CUP FINAL TEAM 1957

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EDITORIAL

CENTENARIES are generally accepted as good excuses for talking about things; and at a time when we are drifting rather diffusely into the first centenary of the use of the experimental method in the Biological Sciences, it would seem not unreasonable to spend a little time talking about research. This tenuous argument derives body from the article on medical student research by Mr. J. T. Silverstone, which appears on a later page of this *Journal*. The rather staggering list of discoveries by students which he presents stimulates comment, and we will tread delicately round the subject, trying to create an atmosphere without going so far as to steal his fire.

Is student research a good thing? This question, not quite so rhetorical as it sounds, places us in a fundamental relationship to the whole problem. The copybook answer is Yes, on the grounds that if students get interested in research they will continue it as practitioners; and the more practitioners doing research, the more discoveries that will be made, and discoveries are a good thing. This, to use rather an offensive simile, is a variation of the old argument that if you sat a lot of monkeys down in front of a row of typewriters and taught them to type, one of them would eventually produce a Shakespearean sonnet. The argument is feeble though colourful, and usually gets the obvious retort that monkeys have far better things to do than type sonnets. The answer transfers poignantly to medical practitioners, and also with a stretch of the imagination to students. In fact, the student bent earnestly over his test tubes, elucidating some tantalising facet of the Natural Law, is a bad candidate for absorbing that Culture which we have laboured rather *ad nauseam* in the previous two editorials.

Let us take a more personal note and consider the student as a personality struggling to justify itself in a challenging and competitive world. As age creeps up on him and his friends in other fields are leading men heroically into battle or stinging their consciences from the pulpit, he wanders unobtrusively round his ward, taking blood here, doing a dressing there, perhaps passing himself off to his patients as a rather adolescent-looking registrar, perhaps later exposed in his lowly garb in front of their credulous eyes. How, to use a nauseating but useful phrase, does he justify his Ego? This, it might be thought, is an old problem. But it has a television-age colouring to it. In the past there were various ways of achieving the inner satisfaction of a job well done: there were smoking concerts and other varieties of constructive entertainment, and of course people used to write for the *Journal*. Now there is sport, one of whose main functions must surely be to provide these very satisfactions, but many of the old channels are closed or neglected. Research, by the individual or in a team, is a method of giving the student at least the illusion that he is doing something constructive.

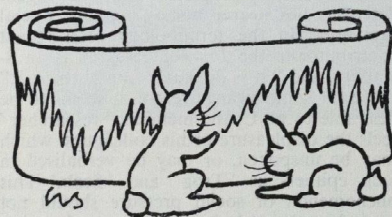
It is easy to blame curricula, Authorities and lack of funds for the paucity of student research now in progress. But one cogent deterrent lies nearer home; namely, Social Pressure. In the terminology of a recent contributor to the *Journal*, research is an S-activity, and "it is distinctly non-U to be S." Since for some strange reason it seems to be desirable to be U, the incipient 'researcher' feels the displeasure of his colleagues, which may be unspoken, or may be verbalised in such epithets as 'Trog' and 'Scab.' This phenomenon of social pressure should not be underestimated; it is a strong trade union

system which lacks only union cards and contributions, and in this instance serves the function of reducing the standard of student achievement to a level compatible with the way of life of the average easy-going fellow. In an age of fairly unlicensed competition, it makes life livable.

But to the student who desires his life to be creative rather than livable, this *Journal* offers hope and inspiration. In Mr. Silverstone's article lies the basis for a different set of social norms. An article which leaves us with just a vague feeling of hopelessness and inadequacy may, if carefully ingested, stimulate the good student to wild feats of emulation. It is in these great names rather than his contemporaries that he must look for a tolerant and encouraging society.

If, on the other hand, research is to become a toy of the majority rather than a dedication of the eccentric, it is not by the provision of funds, time and apparatus that the desired state will be attained. Research must not become just another subject in a top-heavy curriculum, but rather it must permeate as an attitude of mind into all the teaching in the hospital. The questions must subtly change from "How do you treat . . ." to "How could you treat . . ." One promising sign is the great success of all ventures in which students participate in teaching, from the presentation of cases in out-patients to the lecturettes which they give in pathology and psychiatry. This trend should be encouraged in other departments, and could well be given a research flavour.

Perhaps it is better that if we are going to have student research, it should concern the majority rather than the few. After all, we are living in quantitative and statistical times. And one can't help realising that there are an awful lot of monkeys. Why merely teach them to type—why not also tell them how to write poetry?



Cambridge-Bart's Club

A light blue correspondent writes:

The Sixty-Seventh Annual Dinner of the Cambridge Graduates Club of St. Bartholomew's Hospital was held on Friday, 29th March at the Royal College of Surgeons under the Chairmanship of Sir Henry Dale, O.M., a hundred and three members and guests being present.

In proposing the health of the Club, the Chairman referred to the loss sustained by the death of thirteen members. He congratulated Dr. H. W. Balme on his election to the staff. He welcomed younger members and made special reference to Mr. J. C. Mackenzie, Captain of the Rigger Team who had come so near to winning the cup in the replay of the Final a few days before. Among the senior members he referred especially to Sir Geoffrey Keynes who had recently held a 70th birthday party at Bart's and to Dr. Charles F. Hadfield who had been at school, Cambridge and Bart's with Sir Henry. Finally he wondered whether the great characters of the past had their counterpart in the present when science had to some extent usurped the art of medicine. Professor E. T. Spooner gracefully proposed the guests referring to the strong M.R.C. element present and making special reference to Sir Landsborough Thomson, Second Secretary of the Medical Research Council. Sir Landsborough Thomson made a polished and most entertaining reply on behalf of the guests. Dr. George Graham's proposal of the toast of the Chairman's health was illuminated by various reminiscences about Sir Henry, among them Gee's advice to leave physiology behind when he entered the wards. In replying, Sir Henry disclosed that Gee had gone on to say that medicine might in the future become an experimental science.

It is fair to say that this very happy gathering was infected with the happy personality of its distinguished Chairman, and the occasion was an exceedingly pleasant one.

Dark Blue Dinner

The Annual Dinner of the Oxford-Bart's Club was held at the Royal College of Surgeons, Lincoln's Inn Fields, on Tuesday, 12th March. Vice-Admiral Sir Alexander Ingleby-Mackenzie, K.B.E., C.B., was in the Chair.

The dinner was convivial and the speeches of a delightfully high standard. Dr. Norman

F. Smith proposed Oxford and Bart's, and wondered whether it was technically correct to join them with a hyphen; if so, perhaps a more suitable title might be Oxford-siphon-Bart's. Distilling the wisdom of his experience, he recommended to the younger members that unless one is a vet. or a paediatrician it is best to take the history oneself.

Dr. R. Bodley Scott proposed the Club, and soon found himself referring to its illustrious president, the "doctor-sailor-brewer." With great courage (as the target of his remarks was next on the list of speakers) he quoted the remark of Dr. Johnson, that the only man who becomes a sailor is the man who has not the contrivance to get into a jail; and that the sailor is the jailbird who runs the risk of being drowned.

Sir Alexander replied and used his guns sparingly. After amusing the company with one or two anecdotes, he spoke of his guest, Admiral Mayes, who is succeeding him as Director of Medical Services to the Navy; of his long and happy association with the club; and of Professor K. J. Franklin, to whom at the Annual General Meeting immediately preceding the dinner he had relinquished the Presidency.

New Hospitaler

The Reverend H. A. Norton was formally inducted as Hospitaler at a ceremony on April 12th. Mr. Norton has spent some time in Queensland, Australia, and has recently been Rural Dean of Market Harborough.

Redecoration of Cloakroom

Tentative plans have now been made for the redecoration of the students' cloakroom. Individual lockers will replace the present rows of pegs, and larger lockers will be provided for the use of clubs. There will be a drinking fountain, a drying bay, a ventilating system, and mod. cons. will replace the old and almost historical plumbing.

The repairs are expected to take about three months, during which time Mr. Garwood and his assistants are likely to become displaced persons, and the functions of the cloakroom will be dispersed over the hospital and parts of West Smithfield. The rooms under the Physiotherapy Department may be made available for leaving coats, etc. No doubt everyone will bear with these temporary inconveniences stoically in the

knowledge that the old quarters will be returned to them in new and luxurious form.

The cost of the repairs, roughly estimated at £6,000, will be shared by the Medical College and the Hospital.

University of London

Professor J. L. D'Silva has been appointed a Fellow of King's College.

Oxford Entry

We welcome the following Oxford men who joined the Hospital in April:

J. M. H. Buckler (Brasenose).
C. W. Burke (Oriol).
R. L. W. Cleave (Magdalen).
J. M. Rice-Edwards (Wadham).

More About Percy

Our taciturn ambassador of goodwill has paid a state visit to yet another hospital. During the drawn Final against The London he was wrested from his supporters by force of numbers, and carried off in triumph to the barbarous lands of Whitechapel. There he stood like a primitive god watching over the savage celebrations of the evening.

However, little did this eastern tribe realise that two Bart's men were mingling with their number, nor that after the evening's mumbo-jumbo was over they helped the natives to carry Percy off to his dismal temple for the night. After lying low in the precincts for some time, they drugged the sleepy guards with the grape and brought our mascot secretly back to Bart's.

Now that we have entered Percy's close season, we trust that he will be allowed to recuperate in peace from the gruelling experiences of the past few months. We hope shortly to produce an authoritative History of Percy, and of course it is always possible that he will follow the fashion and write his memoirs for the Sunday Press.

Payment in Arrears?

Banking circles are alarmed at a recent circular letter sent to parents by a public school, stating that increased overheads had forced them to alter their fees "from £300 per annum to £350 per annum." One startled parent shared their feelings, and replied that he would much prefer to go on paying in the old way, through the nose.

Advice from a Wise Man

There are probably few readers who will find completely redundant the following advice on general reading, which Sir Norman Moore gave to Dr. Ivor J. Davies. Dr. Davies was closely associated with Sir Norman Moore during his Bart's days, and writes that he used to marvel at his erudition. We thank Dr. Davies for sending the letter, which he has presented to the Library.

March 28th, 1912.
94, Gloucester Place,
Portman Square, W.

Dear Davies,

Sydenham was asked by Sir Richard Blackmore what book he would recommend him to improve him in medicine and replied "Don Quixote." It has often been quoted as an answer showing contempt for Blackmore but I do not agree with this view of Sydenham's advice. I think he meant "read a book which will give you a broad view of human nature." and the advice was good. So read Don Quixote and the best translations are those of Jervas and of Ormsby. Jervas is in excellent English, Ormsby is a more exact version and also in pure English. All the other English translations are less worth reading than these.

Then I advise you to read Boswell's Life of Johnson so as to know it well and generally to read all the great works of English literature. The whole of Shakespeare: Burke's Speeches at Bristol and on Economical Reform and on Fox's East India Bill and his letter to the Duke of Bedford: Goldsmith's Poems and the Citizen of the World and the Vicar of Wakefield: and Cowper's letters and Gray's letters and Swift's Journal to Stella and as much in the Spectator, the Tatler and the Rambler as interests you.

When you have read these you will feel how much good literature tends to improve a man as a physician: to fill his mind, train his thoughts and give strength to his judgement. With very kind regards.

Yours sincerely,

Norman Moore.

Sir Norman Moore entered Bart's as a student in 1869 and was a Physician to the Hospital from 1902 to 1911. He was a man of wide interests and great learning, and well qualified to give advice on reading to the aspiring doctor. Perhaps his main interest apart from Medicine was in all things Irish, and he occasionally used to break into the

Irish language in the middle of a speech. An excellent account of his life by M. J. Linnett won the Wix prize in 1947 and was subsequently published in the *Journal*.

As a comparison, here is William Osler's recommended bed-side library for medical students:

1. Old and New Testament.
2. Shakespeare.
3. Montaigne.
4. Plutarch's Lives.
5. Marcus Anrelius.
6. Epictetus.
7. Religio Medici.
8. Don Quixote.
9. Emerson.
10. Oliver Wendell Holmes' Breakfast-Table Series.

What more can one say?

A recent poster advertised an Abernethian Society debate on the motion, "This house considers that too much attention is given to organised games by hospitals." Across it was written in large letters, "POSTPONED: RUGGER CUP REPLAY."

CANDID CAMERA



After the party?

ANNOUNCEMENTS

Marriages

CAIRNS—CRIDLAN.—On January 19th, 1957. David A. O. Cairns to Valerie Ann Cridlan.

ELLISON—BATES.—The marriage took place at St. Anne's Church, Highgate, on Saturday, 30th March of Antony John Hubert, elder son of the late Dr. H. H. L. Ellison and of Mrs. Bentley, and Margaret Heather, younger daughter of the late Mr. and Mrs. B. A. Bates of Huddersfield.

MCKINNA—PEARCE.—On February 16th, 1957, Dr. Alan McKinna to Marilyn Pearce.

Births

ELMHIRST.—On March 6th, 1957, to Sheila, wife of Edward Elmhirst, twin sons.

SIMS.—On February 26th, 1957, to Nancy, wife of Capt. A. J. Sims, R.A.M.C., a son (Stephen Jonathan Turner).

STONE.—On February 16th, 1957, to Ellen, wife of Patrick Herbert Dillon Stone, Swift Current, Sask., Canada, a son (Patrick).

WALSH.—On March 14th, 1957, to Anne, wife of Rodney Walsh, a daughter.

Deaths

GRACE.—In 1957, J. J. Grace, aged 85. (In California, U.S.A.) Qualified 1894.

HUDSON.—On March 31st, 1957. Bernard Hudson. Qualified 1903.

PERRAM.—On February 8th, 1957, Charles Herbert Perram, aged 90. Qualified 1893.

TAUNTON.—On March 18th, 1957, T. J. Taunton. Qualified 1915.

NOTICES

Oxford Bart's Club

The Oxford-Bart's club will be holding its Annual sherry party on the evening of Wednesday, June 2th at Dr. Strauss' rooms, 45, Wimpole Street. Anyone with the necessary qualifications who has not received an invitation is requested to contact the Hon. Secretary, Abernethian Room, St. Bartholomew's Hospital.

Twelfth Decennial (1925-1935)

The Annual Dinner of the Twelfth Decennial Club is to be held at the Naval and

Military Club, 94, Piccadilly, W.1, on Friday, the 17th May.

Will any Member who does not receive notification, or any eligible non-Member who would like to attend the Dinner, please get in touch with W. D. Coltart, at 58, Harley House, N.W.1.

Contributions

The June *Journal* will be a special number devoted largely to the life and works of William Harvey, and will have gone to press before this *Journal* is published. Contributions for the July *Journal* should reach the Editor before the 1st of June.

Nurses' Representative

The nurses' representative, Miss Muriel Parker, has resigned from the Publications Committee and the post has therefore fallen vacant. The Editor would be grateful to hear from any nurses who feel that they would like to take on this useful and not too arduous task.

CALENDAR

Sat. May 11	Dr. G. Bourne and Mr. J. B. Hume on duty. Anaesthetist: Mr. F. T. Evans. Cricket: v. RAMC Crookham (H).
Sun. " 12	Cricket: v. Hampstead (A).
Wed. " 15	Athletics: v. Westminster Bank and Surrey A.C. (A). Golf: v. The Staff at Denham.
Sat. " 18	Dr. A. W. Spence and Mr. C. Naunton Morgan on duty. Anaesthetist: Mr. R. A. Bowen.
Sun. " 19	Cricket: v. Romany (H).
Wed. " 22	Athletics: v. Charing Cross Hosp. (H). Golf: v. St. Thomas's at West Hill.
Sat. " 25	Dr. R. Bodley Scott and Mr. R. S. Corbett on duty. Anaesthetist: Mr. R. W. Ballantine. Cricket: v. Balliol College (A).
Sun. " 26	Cricket: v. Radcliffe Infirmary (A). Golf: v. Tandridge G.C.
Wed. " 29	Athletics: v. Guys and London (H). Hospital Regatta begins.
Sat. June 1	Dr. E. R. Cullinan and Mr. J. P. Hosford on duty. Anaesthetist: Mr. C. E. Langton Hower.
Tues. " 4	Athletics: v. Harrow School and Scarabs (A).
Wed. " 5	Athletics: v. Dulwich College and St. Mary's Hosp. (A).
Sat. " 8	Medical and Surgical Professorial Units on duty. Anaesthetist: Mr. G. H. Ellis.
Mon. " 10	Sailing: First heats of Sherren Cup. Sailing: Final of Sherren Cup.

LETTERS TO THE EDITOR

FRIEDRICH AUGUST KEKULÉ

Sir,—About eight years ago I was reading an article¹ on Iatrochemists, written by Dr. Trevor I. Williams, when I came across the interesting statement that Friedrich August Kekulé "was for a time a lecturer in chemistry at St. Bartholomew's Hospital, London," and I have always intended to pursue further this story of the connection between our Hospital and one of the greatest organic chemists of the 19th century (and possibly of all time). Recently I had an opportunity of learning more about the origin of this statement and I am very grateful to Dr. Williams, Editor of "Endeavour," for the information that details appear in Richard Anschütz's big biography on Kekulé. It appears that in 1853 John Stenhouse, then Professor in St. Bartholomew's Hospital, wrote to Liebig asking him if he could recommend two assistants. Liebig did so, sending Kekulé and Heinrich Buff.

Kekulé (1829-1896), besides being a very great chemist was also a very interesting individual. Some of his fundamental ideas about molecular structure were undoubtedly developed during the period when he was in London, for some of his ideas about the quadrivalency of carbon and the linking of carbon atoms came to him one summer afternoon when he was dreaming during his journey home across London as an 'outside' passenger on a horse omnibus. In his dreams, carbon atoms joined together and ultimately formed chains, all the groups "whirling in a giddy dance." The cry of "Clapham Road" awakened him from his dream.

In another dream, this time as he dozed by his fireside in Ghent, one of the twisting snake-like chains of carbon atoms seized its own tail, forming a ring structure; this idea was the foundation of Kekulé's concept of the benzene ring of six carbon atoms arranged to form a regular hexagon.

Certainly, Kekulé was a dreamer, but he was not content with dreams. "Let us learn to dream, to dream, gentlemen," he said, "and then perhaps we shall learn truth." Realising that visions are often baseless fabrics, he added with true scientific caution "let us beware of publishing our dreams before they have been put to the proof by the waking understanding."²

I hope that we can persuade our librarian, Mr. Thornton, or the Hospital Archivists, to search the Hospital Archives for details about Kekulé's work in our Hospital.

Yours truly,
A. WORMALL.

Dept. of Chemistry and Biochemistry,
The Medical College of St. Bartholomew's
Hospital,
Charterhouse Square, E.C.1.

References:

- ¹ "Some medical contributors to chemistry," by Trevor I. Williams, *Brit. Med. Bull.*, 1948, 5, 369.
² Quoted from "A Direct Entry to Organic Chemistry," by John Read; 1948. Methuen & Co.; London.

Sir,—As I have recently investigated the Hospital Journals, abstracting material of specific interest to the College, I can supply certain information on those holding the position of Lecturer in Chemistry here. They were William Thomas Brande, 1836-1841; Thomas Griffiths, 1836-1851; John Stenhouse, 1851-1857; Edward Frankland, 1857-1864; and William Odling, 1863-1868. (Where these dates overlap it is because the post was held jointly.)

It would appear from Professor Wormall's letter that John Stenhouse (1809-1880) wrote to Liebig (under whom he had studied at Giessen from 1837-39) asking if he could recommend two assistants. These would not have been employed by the Hospital, and there is therefore no mention of their names in the official records.

If Kekulé came to Bart's it was as a personal assistant to Stenhouse. There is a similar situation at a later date when a Lecturer in Chemistry (W. J. Russell [1830-1909]) employed two demonstrators, one to assist with the teaching and the other as a research assistant. It would indeed be a great honour to prove that Kekulé was associated in any way with Bart's but there is nothing in the official records to throw light on the matter. Possibly letters of Kekulé or Stenhouse would prove that the former at one time worked here, and an investigation from that angle might prove fruitful.

Yours truly,

JOHN L. THORNTON,
Librarian.

Medical College Library.

PRACTICE IN CANADA

Sir,—I read with great interest Dr. Roberts' article in the February edition of the *Journal*. Readers may remember that exactly four years ago you were good enough to publish an article of mine in which I described the steps which brought me to Canada, in my case, Alberta instead of Saskatchewan. I therefore read Dr. Roberts' remarks with more than usual interest, and I am availing myself of your request for further articles on the same subject to comment on and elaborate a bit on some of the points raised by Dr. Roberts.

Practice in the prairies is particularly attractive to the British, for we do not need to pass the L.M.C.C. examination in order to practice in Alberta or Saskatchewan. In consequence, there are a large number of British graduates now in practice here. Of around 1,300 doctors now in practice in Alberta, around 17% are British trained. As far as I have been able to find out, five of these are Bart's men. A large number of doctors are listed as having specialist diplomas of one sort or another, the latest list I have shews 317 in all, of whom about 24% are general surgeons, 17% specialist physicians (referred to across the Atlantic as Internists) 12% are Eye and/or ENT men and 10% are O. & G. As Dr. Roberts has pointed out, a number of these are not consultants in the British sense. A man,

having got his specialist diploma, announces that he is opening an office where his practice will be limited to a stated speciality. He may list this speciality against his name in the Phone book and will usually see anyone who knocks at his door, but, if the patient's complaint does not fall within the bounds of his speciality, he is not meant to treat him. In fact, except when he has to admit him to hospital (where, in the larger cities strict rules keep the doctor in the right groove) this ethical point is often overlooked. As Dr. Roberts pointed out, this is due to the fierce competition. This is probably no worse than obtained in England in the old days, but, in the bigger cities, is certainly severe. This applies particularly to the General Surgeons and the Internists, and is due to the fact that the bigger cities are over-doctored. For instance Calgary (1956 figures) with a population of 155,000 had 245 doctors, or one per 630 persons. In Calgary there are 19 general surgeons and 13 internists while Edmonton, where the medical school is, has 36 general surgeons and 31 internists with a population (1956) of 214,000 and a total of 272 doctors. It will be seen from this that the aspiring Englishman is up against stiff opposition in the cities. What then is he to do to get himself established? In whatever field of work he prefers, if he comes in and squats he is going to suffer some lean years, except in vacant rural practices, just as our fathers did in the years before national health, and our immigrant Briton is prevented by the Bank of England from bringing with him the wherewithal to sustain himself over this period, always supposing that he has the necessary in the first place. He should, therefore, have some secure spot where he can be sure of not starving while he learns the local ropes and looks round for a good spot to start up in on his own. Dr. Roberts chose to take an intern post, and I think, and he admits it, that he was unfortunate. The Canadian system, after the equivalent of the first M.B., gives the student two, preclinical and two clinical years and then he takes his M.D. but after that there comes the most important part, the intern year, wherein is crowded all the practical work which his British confrere has had scattered over his three clinical years. At the end of this year he takes the L.M.C.C. (Licence of the Medical Council of Canada) without which he cannot work and which allows him to practice in any province. It will be seen from this that it may not be a very good idea for our immigrant to take a junior rotating post as he may find, as did Dr. Roberts, that the work is too junior for him. Better it would be for him to seek a post in a hospital which takes senior interns. There are not too many such. In Alberta, only the University and the Royal Alexandra Hospital in Edmonton (both teaching hospitals) and the Colonel Belcher in Calgary take senior men. However, in the hospitals which do not take senior interns, there are often not too many junior interns to make their work menial, for instance the Misericordia and General Hospitals in Edmonton with 308 and 383 beds have 3 and 4 interns respectively, while the Holy Cross and the General Hospital in Calgary with 400 and 626 beds have 8 and 10 interns respectively. The proportion of men to beds in these hospitals is thus much as one would find them in an English County Hospital, the only difference being a much greater staff, for no Canadian Doc-

tor would consider himself properly treated if he could not treat his own patients in hospital. So our immigrant, then, if he chooses to intern, should try for a senior post, or else stick to the smaller hospitals.

The second alternative is to try and get an assistantship. These are fairly easy to come by, and many young men start off this way. Most principles pay \$400—\$500 per month, provide your own car (easily done as any Doctors' credit is good) but car running expenses are usually provided. Even if one has specialist training, these routes are still useful, but there is a third one and that is in group practice. The trend to group (or "clinic") practice is a growing one, especially in the middle sized towns, where it is often possible to form large partnerships whereby the terrors of competition can be avoided, men with specialist training be given scope to work, a roster of night call duty can be arranged, and the practice of medicine made altogether better. Such a group may advertise from time to time in the medical press asking for a man with some particular experience, and it was by this route that I arrived in Drumheller. If one joins such a group, it does not behove one to be too particular about one's speciality, for, as indicated above, there are not too many men anywhere in the province in general medicine or general surgery who wholly confine their efforts to their chosen fields. So it is that I, though I do the majority of the surgery for the eight men practicing in this hospital district (seven of whom are in our clinic) do have to do my turn of general practice, night work, and so on. It has done me such a lot of good that I now firmly believe that the Royal Colleges ought to insist that any man aspiring to a Fellowship or Membership should give evidence of having done at least one year in general practice. Likewise, I firmly believe, from the experience of my Canadian practice, that the Medical profession in England should insist on a fundamental right of every doctor to treat his own patients in hospital. Any abuses by poorly trained men trying to do more than they are capable of doing can be checked by the system of limiting privileges which is in general use in the larger hospitals hereabouts. At the same time, there would be no need for the large number of junior hospital staff posts, many of whose holders now so often face, after acquiring some special skill, no hope of ever being able to reach consultant status and so be able to put their knowledge to use profitably. If the Canadian system were adopted, then all the talent acquired by British G.P.s during their days as housemen or registrars which is now being wasted could be put to use. No wonder, as Dr. Roberts remarks, that the Canadian Doctor seems so incredibly good. It's not that he is better trained, or that he is a better man, it is just that under the British system a lot of what he learns in Hospital the G.P. will never be able to use in Practice, whereas his Canadian brother will. There is no doubt in my mind which system results in the better medicine for all concerned. I, like Dr. Roberts, could never practice in England again.

I am, Sir, Yours most truly,
A. J. WALKER.

376, Centre Street,
Drumheller,
Alberta.

PRACTICE IN SOUTH AFRICA

Sir.—Dr. Roberts' article in the *Journal* last month has prompted me to write and tell you of my own experiences and observations of practice in South Africa.

Having been born and brought up in South Africa, I was keen to go out and see for myself the state of the country after an absence of eleven years, and whether it would be worth settling there. After I had done two years on the house, I set sail with my wife and three young children . . . the youngest, three months, and landed in the Union with no job, but at least a home to go to.

First a word about registration. The Registering body is the South African Medical and Dental Council. They will recognise all English Qualifications, but require written evidence that the applicant has done at least two house jobs. There is a registration fee of fifteen pounds, and an annual fee of three pounds for all who wish to remain on the register.

I soon obtained a locum after arrival through one of the agencies, and found myself in a small country town in the Free State. This was a single handed practice, the gross income of which was about six thousand pounds. It was a mixed practice, meaning that the patients were English speaking, Afrikaans speaking and African. The Surgery was open from nine until five with a short break for lunch, and I found that there was a continual stream of patients coming in all the time. There was very little visiting and that was mostly done in the evening, and consisted of journeys of up to thirty miles out into the Veld. The standard of medicine here was high in the European practice, but very low on the African side . . . this was mainly a cursory examination of the chest or abdomen (both with Stethoscope) and a bottle of Mist. Ammon. Chlor. or Mist Pot Cit. For this service the patient was obliged to pay seven and six in cash, which he willingly did. If Penicillin or tabs Sulpha were necessary a further seven and six was charged. I found that I was taking about twelve pounds a day in cash.

The European practice was a different type altogether. A full examination was made on every patient, including urinalysis, and frequently chest X-rays on the small but efficient machine in the Surgery. All drugs were supplied by the doctor. The standard fee for the consultation was two guineas with the cost of the drugs on top of that.

During my month in the practice I was able to do quite a lot . . . three normal deliveries, a forceps delivery a D and C, two Colles, a Potts, various minor surgical operations, including the extraction of about forty teeth under local anaesthesia, several severe Pneumonias, mostly among the Africans and some Psychotherapy conducted in my very scanty Afrikaans!

The second locum I did was down in a native reserve area in the Transkei. This was even more primitive. The practice was ninety-nine percent African and consequently all cash . . . about four thousand a year. The Surgery was open from nine until twelve in which time I saw up to forty patients. In the afternoon my small Austin was loaded up with a crate of bottles containing the stock mixtures, a twenty gallon drum of water and the Coloured interpreter and off we set into

the bush. We drove out about thirty miles to the first of the out stations. Here I would see patients in a school, an unused garage, the Verandah of an Hotel, or even in the open air. This was a very social occasion, and there was always lots of advice and encouragement from the onlookers. Having seen fifteen to twenty patients at the first stop, we would load up the car again and move on to the next place. Four stations were visited each afternoon, and about a hundred miles travelled. Two weeks of this was as much as I could stand. In that time I saw three young men with massive pleural effusions, two open ulcerating Neoplasms, a Leprosy, unconfirmed, a retained Placenta, retained incidentally for three days before medical aid was sought, a stab wound in the chest and of course the usual number of Pneumonias and a mass of malnutrition.

After looking at several other practices I took a job as Casualty Registrar at the big Hospital in Durban. This was a very good job and I saw a lot of interesting cases. As Casualty Registrar I was able to order any investigation I liked in the Hospital . . . Barium meals for example . . . and carry out any minor operation. There was very little supervision and the hours were not exhausting . . . eight thirty until four with no night work and no weekend duty.

During my stay in Durban, I got to know several of the G.Ps. and was able to assess the kind of practice in the town. I formed the opinion that there were three types of practice. Firstly, the really high class practice, usually with three principals who qualified in England, and one of whom had his Membership. It is virtually impossible to get into this type. Secondly, the average mixed practice where the medicine was none too ethical and the size of the patient's bank account was more important than the severity of his disease. Lastly the African and Indian practice which was nothing but a money-making racket.

It did not take me long to realise that I would far rather be in England practising in the N.H.S. I would like to add, however, that I found this a most enthralling year, and I thoroughly recommend this way of life to anyone wanting to see a lot of South Africa.

Yours sincerely,
H. F. COWPER JOHNSON.

Peggs' Close,
Sheringham,
Norfolk.

VALGUS, VARUS & VAPOURS

Sir.—I hold no brief for the classical education, but I don't think that Mr. Plumpton's Latin has been altogether wasted. It is only by having some members as well informed in that subject as he is that our profession can have even an inkling that there may be anything unsatisfactory about *valgus* and *varus* being used to describe knees. Of course, there are many other irritations, which vary with a combination of one's pedantry and knowledge of Latin and Greek. Mine are relatively few, but can anyone make me daily happy by finding a suitable adjective to replace *homonymus*? I have not been able to discover how it acquired its special meaning in relation to the visual fields, but wonder whether the better, but still incompletely

adequate word, *homologous* was originally meant. And surely *stereognosis* sounds nicer, and is better than *astereognosis*?

It is true that *a, ab, absque, coram, de* hold little in store for the future doctor, but out of fairness to the Rev. Prof. Kennedy, Mr. Plumpton might have recalled the preceding page of *The Shorter Latin Primer*. How about those medical masculines in " . . . *fons* and *mons* (sic), *chalybs, hydrops, gryps* and *pons*."? Also on the same page are: *fornix, calix, vas (vasis), dens, incus, sal, ren* and *splen*.

Furthermore, with a little Latin in mind, someone should have stopped the word *consensus* (sic) appearing in Miss Coltart's admirable little piece. (A pretty bit of etymology here, incidentally.) I too have the same fun as Miss Coltart when reading novels. Isn't Jane Austen exasperatingly vague? It would, of course, be too much to expect her to tell us about the state of *Marianne's* bowels, when that poor, wronged girl is so ill in *Sense and Sensibility*, but she tells us so little

about anything else. It is only the agility in prognosis of Mr. Harris, the attending apothecary, that brings interest to this unsatisfactory case of P.U.O.: it helps us not at all to know that he "had pronounced her disorder to have a putrid tendency." Contrast all this with the pithy brilliance of the anonymous ballad writer: we have only to know that sweet Molly Malone died of a 'faver' while selling cockles and mussels (alive! alive! oh!, mark you!) in Dublin to be able to diagnose typhoid fever instantly.

Finally, I must protest to Miss Coltart at her description of Bexley (where I used to live) as "a filthy hole." Perhaps you have by now also had a letter from the Town Clerk. Bexley is certainly not what it was, but what it was was unquestionably a delightful Kentish village in the early days of chloroform and Charlotte M. Yonge.

Yours &c.,
JOHN POTTER.

3, Lorne Street,
Manchester, 13.

STUDENTS' UNION

There was a meeting of the Students' Union Council on Wednesday, 20th February. The following business was discussed:—

1. MODERNISATION OF THE CLOAKROOM.

This work is to be undertaken during the Summer Term. As it was not possible to obtain exclusive rights for the use of the Public Lavatories in Smithfield, the S.U. agreed to do without lavatory accommodation during the period in question.

The telephones are to be moved to the back of the cloakroom, and the rented boxes now in use dispensed with. New boxes will be provided as part of the re-decoration.

2. COLLEGE ADVISORS.

No further information was available regarding this problem which was due for consideration by the College Committee.

3. COLLEGE HALL.

The Dean was unable to accept the Council's proposal that more final year students should be allowed to live in College Hall. The present system which gives preference to first year students is to continue for a trial period.

4. CHARTERHOUSE LIBRARY.

The Council decided to ask for an extension of the Librarian's hours, so that the Library would be open from 10 a.m.—6 p.m. on weekdays, and 9.30 a.m.—12 on Saturdays.

5. JOURNAL OFFICE.

The present position of the Journal desk in the Library is considered inconvenient, and an effort is to be made to incorporate a Journal Office in the rear of the re-styled cloakroom.

6. POT POURRI REPORT.

The report was read and approved. Due to the increased cost of this production, the prices of tickets next year will be increased to 3s., 4s., 6s. and 7s. 6d.

about anything else. It is only the agility in prognosis of Mr. Harris, the attending apothecary, that brings interest to this unsatisfactory case of P.U.O.: it helps us not at all to know that he "had pronounced her disorder to have a putrid tendency." Contrast all this with the pithy brilliance of the anonymous ballad writer: we have only to know that sweet Molly Malone died of a 'faver' while selling cockles and mussels (alive! alive! oh!, mark you!) in Dublin to be able to diagnose typhoid fever instantly.

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Yours &c.,
JOHN POTTER.

3, Lorne Street,
Manchester, 13.

7. FINANCE REPORT.

The report was read and approved. The following points arose:

(a) A grant of £40 for new shirts was made to the Rugby Club.

(b) The sum of £15 13s. 6d. was granted to the Dramatic Society for new curtains and lighting equipment.

(c) A grant of £20 was made to the Sailing Club for new sails.

(d) The Rahere Music Society were asked to present a detailed estimate of the income and expenditure involved in the production of their Concert in the Church of St. Bartholomew the Great, before the S.U. can consider underwriting the venture.

8. FRESHERS' HANDBOOK.

It was suggested that the S.U. should produce a handbook giving details of hospital departments, Union activities, and other information helpful to the freshman. The proposers were asked to prepare a synopsis for Council's approval.

9. Permission was granted to the Boat Club to hold a Derby Draw.

10. THE ROCK AND ROLL CLUB.

This newly formed club was granted permission to use the gymnasium for a trial period of one month.

11. GRAMOPHONE ROOM.

Recent damage to the radiogram was considered to be due to the fact that the room was being used for purposes other than listening to records.

This matter was placed on the Agenda of the next meeting. Meanwhile it was decided that the room must be kept locked, and the key only obtained from the Hall porter on the production of a record library membership card.

THE MUSCLES OF OWEN

by A. J. E. CAVE

THE purpose of this trivial notice is merely to direct attention to two small muscles, and those non-human, which were the minor and incidental discoveries of that monumental figure in comparative anatomy and palaeontology — Sir Richard Owen. Even to mention such minutiae in the light of Owen's prodigious and profound contribution to zoological science is flagrantly antithetical: yet such mention in these pages may be excused on two grounds, the one domestic, the other educative. Owen was a Bart's man, and its greatest scientific alumnus: to the generations which succeed him within the Hospital and Medical College, even his smallest anatomical discovery cannot fail to occasion pride and interest, and no apology is necessary in defence of a little family gossip. The moral pointed by his minor myological discoveries is salutary for all, whatever corner of the scientific or clinical field be tilled: it is the perennially valid counsel that careful observation, of whatever material, is always rewarding.

The finding of hitherto unknown muscular slips in an animal carcase may nowadays be considered no great matter and perhaps not even a 'scientific' business at all. But the exploring hand and the observant eye which noted these admitted trivialities were equally responsible, under exactly similar difficulties of operation, for no less momentous a discovery than that of the mammalian parathyroid glands¹. This lesson should be pondered, the more so perhaps in these present days, when, in so many scientific disciplines, an essential but increasingly complex exploratory armamentarium threatens to mask the fundamental necessity for direct observation of whatever material be under study.

A. J. E. Cave, M.D., D.Sc.(Viet.), F.L.S., F.R.A.I. Professor of Anatomy, University of London (Bart's); Hunterian Trustee; Vice-President, Zoological Society; Demonstrator and Lecturer in Anatomy, University of Leeds, 1924-34; Senior Demonstrator of Anatomy, University College, London, 1934-35; Assistant Conservator of Museum (1935-46); Arnott Demonstrator (1936-46); Professor of Human & Comparative Anatomy (1941-46); Arris & Gale Lecturer (1932, 1941); Royal College of Surgeons.

Before describing the two small muscles which Owen discovered, some brief reference to his early days, and to his association with Bart's, may not be regarded as irrelevant.

After serving professional apprenticeships (1820-23) as was the old custom in medical education, Owen matriculated in 1824 at Edinburgh University, wherein he suffered the notoriously unprofitable lectures of Monro Tertius, but most fortunately came under the stimulating extra-mural influence of Dr. John Barclay, whose courses in practical anatomy he attended. Barclay made a great impression on young Owen, by whom henceforth he was held in the most affectionate regard. In April, 1825, Barclay persuaded Owen to migrate to London that he might study under John Abernethy at Bart's and to this end gave him a letter of introduction and recommendation. Abernethy greeted the young man in characteristically off-hand fashion, but invited him to breakfast, when, impressed equally by Barclay's testimonial and the obvious qualities of his guest, he appointed him forthwith prosector for his anatomical lectures. Thus began Owen's memorable and valued connexion with St. Bartholomew's Hospital and its Medical College.

In 1825 Owen was elected to membership of the Medical and Philosophical Society of St. Bartholomew's (now the Abernethian Society) and the following year read before it two papers, one entitled 'On encysted calculus of the urinary bladder', the other 'A case of gluteal aneurysm with ligature of the common iliac'. That same year he qualified M.R.C.S. (old style) and set up in medical practice among the lawyers of Lincoln's Inn Fields — more precisely, at 11 Cook's Court, Carey Street — almost next door to the Royal College of Surgeons Museum, wherein so much of his future professional life was to be spent. In 1827, doubtless through Abernethy's wisdom, he was appointed Assistant Conservator of the Hunterian Museum, William Clift being Conservator, and his son, William Home Clift, Assistant Conservator with the assured promise of succession to his father's office. The next year Owen became

Lecturer in Comparative Anatomy at Bart's, in which post he continued until 1835, establishing therein his great reputation as an impressive and successful lecturer. It would seem that for most of this period Owen lectured at the request of the Hospital Staff, for it was not until October, 1834, that he received formal appointment by the Hospital Governors. Howbeit, it is to the memory of this historic teaching association that the 'Owen Laboratory' is dedicated in the present Department of Zoology and Comparative Anatomy of the Medical College in Charterhouse Square.

About this time Owen inaugurated his long-sustained and meticulous anatomisation of animals dying in the menagerie of the Zoological Society of London (of which he was Fellow by 1830 and Council Member by 1834), thereby laying the foundations of his exhaustive and unrivalled knowledge of vertebrate morphology. (The minor myological discoveries detailed below were made in this connexion.)

But by 1832 Owen found himself in a quandary. His practice was small, his work at the Royal College of Surgeons and at Bart's was not very remunerative, the succession to the Conservatorship of the Hunterian Museum was promised to young Clift, and Owen himself, engaged to Caroline Clift, was anxious to marry. He had published that year his classic 'Mémorial on the Pearly Nautilus', which established his reputation as a first-rank scientist both at home and abroad. Yet nowhere appeared any channel of permanent employment congenial to his bent and affording scope to his distinctive and undoubted talents.

This dilemma, however, was unexpectedly and tragically solved by the accidental death in the September of William Home Clift. Sustaining a fractured skull from a cab accident in Chancery Lane, he was admitted to St. Bartholomew's Hospital (being received by Owen) and died therein some days later. By this stroke of fate William Clift lost a son and gained a son-in-law, and Owen's professional life settled into its predestined course, first at the Hunterian, later at the British Museum.

Inevitably, a full-time Assistant Conservatorship of the Hunterian Museum necessitated the severance of formal academic ties with Bart's. Henceforth, Owen's labours were

to be directed wholly away from medicine and into those fields of comparative anatomy and palaeontology wherein John Hunter had pioneered. But private ties continued to bind Owen to his old Hospital and Medical College, and many of his erstwhile colleagues and students remained his life friends. Nor did he ever forget John Abernethy, who had sat at Hunter's feet and whose devotion to his master's ideals secured for the Hunterian Museum the services of his former prosector, the one man then capable of organising and developing its collections.

Hunter-Abernethy-Owen: Hunter-Clift-Owen. In double measure the Hunterian tradition devolved upon the receptive Owen, whose native genius, thus fortified and stimulated, rendered him the greatest of a distinguished line of Hunterian Conservators and the one perhaps most sympathetic to Hunter's distinctive outlook on biology.

That story, however, is outside our present purpose, and we return to Owen's anatomical labours in the Prosectorium of the Zoological Society. Here a prodigious amount of hard work was achieved upon a wide variety of comparative subjects, and over the years there issued in consequence a voluminous output of memoirs and papers whose classic importance time has not diminished. Perhaps only personal experience of the dissection of large mammals can bring realisation of some of the difficulties involved — the laborious business of flaying and dismemberment, the unwieldy nature of parts and organs, the impracticability of employing preservative injections and the inevitable race against the onset of putrefaction. Under such conditions, and anatomising such desperately awkward carcases as those of rhinoceros and elephant, the discovery of even insignificant muscles is both a tribute to acuity of observation and an object lesson in prosection.

M. depressor palpebrae inferioris.

(Owen, *Trans Zool. Soc.*, 1852, 4 (Art. 3), 55)

Commenting on the structure and mobility of the lower eyelid, Owen² remarks that 'rarely in mammals has it a proper depressor'. He himself was the first to observe such a special depressor muscle, and this during his dissection of a male Great Indian Rhinoceros (*Rhinoceros unicornis*) which he anatomised

during the winter of 1849-50. His specimen was the first example of this species to be acquired by the Zoological Society of London, in whose menagerie it lived from 1834 to 1849. Owen refers to the *M. depressor palpebrae inferioris* both in his classic monograph² on the Indian Rhinoceros and in his monumental treatise³ on vertebrate anatomy and physiology.

It seems most unlikely that his muscle had been observed by Vicq d'Azyr and his colleagues, in their earlier (1793) dissection of a male Great Indian Rhinoceros in Paris. This animal (whose skeleton is now No. A.7974, Mus.Nat.d'Hist.Nat., Paris) had lived for some twenty-one years in the Royal Menagerie at Versailles and was dissected in July, 1793, by Mertrud, Vicq d'Azyr and S. Rousseau. No published account of their work ever appeared, Vicq d'Azyr dying the next year: but thirty-four relevant folio plates, executed by Maréchal and by Redouté père et fils, and annotated in Vicq d'Azyr's hand, remain unpublished in the Muséum National d'Histoire Naturelle. One of these plates depicts the eyeball and its attached muscles but none of them concerns the eyelids and their musculature.

Unfortunately, Owen gave no details of the attachments and relations of his depressor muscle, contenting himself with the single statement² that 'the lower eyelid has a special depressor muscle', and subsequent authors have adopted a morphological rather than a physiological nomenclature for the various components of the mammalian facial musculature. It is therefore uncertain whether Owen's *M. depressor palpebrae inferioris* represents the *M. preorbicularis ventralis* or the *pars palpebralis* of *M. sphincteris profundus* of Boas and Paulli⁴, but in either case it is clear that a special depressor fasciculus to the lower eyelid is not confined to the rhinoceros, for Virchow⁵ has noted its presence in the elephant.

M. nictitator.

(Owen, *Comp. Anat. Phys. Vert.*, 1868, 3, 260)

In the elephant the nictitating membrane is supported by a special cartilage to assist its action as a cleanser of the surface of the eyeball. Owen observed² that 'there is a special "nictitator" muscle, the fibres of which pass at first over the base of the membrane in a curve, then form an angle to include the ex-

tremity of the nictitating cartilage, which is consequently moved in the diagonal of the contracting forces, and pushed forward and outward over the front of the eyeball'.

This 'nictitator' muscle consists essentially of slips which proceed from the deep aspect of *M. orbicularis oculi* to the upper and lower aspects of the 'handle' or posterior process of the cartilago nictitans. It recalls, but is not necessarily homologous with, the *pars lacrimalis* of *M. orbicularis oculi* in Man (= Horner's muscle, *M. lacrimalis posterior*, *M. sacci lacrimalis*, *M. tensor tarsi*). Innervation is similar but is here an uncertain guide, for in the elephant a lacrimal sac and nasolacrimal duct are wanting, and it needs yet to be established whether a cartilago nictitans is invariably provided with a *M. nictitator*, likewise the nature of anatomical arrangements in those species wherein a lacrimal sac and a nictitating cartilage co-exist.

The elephant has attracted the attention of anatomists from antiquity, when both Aristotle and Galen made observations upon its structure: later dissectors of this animal, before Owen's day, include Moulin⁶, Blair⁷, Duverney and Perrault⁸, Camper⁹ and Hunter¹⁰, but none of these appears to have anticipated Owen in his notice of the *M. nictitator*. The presence of this muscle has been subsequently confirmed by Virchow⁵ who, however, appears curiously silent as to Owen's previous finding.

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ASPECTS OF COLONIAL MEDICINE

by UNA MALCOLM KING

SHE CHOSE the day on which we started to pack up the house, before our return to England, to fall off the bus. Daydream is our coloured cook. She is, by the way, a first-class cook. She hobbled back from the doctor with her ankle bandaged, and said that the doctor told her she must go to the Hospital to have her leg X-rayed the next day. We drove her home, home being a small wooden house precariously propped up from the ground with small stones balanced on larger ones. Her mother, 80 years old, and her daughter lived with her.

In the evening of the next day the daughter came to see us. Mother, she said, had been X-rayed and there was a 'large gap in the bone': she knew because she had seen the picture herself. They had put mother to bed with her leg in plaster and told her that it was fractured, and that she must keep the leg up. We expressed our regrets.

The following day I rang "Hospital, Enquiries, Patients." After much explanation of name and ward and a very long wait, the answer was "All the patients in all the wards is much better this morning." But to our utter astonishment the daughter appeared that night and said that the Hospital had sent mother home, because each bed must hold two patients and Daydream was too big to share a bed with anyone else. Incidentally she is 6 foot tall and 56 inches round the hips—so that was understandable.

A week went by, in which we missed the delicious soufflés she excelled at, before Daydream came walking up the drive with her knee bandaged. We were very surprised. "I go now to see the doctor up the road, I do not like the Hospital." "Do you know what a fracture is?" I asked. "No please" said Daydream. "Is this bandage what you call a plaster?" I asked, for daylight was dawning on me. "Yes please, they tell me I slip the biscuit in my knee."

"Daydream" I said "when you see the doctor ask him to send me a message as to what is the matter with your leg." She came back later with her *ankle* bandaged and said "The doctor he say I have a 'lame' leg and you spell it L.A.M.E."

Our barber, who is a fisherman by trade, does not believe in doctors at all and he, also, has no use for the Hospital. For months now he has had a bandaged finger, which makes hair cutting both difficult for him and hazardous for us. On being asked what was the matter with it he said that he had cut a large fish hook out of it with his penknife. Weeks passed by. The finger was still bandaged and the hand very swollen. "Not healed yet?" we asked. "There is still a lot of muck in it", he replied, "It hurts all up the arm, so I cut it again with my penknife. I have done it several times; it will be alright once I get it all out". We suggested going to a doctor. "Oh, no", he said, scornfully, "I do it as good as the doctor". "But", we exclaimed, "your penknife is dirty, full of germs". He was furious at this remark and said, as he produced the knife from a dirty pocket. "Look, you call that dirty?" It certainly was shining bright. The finger is still bandaged.

Some authorities in this tropical island are trying to stop the enormous birth rate by teaching "Birth Control". Since the Church does not approve, it is called "Family Planning". Our laundry maid, who is 23 years old, has her own idea of "Family Planning". She was gradually increasing in size. I asked her if she was going to have a baby. "Oh, yes, please", came the reply. "Are you married?" I asked. "No, please". "Is this your first baby?" "No, please, I have four boys". After the first shock of this answer, I said "Is the same man the father of them all?" "Oh, no... if you put your foot in an ants' nest, how do you know which ant bit you?" she replied with a kind of pitying look for my stupidity.

But that they are trying to improve conditions there is no doubt, for only the other morning I read in the island paper the following caption: "MR. KIDNEY OPENS PUBLIC LATRINE". Underneath was a large picture of Mr. Kidney christening a "stand" in truly noble fashion. This, of course, is a well meant effort to do away with notices so nicely put by the French, "Defense d'uriner". It seems a shame that poor Mr. Kidney's example will not be lived up to.

* * *

THE MEDICAL STUDENT AND RESEARCH

by J. T. SILVERSTONE

PART I: PAST ACHIEVEMENTS

IT WAS NOT until the sixteenth century that the scientific beliefs of Roger Bacon, which had filtered down from the Middle Ages, were finally crystalized into firm convictions in the minds of most men of learning. Before the Renaissance, although many accurate observations had been made in medicine, no systematic investigation had been attempted. But in the late 1500's throughout Europe and especially in Italy, the medical sciences were swept by a wave of enthusiasm for knowledge. Many students, motivated by the desire for learning, flocked to the great centres of Padua and Bologna where they could witness such innovators as Vesalius perform dissections on human bodies. These students, influenced by what they had seen, returned to their own cities eager to discover more about the structure and function of man in health and disease.

Great changes were also being made in medical education, changes which were reflected in the growing participation of medical students in all fields of biological research. As the old system was dissolving a knowledge of Greek became less necessary; a more naturalistic tendency began to appear in the curriculum. Zoology became a recognised subject for study by medical students, and botanical gardens were set up in many places of learning where students could observe the plants which provided many of the remedies they would use in practice.

It was in such an environment that Valerius Cordus (1515-44) the son of a physician and botanist, discovered sulphuric ether while a student. He spent his years of training at many universities as was the fashion of the time, beginning at Wittenburg and going on to Padua, Bologna, Ferrara and Venice. He, the first of the famous student investigators, went on to make great contributions in the field of botany.

By the beginning of the seventeenth century, scientific investigations were so widespread that historians have dubbed this 'the age of experiment'. Advances in anatomy continued to be made, these being assisted by Leeuwenhoek's development of the microscope.

The lymphatic circulation was investigated in more detail, and several students made valuable contributions in this field. Jean Pecquet (1622-74) a student of the University of Montpellier, discovered the thoracic duct and receptaculum chylo during a dissection of a dog. He traced the chyle, not to the liver as expected, but to the receptaculum via the lacteals and from there to the thoracic duct which he found entering the left subclavian vein. This discovery was confirmed by another student, Olaf Rudbeck (1630-1702) who was studying at Leyden in 1651. The valves in the lymphatics were first noticed by Jan Swammerdam (1637-80). This anatomist was fortunate in being reared in a scientific atmosphere; his father had the finest collection of exotic fauna in his native city of Amsterdam. In fact, the young Swammerdam became expert in microscopic dissection before he commenced his medical studies, and before he qualified in 1667 he had made two further important contributions. He described the red blood corpuscles in a frog fourteen years before Leeuwenhoek mentioned these cells, and he observed the fact that foetal lungs do not float unless the infant has respired, a finding which is used in forensic medical practice to this day. Again in Holland, a Danish student, Niels Stensen (1638-86) discovered the parotid duct in a sheep.

The current doctrine of embryology was 'Omne vivum ex ovo', but in 1674 a medical student, Johann Hamen, made the first observation leading to the downfall of this theory, by his discovery of spermatozoa, which he pointed out to Leeuwenhoek.

In the eighteenth century the teaching of medical subjects improved markedly. In England tuition could be obtained at London, Edinburgh, Aberdeen and Dublin, and seven London hospitals were open to students. Those wishing to be physicians had to undergo a much longer training than aspiring surgeons. The latter were only required to attend a course of lectures before

Prizewinning essay in the B.M.A. competition, 1957. (Abridged).

presenting themselves for an examination by the Corporation of Surgeons or the Worshipful Society of Apothecaries. The physician was obliged to obtain a degree from a University plus a licentiate from the Royal College of Physicians, and was expected to 'be familiar with the principles of medicine and exhibit some general erudition and culture'. The union of a university with a hospital took place at Edinburgh in 1738, and another innovation, that of combining the students of surgery and medicine, occurred at the Military Medical School in Vienna in 1785.

One of the great figures of the century was Thomas Young (1773-1829) who was such a prodigy that he was referred to as 'phenomenal' Young. While a student at Bart's he was dissecting an eye from a recently killed ox when he noticed that mechanical stimulation of the ciliary muscle caused alteration in shape of the lens. He later read a paper to the Royal Society demonstrating that the accommodation of the eye for different distances is due to a change in curvature of the lens, for which he was elected a Fellow at the age of 21.

Another who has left his mark in medical history and who made astute observations during his medical training was René-Théophile-Hyacinthe Laennec (1781-1826). He gave the first adequate description of peritonitis and mitral valvular disease. He also discovered the subdeltoid bursa while studying in Paris at the Charité under Corvisart, and he recognised the true aetiology of hydatid cysts. To crown his student achievements he gave a lecture in 1804, the year of his qualification, in which he stated that phthisis was a tuberculous condition of the lungs.

Sir Humphry Davy (1778-1829), who was apprenticed to a surgeon apothecary and associated with the Medical Pneumatic Institute of Bristol, can be considered the founder of anaesthetics. He demonstrated that nitrous oxide was respirable and could produce great exhilaration. He remarked in 1799, 'as nitrous oxide in extensive operation appears capable of destroying pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place'.

As Davy was to anaesthetics, so Edward Jenner (1749-1823) was to preventative medicine. His contribution on this subject is world famous, and it was during his

apprenticeship to a surgeon near Bristol that he first conceived the notion that it would be worth while investigating the immunity from small pox in those who had cowpox. When discussing the idea with Hunter, under whom he later studied, Jenner was told, 'Don't think, try; be patient, be accurate' — a good introduction to research.

The nineteenth century saw a turning away from the metaphysical doctrines of the preceding age, and a turning towards an objective approach to science. Biology advanced concurrently with physics and chemistry, and a mechanistic viewpoint obtained in all fields of Natural History. Of the many discoveries which altered men's attitudes in biology the following appear some of the more significant: the recognition of the cellular nature of living organisms; the law of conservation of energy; the appreciation of the bacterial cause of infectious diseases; the theory of evolution put forward by Darwin and the genetic investigation of Mendel.

France led the medical world in the early part of the century, but with the growth of experimental laboratories in Germany more students crossed the Rhine to study under eminent German professors. In England the Medical Act of 1858 regularised the obtaining of licences to practice, a privilege which had often been obtainable previously by purchase alone. A commission on medical education sat in 1881 to advise on a medical curriculum and the training of students. Gradually, during these hundred years, the system as it appears in the present day was evolved. More opportunity was given to the student to perform class experiments, thus acquainting him with much of the scientific apparatus of the time. That this knowledge was put to excellent use the quality of student research will testify.

The 'father of experimental medicine', Claude Bernard (1813-78), made original discoveries during his period of study at Paris. Although he did not publish any works before he qualified, he had completed several experiments. He was stimulated by seeing a case of facial nerve palsy to trace the course of the chorda tympani nerve, while in his thesis he described his observation that the injection of cane sugar into a vein is followed by the appearance of sugar in the urine, but no urinary sugar appears if the injected sugar is previously treated with gastric juice.

The nervous system began to attract a great deal of interest and during the nine-

teenth century teaching in the subject was considerably affected by the work of Ramon y Cajal, Sherrington and Charcot. Students also contributed to the knowledge of neuro-anatomy, neuro-physiology and neuropathology. Herman von Helmholtz (1821-94), who came under the influence of Johannes Müller at Berlin, was able to discover the origin of nerve fibres from cells in the ganglia of leeches and crabs using only a rudimentary microscope. Robert Remak (1815-65), another protégé of Johannes Müller, was the first to describe non-medullated nerve fibres. By the time he graduated from Berlin he had shown that the axis cylinder is the transmitting part of the nerve trunk; confirmed in vertebrates that nerve fibres originate from cells; and demonstrated ganglion cells in the walls of the heart and intestine.

The name of Freud is universally associated with psycho-analysis but he commenced his work on the nervous system, while a medical student, with the study of its development and phylogeny. He described the derivation of the T-shaped dorsal root ganglion cells of the spinal cord, and gave an account of the phylogenetic levels in the development of the central nervous systems. He also made observations on the neurofibrillary structure of axons in the water-crab, and on the tracts and nuclei within the medulla oblongata.

Two eminent neurophysiologists, Sir Henry Head and Sir Charles Sherrington, began their research while students. Head wrote a paper on the action potentials of nerve in 1886 and later began his classic work on the rôle of the vagus nerve in respiration. Sherrington, while a Cambridge undergraduate, studied the effects of hemisection of the spinal cord in a dog and of the removal of the cerebral hemispheres.

Neuropathological knowledge was advancing, partly as a result of undergraduate endeavours. Marc Dax at Montpellier described the correlation between aphasia and lesions of the dominant cerebral hemisphere. Edward Brissaud (1852-1909) pointed out the relationship of pontine lesions to varying degrees of hemiplegia. Constantin Monakow (1853-1930) made good use of the opportunity he was given for studying brains at autopsy while a student of Hitzig at Zurich by describing the histological changes occurring in some cases of organic dementia. Franz Nissl (1860-1919) won a prize from

the University of Munich for his thesis on the pathological changes of the nerve cells in the cerebral cortex.

The vascular system became the special interest of several student investigators. Jean-Leonard Marie (1799-1869) was able to measure the blood pressure in an artery by using a mercury manometer which was connected to the artery by a hollow lead tip filled with potassium carbonate to prevent clotting. This work was followed up by Rudolph Magnus (1873-1927) who measured the blood pressure in exposed arteries.

The movement of red blood corpuscles out of the capillaries was studied in a preparation of living frog's tongue by Augustus Volney Waller (1816-1870). F. M. Landis while a student in the 1920's, perfected a technique for measuring the pressure within the capillary vessels, and with this was able to verify Starling's hypothesis.

Digestion was rapidly becoming more fully understood. Ivan Pavlov, who later used digestive reflexes to study the higher nervous activity, began his work with experiments on the nervous control of pancreatic secretion. He was so well thought of that he was put in charge of a laboratory before he was qualified. Walter Bradford Cannon (1871-1945) was led to try and observe the movements of the stomach in intact subjects after overhearing a conversation about 'the new rays'. He started with buttons as a contrast medium but later developed the technique of using bismuth, and it was these student experiments that led to his later publication of 'The Mechanical Factors of Digestion'.

Two important principles of pharmacology were first expressed by medical students in the nineteenth century. James Blake (1815-93) who later was known as 'Gold Rush Doc' in the gold fields of California, read a paper before the British Association for the Advancement of Science when he was a student at the University College, London. He expressed the idea that the effects of drugs on the body was determined by their chemical structures. This principle remains sound although he believed that monovalent elements acted on the lungs, divalent elements on the heart, and those with higher valencies on the nervous system. Paul Ehrlich (1854-1915) became interested in lead poisoning during his training at Strasbourg, and developed a fuschin stain to demonstrate lead in the tissues. This experiment is said to have convinced Ehrlich that certain tissues have a

selective affinity for certain chemicals.

With the growth of tropical medicine parasitology became widely studied, and two students have left well-known contributions to the subject. Sir James Paget (1814-99) during his first year's dissection at Bart's noticed some small white specks in a muscle which he examined under a microscope. These consisted of a small worm surrounded by a capsule and were identified as *Trichinella spiralis*, previously unknown to be a human parasite. Much interest was being taken in the aetiology of malaria, and Sir Ronald Ross had almost solved the problem. He was at an impasse however, until the work of a student at Johns Hopkins, William George MacCullum (1874-1944) led to the discovery that the so-called flagella of *Plasmodium* were in fact sexual forms.

It is the science of anaesthetics which owes most to student work. The discovery of ether by Cordus and the experiments on nitrous oxide by Davy have already been mentioned. In the middle of the nineteenth century three American students started the use of anaesthetics in surgery. William E. Clark at Berkshire Medical College was in the fashionable habit of holding ether entertainments. With the experience thus gained he was able

to administer ether to a dental patient — the first recorded use of ether anaesthesia. Crawford W. Long also learned from ether entertainments held while he was studying at the University of Pennsylvania. After these parties he noticed he often had bruises, almost certainly the result of injuries he failed to perceive at the time. After qualifying he used ether in a surgical operation. William Thomas Green Morton (1819-68) was a dentist before taking up the study of medicine, and he had heard of the anaesthetic effects of nitrous oxide. While at Harvard Medical School he experimented with inhalation anaesthesia on puppies and a dental patient. He finally persuaded the chief surgeon at the Massachusetts General Hospital to use it for an operation, when it succeeded in preventing the patient from feeling any pain at all.

From the student endeavours of the past many an illuminating fact or theory has emerged. Often the early research led to a life-long interest in experiment to the great benefit of the world at large. As Fulton says, '... simple facts were once hidden in a fog of faulty observation and faulty reasoning and it was sometimes the enquiring minds of students that made matters clear'.

PART II: PRESENT OPPORTUNITIES

One of the most pronounced features of recent years has been the general increased interest in scientific research. This has led to a greater number of opportunities becoming available to the medical student who wishes to undertake a research project, opportunities in a wide variety of subjects.

During their preclinical studies most students in England are taught by those personally engaged in research, who will often welcome a junior assistant. Usually the members of the various departments are willing to help any student seeking an introduction to experimental method. At Oxford and Cambridge there is perhaps greater opportunity than elsewhere for this type of relationship to develop, because each student has individual teaching sessions with a tutor. Such a tutorial system has led in many instances to the pupil becoming associated with a facet of his tutor's research. The long vacations provide ample time for the

undergraduate to pursue an interest under expert guidance without curtailing his studies, or his leisure.

During the time the student is learning clinical medicine his opportunities for research are curtailed. One reason is that clinical research does not lend itself to student participation, for without a sound knowledge of clinical methods and a wide experience it is impossible to assess any patient satisfactorily. Another reason is that the vacations are much shorter and the student is strenuously urged to relax completely during his holidays. But there do remain some opportunities for student investigation.

A study of clinical notes which are open for perusal by students, may lead to the appreciation of previously unrecognised factors in disease. In this way Stewart and de Winser were able to determine the relative importance of the various factors concerned

in the perforation of peptic ulcers. Some teaching hospitals provide an incentive for this type of research in the form of an annual prize for the best report of cases seen at these hospitals during a given year.

Another opportunity open to those with an inventive turn of mind is in the design of apparatus. A striking example of a student's success in this field is the pneumatic respirator developed by the Clitheroe medical student L. P. Grime, which was reported in January of this year.

With such a wealth of opportunity and excellence of example, it is disappointing that more present-day medical students remain unaffected by any wish to undertake a scientific investigation.

This absence of enthusiasm is partly due to the attitude of the hospital and medical school authorities, an attitude which is illustrated by a quotation from Professor Ian Aird's report of the B.M.A. subcommittee studying the proceedings of the First World Conference on Medical Education. He states, 'It is the general view in England that the undergraduate student should not be active in research . . . Most students are thus discouraged, and the officials of at least one London teaching hospital consider that there is not enough time for a conscientious student to indulge in any extra-curricular activity other than recreational.

It is difficult to reconcile the above with the following recommendation of the Royal College of Physicians' Committee on Medical Teaching: 'the aim in future should be to give the student a basic professional education of high standard . . . much may be gained by arranging for the student to spend some months wholly or mainly in any department chosen by himself, both his interest and his understanding will be stimulated by working in an atmosphere of progress and research'.

Many American students, on the other hand, are given every encouragement to attempt the investigation of a scientific problem. Yale University as long ago as 1917 began the experiment of allowing students a great deal of freedom in their curriculum, and providing opportunities for research. The University of Pennsylvania students' magazine publicises student efforts in this direction by printing a list of projects undertaken by students. At the University of California at Los Angeles many students take part in research programmes during their

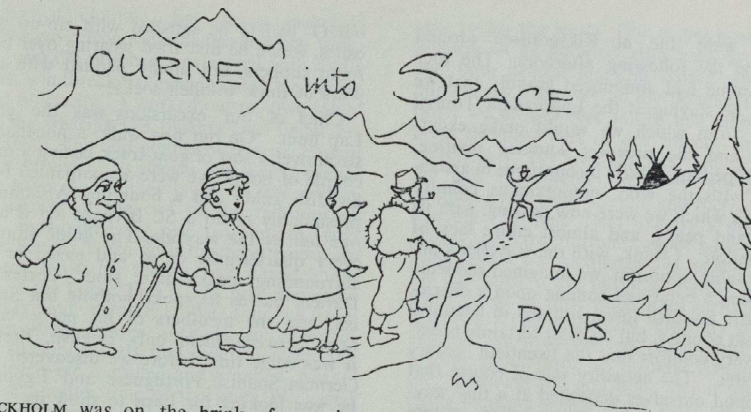
summer vacation. They are paid for doing this out of University and Federal funds thereby ensuring that they spend their time more profitably than their fellows who seek employment in the more mundane occupations of dishwashing and waiting at table.

While not advocating such changes in this country it would seem that more incentive could be provided for students to learn something of the rewards and difficulties of scientific experiments. Personal encouragement is a matter for individual teachers and students, but might be assisted if the student had a clearer understanding of scientific method, which could be obtained by a series of introductory lectures on the subject, as suggested by Professor Bradford Hill.

Lack of time is an excuse rather than an obstacle. Compared with his American colleague the English student has a great deal of free time even after reasonable periods for relaxation are deducted.

There is a greater difficulty over financing the student's research programme and in providing monetary rewards, if such are thought to be desirable. A survey of the B.M.A. Book of Medical Scholarships reveals that each year every hospital and university provides considerable sums in prizes for students who pass competitive examinations in each subject. Instead of fostering individual enquiry these tend to promote reading of small print and obscure papers about uncommon diseases. If such money were used to provide incentives for original observation many more students might engage in this truly educational pursuit.

This plea for more interest by the authorities has been succinctly expressed by Dr. William Gibson. 'Good seed can be helped greatly by good soil. The determining factors have often been the provision of facilities for a student investigation by a sympathetic teacher. The lesson for us today would be clear. Summer research scholarships in all fields of medicine and its ancillary sciences are likely to repay us handsomely as educators. Encouragement of original work by undergraduates is in the best tradition . . . and offers one method of offsetting the homogenizing influence of too many specialist boards. Student curiosity can be depended on to bring to light new facts of major importance, as it has in the past. The shaping of the conditions under which students will work and grow is a major challenge to all educated people'.



STOCKHOLM was on the brink of a major Trade Fair and a European Heart Conference, so of course taxis were at a premium. Our train for Lapland left at 4 p.m. and we felt quite sure that it would go without us, but by dint of vast patience, extravagant arm-waving and a large slice of luck, a taxi with an illuminated LEDIG sign drew in to the kerb, and we had met and conquered our first obstacle. The station was a seething mass of people—residents, tourists, trade delegates, and an extraordinary number of physicians from the most unlikely countries. We tracked down our platform at last, and found a motley crowd of cardiologists surrounded by mounds of luggage, and a small neat woman guide in the uniform of the Swedish tourist agency which had organised this pre-conference trip to the Arctic Circle. With enviable efficiency and an amazing command of most of the European languages, she shepherded her protégés towards their train, and in the minimum of time we found ourselves in a minute, but beautifully equipped sleeper.

The journey started without undue incident, and the hours of early evening slipped away while we watched, entranced, the Swedish countryside, lit by the sunset, unfolding beyond the dusty windows of the train. We had spent an intriguing half-hour exploring our compartment which the Swedes, with their passion for mechanical contrivances, seemed to have fitted with an incredible quantity of buttons, levers, and other more complicated gadgets, and we had discovered, to my chagrin, that the exciting-

looking door which appeared to lead at the very least to a private bathroom, was thoroughly locked. This was borne out when the occupants of the next sleeper in their turn tried to force it open, and we found that it was in fact nothing more than a communicating door between the two. We enjoyed, a little later, an excellent dinner in the restaurant car—a meal which was enlivened by the appearance on the menu of reindeer steak, and by the delight with which the small Swedish girl opposite us achieved, in a burst of unsuspected erudition, an English 'Thank you.' After dinner we settled down in our compartment with our staple holiday reading, a couple of thrillers, but life was not to be without its own small excitements. At intervals the door into the corridor opened abruptly and heads poked themselves in to announce the sale of magazines, or tobacco, or, for all we knew to the contrary, merely to bid us good-night. This habit of walking in unannounced, though pleasantly companionable, had its hazards when the time came to get ready for bed, and it was a considerable relief to find that there was actually a lock we could use. G. turned it, and for a while all was peace. I had just got myself into a nightgown, not entirely Victorian in character, and was sitting on the edge of the bunk, brushing my hair, when an ominous clicking sounded from the corridor and I found myself facing the unembarrassed stare of a large man in official uniform. He said something politely but quite uselessly, and disappeared whence he came, leaving G. and me in a state of mingled consternation and giggles.

We were due at Riksgränsen around tea-time the following afternoon. The tour programme had announced grandly that we would be staying at the Lapplandia Tourist Hotel, from which we would make excursions, and the prospect sounded inviting, though perhaps a little incongruous in association with the wild, mountainous country through which we were now passing, with its lakes and peaks, and almost entire lack of civilisation. I think, with the traveller's unquenchable optimism, we imagined suddenly rounding a bend and coming upon a charming little Swedish town, situated in beautiful unspoiled country, but oh most certainly boasting every comfort that the twentieth century can offer. The actuality was of course that we found ourselves deposited at a tiny wayside station, with untrammelled nature spreading in every direction, the only apologetic gesture that humanity had made being the railway line, a ski-lift, and a group of wooden houses that resolved themselves, upon closer inspection, into the Lapplandia Tourist Hotel—and as we left the train, it started to snow! In actual fact the Lapplandia was a ski-lodge, and an extremely comfortable one, with central heating, excellent food, and the most delightful staff that one could imagine, and having said good-bye to our visions of a smaller edition of the Grand in Stockholm, we did not regret them once—but we were a little disconcerted by the surrounding countryside. The lovely view from our windows of the deep, placid lake, the snow-clad peaks, and the unspoiled stretch of richly glowing tundra was well enough, and indeed we praised it to the skies from the aesthetic point of view, but exploring it was another matter. Not one of the party, some forty strong, seemed to have conceived of the possibility of there not being such a simple amenity as a road, and it came as something of a shock to find that the much-vaunted excursions were not of the motor-coach, or even of the boat, variety, but on our own feet. The women, particularly, had no footwear suitable for trudging through snow-covered heath, and worse. But a little matter of that kind was of small consequence. The Lapplandia staff came to the rescue in no uncertain manner and by the first morning, every cardiologist and cardiologist's wife, was equipped with something that would do at a pinch—and in some cases, did just that! I was lucky enough to get stout walking shoes that fitted perfectly.

but G. had to be satisfied with zip-up goshes, which he first tried wearing over bedroom slippers, but finally padded with two pairs of thick woollen socks.

Chief of our excursions was the great Lap hunt. On our first walk, a nonchalant stroll over a sort of goat-track lasting a mere couple of hours, we were accompanied by a Swedish guide and a bounding Alsatian—presumably to do a St. Bernard act if anyone fell by the wayside. The guide stopped every quarter-mile or so and gazed at the surrounding peaks like stout Cortez in Daricn, but as he spoke nothing but Swedish, and the members of his party could raise between them only English, French, it was some time before we discovered that German, Spanish, Portuguese and Egyptian, he was looking for Laps to show us. It is a curious fact that, like flowers in an English garden when one visits it, one never seems to go to a place at the right time to see its chief attraction, unless of course it happens to be something immovable, like St. Paul's, and so it was with us and the Laps. Almost all we knew about Lapland before we visited it was that it was famous for the Midnight Sun, reindeer and Laps. We were, inevitably, out of season for the Midnight Sun. The reindeer which apparently had appeared in scores to those at the front of the train, had all taken fright and disappeared by the time our rear coach arrived on the spot—and now there was not a Lap in sight. Our poor conscientious Swedish courier, who had promised us Laps, like lollipops to children on a school treat, was deeply concerned, and in a fashion that seemed to us nothing short of miraculous, finally discovered that A Lap Family was still in the vicinity. The method she used involved complicated telephone conversations, but as telephoning a Lap encampment seemed about as fantastic as ringing up a Hottentot village, we forbore to go into the matter further. Enough that the Laps were there, and that we were to walk out and see them, reindeer skin tent, traditional costume, and all. The distance, we were told, was a mere four kilometres following a short train ride, and having hurriedly sat down and computed what that meant in mileage, we decided it was worth it.

We set out, accordingly, all forty of us, arrayed in a variety of garments that for piquancy and colour would have put any Lap to shame—it was cold enough to need

plenty of clothing, but heavy overcoats would have been a disadvantage when walking, and the problem was solved with duffle coats, windbreakers, mackintoshes, and every kind of woolly. I worked out my own salvation by wearing G's pyjama coat under my sweater. The odd couple of feet which had to be turned up at sleeves and waist practically gave me another layer. In due course, we arrived at the end of the rail journey and, marshalled by our two guides, who were heavily laden with luncheon packs, we set out across the tundra, like a pale imitation of the Great Trek. The first stop came quickly and abruptly. We drew up in a group inside a large stockade, and were informed impressively that this was where the reindeer were corralled and branded. Naturally at another time of the year! We gazed round obediently for what seemed like about twenty minutes, but without discovering any new fact about the stockade, and then away we went again. This time there was no stopping. The path, if one might dignify it by such a name, led away from the railway line, across marshland, over rocky outcrops, down greasy slopes, over perilously balanced duckboards which as likely as not, acted as a seesaw and plunged one into muddy swamp. Here and there a red mark on a boulder suggested the way, but for the most part one trusted in Providence and the guides. The views all the way were magnificent, provided there was time to look at them, and one was not busy with one's feet. After the first few miles the party had divided into three—an energetic vanguard, who had obviously spent all their lives trekking across the wide open spaces in their various homelands, an American couple and ourselves in the middle, acting as a link, and a large and weary group coming on behind in a sort of pilgrim's progress, groping and stumbling and picking themselves up again. The hills stretched away interminably ahead, and the path to the Laps apparently did too. Breakfast was a long way behind, and lunch seemed destined to be far in the future. Now and then we had a moment of bafflement when the party in front seemed to have been swallowed up by the ground, but patient tracking of footprints would bring us up with them again, and finally, rounding a shoulder of rock, we came upon them all on the shore of a river. This had to be crossed in two leaky boats which could only carry about five at a time, and it was a hazardous pro-

cess, to say the least. One of the boats had literally to be emptied after each crossing, and both needed constant baling while in mid-stream. However, to my permanent surprise, we all got over safely, and embarked upon the next part of our travels. Equally surprisingly, for we had now got used to the idea of walking for ever, this was a comparatively short stretch, and there at last was the Lap tent. Not exactly a thing of beauty, perhaps, but one cannot have everything, and it was picturesque in its way, with the flap open, a fire burning brightly inside, and a forest of little birch trees surrounding it cosily. The male Lap, the only one in evidence when we arrived, came entirely up to expectation with his brilliant costume of the traditional red and blue, and it was exciting to drink coffee made from his cheerfully hissing kettle, and to eat our long overdue lunch in the atmosphere of nomadic domesticity which surrounded the tent. Some washing hung on a roughly-made arrangement of birch logs, and we had not long to wait before the 'housewife' appeared with the rest of the family. There were 'oohs' and 'aahs' of admiration for her gaudy, embroidered dress, and the two children were surrounded in an instant. They too wore the red and blue garments that characterise the national costume, the baby boy's cap surmounted by an enormous scarlet pom-pom which made him look like some fantastic doll. Cameras clicked madly, coins changed hands, and the weary pilgrims relaxed comfortably in the knowledge that, at whatever cost, they had at last Seen The Laps. It was a pity that a few of the more enterprising spirits, looking for fresh fields to conquer, walked to the top of the slope overlooking the tent, and found on the other side, The House that the Laps Really Lived In, though disillusionment would inevitably have followed when something was produced from the depths of the tent and carefully handed round, and turned out, to our everlasting mortification and delight, to be a Visitors Book.

After this, the walk home could not fail to be a little of an anti-climax, particularly perhaps for a gallant Egyptian who suffered from arthritis and had spurred himself to the effort with an extra dose of cortisone. However, as someone remarked, it made an excellent exercise tolerance test for those cardiologists who believe in practising what they preach.

THE BIOLOGICAL MECHANISM OF X-RAYS

by D. F. PARSONS

RESEARCH INTO the various sensitivities of tumours to X-rays, the distribution of the dose of irradiation in the tissues, etc., has its obvious practical importance. The detailed biochemical and biophysical studies now being carried out in many centres, require more justification. It is that clinical radio-therapy is as much in need of basic metabolic investigations as is clinical chemotherapy in order to provide a rational background for future advances.

In the Physics department one of the radiobiological subjects now being investigated is the mechanism of action of X-rays on the important macro-molecules of the cell. The stimulus for this work was the introduction of a new and sensitive technique for detecting the broken chemical bonds and free

protein. The present preliminary work on model synthetic macromolecules and on natural nucleoprotein has shown that the method is superior in several respects to chemical methods. It is capable of giving a very rapid result ($< 10\mu\text{sec.}$) and this is important in detecting the earliest changes produced by irradiation. Rapid measurements of this kind, of course, require that the dose of irradiation be also given very rapidly. The 15Mev. Linear Accelerator is unique in being able to do this since it can produce up to 10^8r. in about one millionth of a second. The output is pulsed (up to 500 pulses per second) so that measurements between pulses are possible.

Below, present ideas about the mechanism of action of radiation on cells are outlined

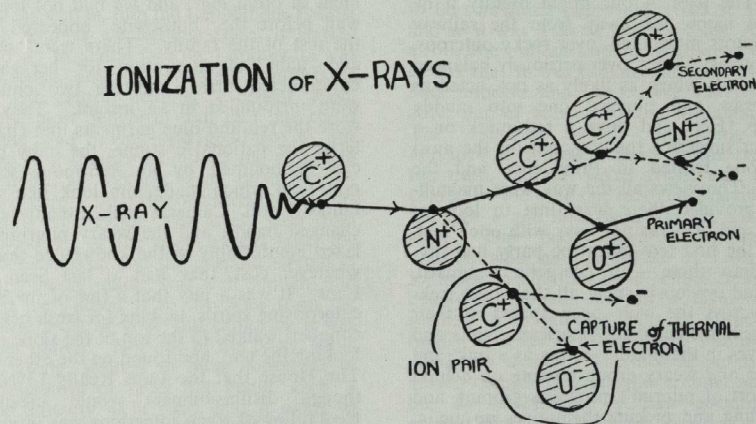


Figure 1.

radicals (highly reactive intermediate compounds containing an unpaired electron), called paramagnetic resonance spectroscopy. To Dr. P. Alexander of the Chester Beatty Institute and myself this seemed a promising method for investigating the effects of irradiation on biological substances especially since the available chemical methods are insensitive and can only detect changes on the exterior of giant molecules like nucleo-

and followed by a discussion of the results of the present investigation in relation to these ideas.

IONIZATION OF X-RAYS

The biological effect of many kinds of radiation (x-rays, electrons or β -rays, γ -rays (^4_2He), protons (^1_1H , etc.) except neutrons are surprisingly similar. The reason is that the important effects are due to the secondary

electrons released by all these radiations. The initial stages of interaction of an x-ray with the atoms of a molecule are shown in Figure 1.

1. There are three stages:

1. The x-ray causes ejection of a primary electron from an atom.

2. The primary electron interacts with other atoms giving rise to free radicals and secondary electrons.

3. Terminal interaction of electrons or free radicals with the "target molecules" in the cell.

Most of the energy is absorbed in the ejection of electrons from their orbits and the intensity of absorption depends on the atomic number of the atom concerned and the density of electrons in the material. In practice this means that the dose of x-rays is distributed similarly in water and simple organic substances to human tissues so that the measurement of dose distribution is greatly simplified.

In the therapeutically important megavoltage range of x-rays the transfer of energy to the ejected electron occurs mainly by the Compton effect in which the electron has any energy from nearly zero to that of the incident x-ray depending on the angle of the collision. If higher voltages (greater than 50 Mev.) come into general use such processes as electron-positron production and the induction of radio-activity in some atoms of the material, will be important. The secondary electrons shown in Figure 1 are produced, mainly, at the end of the track of the primary electron and this explains why modern megavoltage radiotherapy is so superior to lower voltage therapy. In this range the maximum dose and number of ionizations are produced not at the skin surface but some centimetres deep to it. Hence larger doses can be given with less skin damage. However, x-rays at this high voltage are only slightly absorbed by human tissues so that damage to posterior skin and structures may be extensive. Electrons at 15 Mev. approach the ideal since they show the same "build-up" of dose but a sharply limited range of about 7 cms. so that the exit dose is nearly zero.

Although qualitatively the effects of all ionizing radiation, except neutrons, are the same they differ quantitatively, in the number of ion pairs produced. Neutrons differ in first ejecting protons which then proceed to produce very heavy ionization by ejection of electrons. Neutrons are of interest thera-

peutically since the ejection of protons depend to some extent on chemical composition and so some degree of tissue selectivity may be possible. They can be produced with the linear accelerator by irradiating uranium with 15 Mev. x-rays.

TARGET SUBSTANCES AND MECHANISMS OF ULTIMATE REACTIONS.

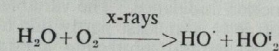
(a) Characteristics of the direct and indirect mechanisms

There are two possible ways in which the free radicals and secondary ("thermal" or slow) electrons, produced as illustrated in Figure 1, may react with the "target" molecules in the cell.

In the *direct* mechanism a thermal (or a high velocity) electron interacts with an atom in the target substance causing ionization or excitation of the molecule with or without the breakage of chemical bonds.

In the *indirect* mechanism the target substance is attacked by free radicals produced by the ion pair. (See Figure 1).

In the indirect mechanism the free radicals are produced mainly from ionized water molecules because of the high affinity of oxygen for electrons—



The effect of x-rays on oxygen-free solutions is much less, and a decrease in the biological effect on removing oxygen is unambiguous evidence of an indirect reaction according to the above equation. If the biological effect is reduced on irradiating the frozen material the indirect mechanism is again supported since any free radicals produced would not be mobile.

Crowther, in 1924, suggested the target theory, (1) where all the biological effect was ascribed to a single ionization occurring in a minimal sensitive volume of the cell. With many solids or solutions of viruses the calculated sensitive volume agrees so closely with the volume of the molecule, or the active part of it, that a direct mechanism must be assumed. Even at low dosage there are, probably, more than one target substance and much confusion has arisen from trying to ascribe all the biological effects to a single chemical change.

Remarkably small doses inhibit growth and mitoses in some cells, e.g., only 0.01r. inhibits the fungus *Phycomyces blakesleeanus*. Using the more usual dose of 34r.

for chick fibroblasts the number of molecules affected is about 68,000. This number is far too small for the target molecule to be one of the smaller, more numerous, molecules like ATP. Assuming, for example, the target to be deoxy ribonucleic acid (DNA) of molecular weight 6×10^6 and an average content of $6 \mu\mu\text{G}$. per cell, there are about 600,000 molecules on the chromosomes, and assuming about 15,000 genes per cell there are only 40 molecules of DNA per gene. Hence if DNA is the target molecule, about 1,700 genes could be affected by 34r, leading to widespread genetic and metabolic disturbance.

(b) Biological effects of radiations.

Radiation produces the following effects in tissues: inhibition of growth and mitoses, mutations, chromosome aberrations, carcinogenesis, widespread metabolic disturbance and release of enzymes, and cell death. The dose (and dose rate) required to produce any of these effects is very different for different tissues and even isolated cells. The effects are not comparable in animals because they are considerably modified by variation in blood and oxygen supply, damage to capillary endothelium, lowered antibody response and endocrine imbalance. The variable sensitivity of cells is at least partly due to the presence of natural protecting substances which compete with the target molecules for the free radicals. Polyploidy and the dependence of cellular oxidation on cytochrome oxidase, (2) are also important factors.

Euler and Hahn (3) and also Durycc (4), isolated nuclei by micro-dissection and irradiated them separately in order to see if the cytoplasm was necessary to produce the observed chromosome changes. The isolated nuclei were very radio-resistant when judged by chromosome changes probably because no mitosis occurred subsequently to make the damage apparent. Zirkle and Bloom (5) ingeniously tried to settle the question of the site of the target substance by passing a fine beam (2.5μ) of protons separately through the nucleus and cytoplasm. Passage of only a few neutrons through the nucleus produced chromosome changes, but heavy doses to the cytoplasm produced no effect.

(c) Chromosome aberrations.

The main abnormalities are "stickiness", breakage of chromosomes and chromatids, and errors in spindle formation. Broken chromosomes may rejoin leading to translo-

cations. The site of breakage of the chromosome is randomly distributed and not localised to one part as with the mutagenic substances (including the nitrogen mustards). While x-rays break chromosomes by an indirect mechanism and have their maximum effect late in interphase, nitrogen mustard acts directly (when nucleic acid synthesis is at a maximum), at mid inter-phase. Hence these substances are wrongly labelled "radio-mimetic" (as has been previously discussed (6)). While the chromosome aberrations produced by x-rays and nitrogen mustard (HN_2) are not related, their mutative effects do appear to be related. Strains of *B. coli*, which are resistant to x-rays are also resistant to HN_2 and vice versa.

(d) Effects on DNA and nucleoprotein.

Müller, 1927, showed that 3,000r. to the *Drosophila* fruitfly increased the natural mutation rate by one hundred times and serves to emphasise the action of x-rays on the nucleoprotein of the genes. It is a definite possibility that the ribonucleic acid (RNA) of the cytoplasm or molecules is also affected, but Forssberg and Klein (7) showed, using labelled orotic acid (a specific precursor of RNA) that RNA synthesis was unaffected by moderate doses of x-rays while DNA synthesis stopped with as little as 35r. *In vitro* experiments showed a large drop in molecular weight of DNA on irradiation in solution and Errera (8), demonstrated the same change *in vivo*.

Past work indicates that the effect of x-rays on nucleic acid is probably the most important event occurring on irradiating the cell. The nucleoprotein of the chromosomes is present as a concentrated gel (30%) so that it is possible and probable that the main reaction is a direct one. Some evidence of this is available in Ephrussi-Taylor's work on the inactivation of transforming principles (6, 9) and also in Pollard's studies of the inactivation of viruses. In this case the change of structure should be detectable on irradiating solid DNA or nucleoprotein, when only the direct reaction can occur. In fact, it is found that gross chemical change only occurs with large doses of radiation and this fact has led many to think that the direct mechanism is not important *in vivo*. The present work, using the new paramagnetic resonance technique, is aimed at demonstrating the fallacy of this argument. DNA is probably one of the most

structure sensitive of all biological molecules so that gross chemical change (the splitting off of amino- or phosphate groups, for example) are not required to destroy its biological activity. It is suggested that a few scattered broken bonds are sufficient, so that a proper test of the sensitivity of DNA to irradiation depends on the measurement of these and not of liberated chemical groups. The method of paramagnetic resonance spectroscopy has been found very suitable for this purpose.

THE PARAMAGNETIC RESONANCE METHOD AND RESULTS.

When a substance containing an odd electron (i.e. it is paramagnetic) is placed in a high frequency electromagnetic field (frequency ν c/s), and a steady magnetic field applied (H gauss) at right angles to the magnetic component of the electromagnetic

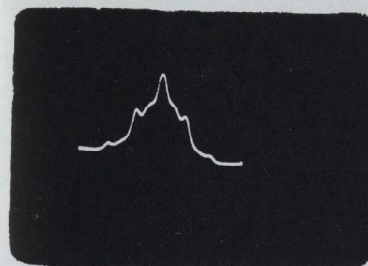


Figure 2. Paramagnetic Absorption Spectrum due to Breakage of Carbon—carbon Bonds in Polymethyl-methacrylate. (Dose 100,000r./G).

field, a strong absorption of energy occurs in the substance when the following quantum condition is satisfied:

$$h\nu = g\beta H$$

where h is Planck's constant, g the spectroscopic splitting factor, and β the Bohr magneton. The intensity of the absorption is proportional to the number of uncoupled electrons in unit volume. Instead of the single sharp peak predicted by the above equation a more complex spectrum is obtained, with multiple peaks, due to interaction of the uncoupled electron with a neighbouring nucleus. The number of these

peaks and the shape of the spectrum allow the broken bond associated with the uncoupled electron to be identified. Hence this method allows the effect of irradiation to be exactly placed even in a large molecule. In practice the method is found to be very sensitive, since 10^{-9} moles, containing one broken bond, can be detected. The best results are obtained at very high (micro-wave) frequencies ($\nu = 10,000$ mc/s and $H = 3,500$ gauss). Technical details will not be discussed here, but the equipment, in most ways, follows conventional radar techniques. The spectrum of the broken bond is ultimately obtained directly on a cathode ray oscilloscope or, alternatively, on a pen-recorder. Figure 2 is a photograph of the spectrum of a broken carbon-carbon bond in synthetic polymethylmethacrylate polymer, produced by a dose of 100,000r. per gramme. The number of broken bonds is estimated by comparing the area under this curve with the area under the curve due to a known weight (a few μG .) of a solid free radical (α, α' -diphenyl picrylhydrazyl).

In order to record the immediate effects of irradiation on nucleoprotein and other macro-molecules, specimens have been irradiated and measured at liquid nitrogen temperature (-190°C). By this means the first reaction of the thermal electron is stabilised and then, on slowly warming up, a series of chemical events can be watched and estimated. At this low temperature it was found that the complex spectra of nucleoprotein and polymethylmethacrylate resolved into a single peak 20 gauss wide indicating that the initial effect was not bond breakage but simple ionization and trapping of the ion pair in the solid. On warming up the ion pair recombined, some of the energy being utilised in breaking bonds. This was confirmed by the production of a blue-green phosphorescence on warming the specimen, and the variation of intensity with temperature showed that this effect was identical with the photo-luminescence observed in other materials and known to be due to recombination of an ion pair. Measurements of the number of broken bonds at different temperatures indicated that over half of the broken bonds initially formed recombined with corresponding modification of the structure. The energy required to produce the initial ionization was found to be only 30 ev. per ion pair, a value in agreement with the established value for ion pair production in

gases (32.5 ev.). Hence, far from the direct effect being unimportant in those macromolecules investigated, as appeared to be indicated by purely chemical investigation, this mechanism seems to be surprisingly efficient when judged in terms of ion pair production and broken bonds.

Future work is directed towards the measurement of bond breakage in 30% nucleoprotein gels in order to establish the nature of the bonds broken under these conditions. Some start can then be made towards explaining how these changes bring about the observed cytochemical effects of irradiation.

ACKNOWLEDGMENTS

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SPORTS NEWS

VIEWPOINT

Now that the winter is drawing to a close one looks back on the sporting activities with mixed feelings. The picture is of course dominated by the glorious failure of the rugby team in the Cup, and though it is tantalising to have been so close to renewing a long overdue supremacy, one may draw some consolation from the fact that the Cup now rests in Whitechapel and not in its perennial niche in Paddington. The Competition has been relieved of its monopoly, the critics have been confounded, and the rugby team was for two days in the limelight of the national Press.

All very gratifying — but in the weekly pilgrimages to Richmond the Ladies' Hockey team's winning of their Cup passed almost unnoticed. Indeed, some members of the hospital were only aware of their triumph when gathering in the square to watch the captain take her annual dousing. Other sections were less successful, but the Hockey Club deserve sympathy for failing to reach the final by the odd goal in seven.

So much in retrospect. Looking forward, it rests with the Cricket Club to continue the

good work, and they are at least favoured with an advantageous draw. So who knows?

1st XV v. Aldershot Services Won 9-6

For the last match before the Hospitals Cup Final Bart's fielded all but one of their Final team. However whether it was because of the morning kick-off or whether because everyone was thinking of the Final the team made a very slow start, and never really got going. After 20 minutes the Services had scored a try and a penalty goal for a 6-0 lead. Before the interval M. J. A. Davies had reduced the lead with a penalty goal, and in the second half, with things going much more our way, Phillips equalised the scores with his first ever drop goal and five minutes from the end Davies kicked a very long penalty goal to give us a narrow victory.

HOSPITAL CUP FINAL

Bart's 9 pts., London Hospital 9 pts.

The preliminaries to a Hospital Cup Final are usually organised on a grand scale as befits the occasion, and this year's game played on the 20th March was no exception. Percy was accompanied from his secret hideout by a party of devoted Bart's supporters suitably attired, and armed with rotten fruit in order to withstand any assault. Alas, the London supporters outnumbered our stalwarts by five to one, and after a fierce battle

in which soot, red ochre, flour and rotten vegetables were thrown around with unabashed fury, Percy was captured and carried off by the foe. One ingenious defensive weapon used by the London to successfully repulse Bart's counter attacks, was a stirrup-pump which rained a veritable deluge of red ochre on would-be assailants until Richmond really looked like a battlefield. However, all was cleared by the time the teams ran on to the field looking fit and eager for the fray.

The London kicked off, and both teams used the touchline until a London three-quarter movement ended with a set scrum at half-way. Carr heeled against the loose-head, and the ball was passed quickly to Phillips who could not beat a good defence, and from the ensuing maul London were awarded a penalty, and a good touch was found. Phillips was again put away from a Bart's attacking movement, but was tackled into touch when gathering his kick ahead.

Following two penalties awarded to them, the London kept up sustained pressure in the Bart's 25 for the next 10 minutes, when Lammiman and R. R. Davies were prominent with good relieving kicks. The Bart's pack with Dobson in the van relieved pressure with a good rush, but were immediately sent back again following two more penalties against them, and only good covering by Howard Thomas and Tallack kept the line intact.

Breaking very fast from a scrum, Mackenzie tackled the opposing outside-half Lee in possession, and the Bart's pack dribbled the ball on. When stopped, a quick heel saw the ball reach the Bart's three-quarters but a misplaced grub-kick spoiled the movement. Then after 23 minutes play Bart's were awarded their first penalty, but M. J. A. Davies hit the cross-bar with a good kick. The London brought the ball into play immediately without touching down, and gained a great deal of ground down the left wing. They then launched a good three-quarter move from a line-out and their left-centre Colwell broke through before kicking high to the posts. Fortunately Phillips was on hand to save with a good touch. However, London soon took the lead when Lee kicked a good penalty after 25 minutes play.

There followed a period of indeterminate play between the two 25 lines, marked only by keen tackling on both sides, and a good piece of fielding by Badley of a difficult high punt, before London again scored in the 37th minute. The ball reached the right wing Hewett from an orthodox passing movement, and when hemmed in he cross-kicked towards the posts. The Bart's defence was shattered as Lee, coming up at tremendous speed, caught the ball on the burst and scored an excellent try which was not converted. In the remaining few minutes of this half Bart's attacked strongly, but when the whistle blew for half-time, the London undoubtedly deserved their 6 pts. lead.

Within 10 minutes of the restart Bart's had shot into the lead by virtue of some excellent all-round play, which must have been appreciated even by the most biased members of the crowd. First Halls carved out an opening in the centre and made ground before passing to Phillips who took his pass at full speed. With the cover defence

converging rapidly, the full-back to beat, and 30 yards to run Phillips wasted no time, and scored a magnificent corner try after bursting through McEwan's tackle. This was wing three-quarter play at its best, with great determination and footballing ability allied to speed, as so rarely do wings possess all these attributes. Then following a good touch by Brian Richards into the London 25, the Bart's pack took control as they flattened the opposition with a tremendous rush — for Dobson to score in the left hand corner. Neither of these tries was converted by M. J. A. Davies from very difficult positions, but not to be outdone he dropped a beautiful goal from 30 yards out, making it 9-6 to Bart's.

During this period Bart's really looked a Cup-winning side and while the London were still wondering what had hit them, Bart's kept up the offensive hemming them in their own 25. However, the London soon awakened from their reverie and proceeded to give blow for blow, but Phillips, Laurie Thomas and Roche did some good things to keep them at bay, until a skilful piece of rugby enabled them to draw level. A scrum formed 15 yards from the Bart's line, and the London heeled. The ball went to outside-half Lee, who caught the defence on the wrong foot by reversing a pass to centre Cumming who had run inside. He burst through a bewildered pack, for once caught off their guard, and passed to scrum-half Hopkinson on the line, for the latter to score. The conversion failed.

With 15 minutes left and the scores level, the stage was set for a grand finale, and the crowds of supporters were not disappointed. Both sides hammered into each other with great zest, although a certain weariness was detectable with the frequent kicks to touch. A kickable penalty to the London went begging, and both lines were frequently in danger from rampaging forwards following up opposition errors, but somehow or other there was no further score. The final whistle blew with both sides slogging it out in mid-field, and a replay became necessary. It was something of an anti-climax when such an enjoyable game ended to stalemate, as the crowd was certainly in the mood for a fight to the finish in extra time. Nevertheless a draw was a true reflection on the afternoon's play, which contained admirably conceived scores interspersed between good, clean, fast, open rugby.

Team: as in photograph.

REPLAY

Bart's 3 pts., London Hospital 5 pts.

This match, played on the 26th March, six days after the magnificent drawn game which necessitated the replay, was expected to be an anti-climax; and so it was! No one was inclined to indulge in pre-match festivity with all the involved preparations, and the only amusement enjoyed by the crowd was a somewhat short-lived tête-à-tête between a huge St. Bernard and a dog of lesser stature but of unimpeachable pedigree. Except on few occasions the game as a whole lacked the excitement and intense quality which marked the previous encounter, and the players seemed stale in comparison. Nevertheless the game had its moments of quite good rugby which must have pleased those present who were completely unbiased.

Bart's kicked off and McEwan caught the ball cleanly to put it into touch. Then after R. R. Davies had put Bart's on the offensive by finding touch on the London 25, Halls was well tackled when trying to find an opening, and the London pack carried play into the Bart's half. The London three-quarters then handled well, but Phillips tackled Salter to halt the movement, and immediately after, they were held up again when Mackenzie caught Lee in possession.

After 20 minutes Bart's took play to the London line, when a good forward rush, with Dobson to the fore, took advantage of a dropped pass. Bart's heeled from a five-yard scrum, but M. J. A. Davies was literally collared trying to break through and London stormed back to half-way. Immediately following this Bart's had a golden opportunity to open the score when Mackenzie burst through and handed on to D. Richards. He in turn passed to Lammiman, but the wing was caught when a score seemed imminent. From then until the 34th minute the play fluctuated about mid-field, both sides trying to initiate scoring movements, but neither defence faltered until London conceded a penalty when M. J. A. Davies kicked a good goal. This infused new life into the Bart's team and they remained on the offensive until half-time when they crossed over with a well-deserved 3 points lead.

For the first 10 minutes of the second half Bart's continued to press, and when Mackenzie broke up a London passing movement M. J. A. Davies crossed the line only to be recalled for a forward pass. L. Thomas was prominent in the loose mauls, and from a good mark under pressure H. Thomas found an excellent touch. Gradually the London worked their way upfield and returned to the offensive, and a reverse pass from Lee to Salter looked dangerous until the latter ran into the covering forwards. A London kick-ahead bounced awkwardly for Badley but he managed to get the ball into touch on his own 25. It was from the ensuing line-out that London scored their try. The ball came back to Lee who attempted a drop at goal, but although it sailed across in front of the goal posts, an awkward high bounce caught the Bart's defence off-guard and Cumming caught the ball on the burst to score behind the posts. Lee was successful with the conversion and so the London led 5-3 with about 25 minutes play left.

Mackenzie continued to get the best out of his team and there was very little to choose between the two sides. Phillips, M. J. A. Davies, and Halls, well supported by the pack, made tremendous efforts to break through but the defence held firm, and indeed London put in just as many attacking movements. Halls in particular made one excellent run but spoilt it with a bad pass when a score seemed probable. The Bart's back-row forwards were frequently in the limelight both marauding and initiating attacking movements, while the front and second-rows gave nothing away in the set scrums. The last minute saw Bart's break away with Howard Thomas prominent, but the London held out to win an enjoyable game, and it is fair to say that the London always looked just capable of hanging on to their slender lead, although they could never afford to slacken their effort in face of continued Bart's pressure.

By reaching the Final this year, Bart's has regained some of its past glories after a lapse of too

many years, so although such stalwarts as Tallack, Roche, and M. J. A. Davies will not be available next season, it is hoped that most of the remainder will form the nucleus of a side capable of bringing the Cup back to an honoured place in the College Library.

Finally, tribute must be paid to the referee, Mr. K. S. John of the London Society, who handled both Finals admirably, allowing the games to be enjoyed by players and spectators alike.

Team: As in photograph.

1st XV v. Old Millhillians. Lost 5-12.

For their first visit to Headstone Lane for some years Bart's were missing six of their Cup side, including Mackenzie and Phillips who were both in the Middlesex party visiting France. Considering this fact, the team did well to hold a powerful Millhillian side, which included England scrum-half J. Williams and England Trialist J. Roberts, to 3-0 at the end of a scrappy first half. In the second half however the Old Boys got well on top and added three unconverted tries, before a spirited Bart's rally in the last 10 minutes was rewarded with a try by Boladz, after a long run by Halls. This try was converted by Badley.

Team: B. W. D. Badley; J. Plant, G. J. Halls, M. Britz, D. A. Lammiman; R. R. Davies, B. Richards; J. C. Dobson, C. J. Carr (Capt.), D. A. Richards; W. P. Boladz, K. E. A. Norbury; R. P. Davies, R. Jones, A. H. Thomas.

INTER FIRM SEVEN-A-SIDES

The Firm Seven-a-sides were played at Chislehurst on Saturday, March 30th, in beautiful weather, and with a proportion of the spectators and players mellowed by Cambridge's earlier victory in the Boat Race.

The early rounds resulted in the third-year pre-Clinicals playing the Midder and Gynae representatives in the final. There was a certain lethargy evident in some of the games but the final was played at a very hearty pace. Perhaps the cool of the evening had something to do with it. The Midder and Gynae side duly confounded the prophets by winning 8-5, tries being scored by Dale and M. J. A. Davies (one conversion) against a try by H. Thomas converted by G. Halls for the third year preclinicals. M. J. A. Davies always looked dangerous for Midder and Gynae and the remaining players nullified the dangerous pre-clinical attack with courageous tackling. Altogether a rather desperate affair with the result in doubt until the final whistle, as distinct from the rather lighthearted frolics we had witnessed previously.

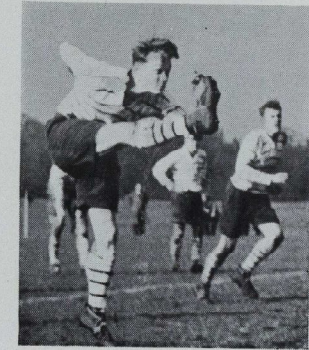
The Housemen v. Registrars match resulted in a win for the Registrars by 11 points to 3. Perhaps the various temporary beards worn by the Housemen proved more to their detriment than advantage, but after the first loose scrum many of them were abandoned, if involuntarily. It soon became evident that the Housemen intended to counteract the heavier Registrar's pack by sheer numbers. Packing a sturdy 3-2-5 (or more



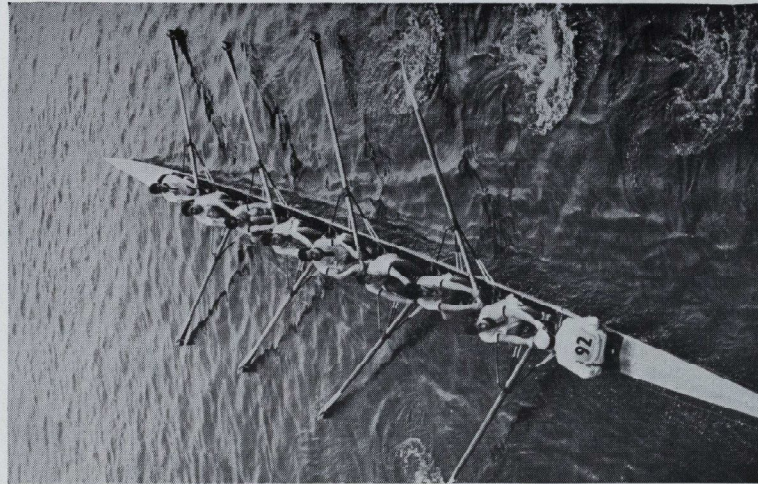
L. R. Thomas comes in for a tackle.

CUP FINAL

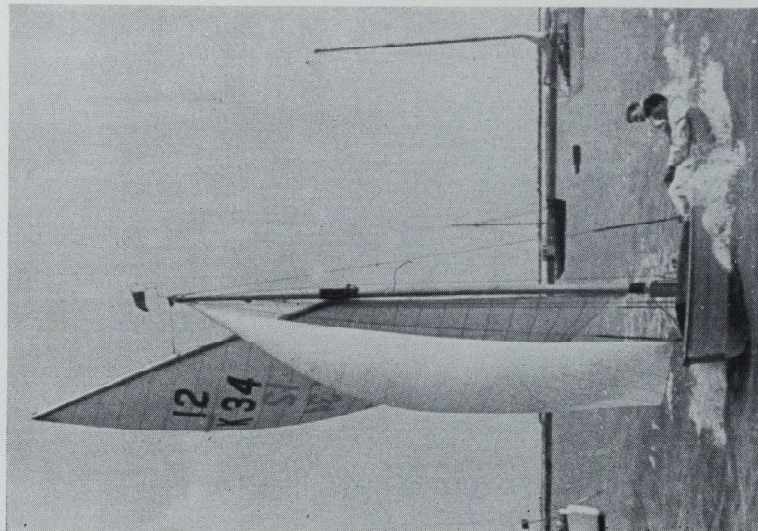
B. W. D. Badley taking a penalty.



D. W. Roche gets the ball in a line-out.



The First Eight.



A 12 Square Metre Sharpie.

on occasions) they had to rely on desperate corner flagging or their opponents' mistakes (usually the latter) to keep their line intact. Picton Thomas scored early on for the Registrars, Havard failing to convert and later M. J. A. Davies was allowed to run almost the whole length of the field to score, much to the chagrin of the crowd. In the second half the majority of the House beards were discarded, and a crisp blind side move ended in a try by Taii. However, this triumph was short-lived as a further converted try by MacNab Jones settled the issue.

So ended a most enjoyable afternoon's entertainment which was concluded in the traditional way with a dance in the pavilion.

SEASON 1956-57.

Colours have been awarded to the following: W. P. Boladz, A. B. McMaster, J. W. B. Palmer, B. Richards, D. A. Richards and A. P. Ross.

Colours have been re-awarded to: B. W. D. Badley, C. J. Carr, J. C. Dobson, M. J. A. Davies, R. R. Davies, G. J. Halls, J. C. Mackenzie, D. A. Lammiman, R. M. Phillips, D. W. Roche, J. S. T. Tallack, A. H. Thomas and L. R. Thomas.

ROWING

HEAD OF THE RIVER RACE

The Head of the River Race took place this year on the 23rd March, the week before the Boat Race. It was rowed under good conditions on a warm sunny day with a following wind over most of the course. There were 280 crews entered for the race, a greater number than there has ever been in previous years.

The hospital entered three crews, the first two being trained and the third being a collection of gentlemen who gallantly turned out for the occasion. The crews entered were as follows:

1st VIII—

- Bow.* A. I. Wilson.
- 2. J. G. Diamond.
- 3. L. K. H. Therkildsen.
- 4. B. P. Harrold.
- 5. J. R. Strong.
- 6. R. France.
- 7. E. M. C. Ernst.
- Stroke.* J. Bootes.
- Cox.* J. C. Rice.

2nd VIII—

- Bow.* R. G. Wilson.
- 2. A. C. Howes.
- 3. J. M. Lewis.
- 4. H. B. Dixon.
- 5. A. J. Lines.
- 6. W. H. F. Thomson.
- 7. R. H. Fell.
- Stroke.* R. S. Edmondson.
- Cox.* J. J. Wilson.

3rd (Gentlemen's) VIII—

- Bow.* D. King, Esq.
- 2. A. Ellison, Esq.
- 3. J. J. D. Bartlett, Esq.
- 4. E. J. B. Makin, Esq.
- 5. C. C. H. Dale, Esq.
- 6. G. M. Besser, Esq.

- 7. G. D. Stainsby, Esq.
- Stroke.* K. R. Bowles, Esq.
- Cox.* J. U. Watson, Esq.

The 2nd VIII was attacked by an epidemic of German measles about a fortnight before the race but were fortunate enough to get all their members back in time to finish training for the event. This year both the 1st and 2nd VIIs went out every day in the last week before the race and did daily exercises in the gym for 10 days before that.

In the race itself the 1st VIII started well. Putting in 36 strokes in the first minute and settling down to a steady 32, No. 90 was soon passed and from Hammersmith to Fulham football ground the crew rowed beside No. 91, who were then passed and left about 2 lengths behind at the finish. The time for the course was 20 minutes 59 seconds.

The Results were as follows:

- Boat I. (No. 92). 20 mins. 59 secs. Finished 83. Placed 102 in 1956.
- Boat II. (No. 192). 21 mins. 50 secs. Finished 188. Placed 221 in 1956.
- Boat III. (No. 272). 22 mins. 9 secs. Finished 252. No. IIIrd. VIII entered in 1956.

It is encouraging to note that six members of the 2nd VIII had had no rowing experience before November 1956.

1st XI v. Middlesex Hospital. Won 5-2.

Bart's kicked off in this our first game against the Middlesex Hospital for two years and during the first half played "up the hill." This however did not prevent repeated attacks on the Middlesex goal and was eventually rewarded when our outside left Tchamannoff scored with a crisp right-foot drive which left the opposition goalkeeper helpless. It was not long before Bart's again added to their score, this time Gould being on hand to force home a splendid forward pass.

The Bart's goal had seldom been threatened during this period due to the splendid defensive covering of the full-backs Prosser and Kennedy and the sterling stopper at centre half, Juniper. This defensive trio found an impregnable barrier in front of the Bart's goalkeeper which was a very good thing, since the goalkeeper, who was usually seen in the inside forward position, had never played in goal before in his life.

The second half started with Bart's still leading 2-0 and soon Gould added our third goal despite vain efforts by both full-back and goalkeeper to prevent a score. Middlesex, however, were not to be denied a score. Following a passing movement amongst their forwards their outside right managed to force home the ball through a narrow gap between our goalkeeper and the post—much to the surprise of the goalkeeper and the post!

Following this reversal Bart's swung to the attack again and soon our outside right Carr had scored our fourth goal. A left-foot centre-cum-shoot from the angle of the penalty box floated nonchalantly past the opposition goalkeeper and finished in the back of the net.

Middlesex fought back but most of their efforts broke down in midfield because of the tight



Psyche-cum-soma

Cupid, you will remember, deserted Psyche; and I occasionally wonder whether it was not so much because she asked awkward questions as because he discovered that she was one of a pair of Siamese twins. For though it was easy enough for Cupid to leave Psyche, Psyche, poor girl, can never leave Soma. Yet to their Siamese twinning—the twinning of mind and body—we are often, like Cupid, blind.

Of course in one sense, we know quite well that our minds are constantly influencing our bodies. Suppose I ask you to think of a lemon—to remember how it smells, how it feels when you cut it with a sharp knife, and what it tastes like when you let your teeth sink into it, as we used to do at halftime. Unless you are unusually weak on imagination your mouth will water. But not because I have in fact handed you . . .

Fascinating, but owing to a shortage of space, unfinished. The complete essay, which appeared originally in The Times, is one of a collection of meditations by this celebrated medical essayist. We will be delighted to send you a copy of "The Proslings of Podalirius". Just send a card to the address below.

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FERTILOL CREAM CHOLINVEL ETC.

marking and terrier-like tackling of the Bart's wing halves, Smith and Noble. It was from a pass from the half backs that Gould scored our fifth and final goal. A pass found Gould just outside the penalty box and beating off one tackle he fired in a low cross shot which completely beat the goalkeeper.

In reply to this effort Middlesex launched repeated attacks and finally scored their second goal, again through their outside right. From the right wing 10 yards from goal he sent over a harmless-looking centre which suddenly sailed into the net just under the cross bar.

Team: R. Pilkington; D. Prosser, R. Kennedy, M. Noble, C. Juniper, R. Smith; C. Carr, D. A. Birkett, A. Gould, L. Iregbulam, S. Tchamannoff.

HOCKEY

HOSPITAL CUP SEMI-FINAL

1st XI v. The London. Lost 4-3.

We were lucky to have an almost fine day for this match after a series of cancellations, and the ground, although not ideal, was not as heavy as anticipated.

Bart's started badly, but soon settled down and in fact in the first half had most of the play. Our goal was only once in danger but Doherty saved at the last minute at full stretch. The two backs, Nichols and Goodwin, were largely responsible for keeping out the very fast and penetrating London forwards. Not long before half time, Drinkwater opened the scoring from a good short corner.

In the second half, the London got more active and their three inside forwards time and again split open our defence. This happened soon after half time and Doherty, left on his own, was beaten. Bart's lost no time, however, in scoring again, and a nice forward movement culminated with Anderson making the score 2-1 a minute later. From now on the London forwards made attack upon attack on our goal, but some terrified 'scratching' by the Bart's defence somehow managed to prevent them scoring, until a muddled defence gave the London their equaliser.

Later their right wing got away and sent a hard centre to their inside left. The shot was saved by Doherty, but before he could recover, the London had scored again, making it 3-2. Ten minutes from the end, Bart's again scored. This time from a long corner. Tabor hit the ball in the air and Drinkwater neatly followed it in: 3-3. Annoyingly quickly after this, the London scored the winning goal when Doherty saved one shot, but was caught (and held) on the ground, while the London pushed the ball gently into an open goal.

A very good game and surprisingly fast for the conditions. One felt, however, that the whole Bart's side could have done much better and had the match been played earlier on in the season, as originally planned, the result might have been different.

Team: R. P. Doherty; C. S. Goodwin, J. B. Nichols; D. Godwin, E. J. Batterham, N. C. Roles; J. R. Nicholson, A. S. Tabor, A. S. Anderson, P. Drinkwater, D. R. Dunkerley.

ST. BARTHOLOMEW'S HOSPITAL JOURNAL

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A symposium
to commemorate the tercentenary of the death of
William Harvey on 3 June, 1657

EDITORIAL

IN JUNE OF 1928 the *Journal* commemorated the tercentenary of the publication of William Harvey's *Exercitatio De Motu Cordis et Sanguinis in Animalibus*. In June of 1957 we commemorate the tercentenary of the death of its author. There is little need of excuse for devoting time and thought to the great men of the past; in the case of William Harvey, the most eminent physician ever to minister to the sick of our Hospital, there is no need for excuse at all.

* * *

The bald statement of a discovery is as informative as a tombstone. It tells you a fact which you knew already, or in which you have not the slightest interest. But even a brief digression into history may turn the fact into an absorbing study of human behaviour, perhaps even an inspiration. We may enquire whether the discovery was a flash of insight or the result of many years of patient study; why the man attempted to make the discovery and why he was successful; what effect the discovery had on himself, his wife, his contemporaries; how his predecessors had managed to cope without his new knowledge; and, perhaps more important than any of the myriads of questions that one might ask, what sort of man he was and what sort of life he led that enabled him to succeed where so many others had failed.

One less important query, which we will take an editorial license in considering, is what would have happened if the discovery had not been made. In Harvey's case this is quite clear. The spread of microscopy shortly after his time would soon have led to the discovery of the one piece of evidence lacking for his theory; namely, the means by which the blood gets from the arteries to

the veins. (In fact, capillaries in the lung of a frog were demonstrated only four years after Harvey's death by Malpighi.) But if the discovery of the circulation of the blood had been made in this way, it would have been made entirely by the old and established method of observation, acceptable in the Western world since the time of the Greeks. Probably as a result, the fact would have been accepted more quickly by the physicians of the time. But the immense propaganda for Harvey's new methods of research would have been lost. As it was, Harvey demonstrated the circulation by experiments on animals and men. His contemporaries had to swallow the circulation of the blood and the respectability of experimental medicine in the same pill.

It has been alleged, rather cruelly, that Harvey as a good Aristotelian derived the idea of the circulation from the current concept of the circle as the perfect geometrical form; although it would take a very ardent Pythagorean to find anything very circular in the cardiovascular system (*pace* the Circle of Willis and, of course, the vessel walls). But the general idea of circulation must have been in men's minds at the time. In 1543 Copernicus, another graduate of Padua's medical school, published his *De Revolutionibus Orbium Coelestium* in which he set forth his heliocentric theory of the solar system. And in 1609 Kepler made known his calculations on the elliptical circulation of the planets. Another circulatory problem was the meteorological one of rainfall, in which evaporation of water from the sea played the part of the invisible capillaries. More pertinent, perhaps, was Servetus' theory of the pulmonary circulation (*Christianismi restitutio*, 1553); and, of course, Fabricius pro-

vided a direct stimulus by interesting Harvey in his work on venous valves.

Perhaps one reason why Harvey's discovery met with such opposition is that it required a complete reorganisation of men's views about the contents of their own bodies; and any idea which violates a man's habitual picture of himself is bound to be distasteful. Only recently they had been told that they were not sitting snugly at the centre of the universe, but rather that the ground they stood on was rushing around the sun at an almost inconceivable speed. Now they were asked to believe that the blood inside them was rushing round and round in a quite unheard of way, instead of ebbing and flowing sluggishly as Galen had assured them. This remained perhaps the greatest blow to their equanimity until Freud demonstrated the strange contents of their unconscious minds.

* * *

The intrinsic interest of Harvey and his discovery is only one reason for presenting this symposium. A fundamental function of the *Journal* is to publicise the interests and publish the researches of members of the Hospital; and we are fortunate in having at the present time many Bart's men who are not only interested in but also carrying out active research into the life and works of Harvey. This has dictated to some extent the form of the symposium. It is not a systematic survey of the subject, but rather a collection of articles by experts on their own particular fields. However, in the pages that follow will be found answers to many of the questions that we have asked.

We would like to express our appreciation to our many contributors, who have found time to write for us in a year in which the time of every Harvey scholar is in very great demand.

View Day Exhibition

The Archivist and Librarian are to be congratulated on the fine display of manuscripts and first editions which was on view in the Great Hall on May 8th. Those who were aware of the Tercentenary paid special attention to the Minutes of the Governors' meetings, which contained references to Harvey's salary, etc., and also to a page of manuscript in which he mentions his ex-

perience in the Hospital. Our main reaction was one of respect and sympathy for those who translate his mixed Latin and English and read his practically illegible handwriting.

Many of the documents quoted by Miss Stokes in her article on page 167 were on view, and she tells us that they will probably be on view again during the week of June 3rd.

The log fire in the Great Hall added to the pleasure of the exhibition, and made a pleasant refuge from the somewhat chilly social activity in the Square.



.... on the playing-fields of Bart's.

Easter Concert

This was a most enterprising and enjoyable concert given in St. Bartholomew's the Great on April 9, by the Rahere Music Society of St. Bartholomew's Hospital. The works ranged from two motets of the pre-Bach era to Mozart's Requiem, by way of

a fine performance by Anne Cassal of Bach's vigorous organ Prelude and Fugue in A minor, one of his chorales from the St. Matthew's Passion and two lesser known chorales.

The motets by H. L. Hassler and J. H. Schein—almost unknown music of great beauty and drama—were sung most convincingly by the choir and in these the balance of parts was at its best.

The choir sounded more tentative in the chorales, perhaps owing to their considerably slower speed, but there was some beautiful solo singing and choral effects.

The requiem was performed with warmth and spontaneity and the conductor Richard Sinton and orchestra should be congratulated on their excellent accompaniment, fully supporting but never drowning the singers. Most of the choruses sounded very well, although the altos and tenors needed more body at times. The soloists—Alice Bohdjalian, Hilda Bickley, Brian Richards and George Hobday—tackled their difficult parts most creditably.

Altogether, this was a memorable evening in surroundings not unlike those in which most of these works had their first performances.

Thanks are due to Richard Sinton and to the Rahere Musical Society for the scholarly musicianship as well as the intensive work which made such a concert possible.

Osseous Librarian

We wish all success to B. W. D. Badley, who recently fought a noble battle on television for the educational benefit of his successors. On the programme *State Your Case* he claimed £100 to start a bone library; and while the cameras were making technical similes between his prosecuting counsel and a skeleton, he argued the case for the medical student who does not want to buy his own bones. Let us hope that the viewers see the logic of the point—and anyway, you can't even get them on the never-never.

Journal Staff

Applications are invited for the posts of Assistant Editor and Women's Representative.

The post of Assistant Editor is held for six months and is usually followed by a six months editorship. Applicants should preferably be in their first clinical year.

That of Women's Representative is advisory rather than administrative and is therefore not exhausting. It is open to ladies of any seniority and may be held indefinitely.

Applications should reach the Editor by June 20.

CALENDAR

Tue.	June 4	Athletics: v. Harrow School and Scarabs (A).
Wed.	.. 5	Athletics: v. Dulwich College and St. Mary's Hospital (A). Golf: v. St. Thomas's at South Herts.
Sat.	.. 8	Medical and Surgical Professorial Units on duty. Anaesthetist: Mr. G. H. Ellis. Tennis: v. King's College Hospital (H). Sailing: First Heats of Sherren Cup.
Sun.	.. 9	Cricket: v. Queen's College, Cambridge (H).
Mon.	.. 10	Sailing: Final of Sherren Cup.
Thur.	.. 13	Oxford-Bart's Club sherry party.
Sat.	.. 15	Dr. G. Bourne and Mr. J. B. Hume on duty. Anaesthetist: Mr. F. T. Evans. Tennis: Mixed doubles tournament. Sailing: Interhospital race. Athletics: United Hospitals Championship at Motspur Park.
Sun.	.. 16	Cricket: v. Horlicks (A).
Wed.	.. 19	Tennis: v. West Heath L.T.C. (mixed) (A). Golf: v. City Police at South Herts.
Thurs.	.. 20	Sports Day Heats.
Sat.	.. 22	Sports Day. Dr. A. W. Spence and Mr. C. Naunton Morgan on duty. Anaesthetist: Mr. R. A. Bowen. Cricket: v. Royal Dental and Charing Cross Hospitals (A). Tennis: v. St. Thomas's Hospital (H).
Sun.	.. 23	Cricket: v. Barcome (H).
Wed.	.. 26	Golf: v. Guy's at Shirley Park.
Thurs.	.. 27	Athletics: relay meeting.
Sat.	.. 29	Cricket: v. Jesters (H). Tennis: Tournament finals.
Sun.	.. 30	Cricket: v. Old Roans (H).
Wed.	July 3	Tennis: v. King's College Hospital (A). Golf: v. Middlesex Hospital at South Herts.

WILLIAM HARVEY

by SIR GEOFFREY KEYNES

DR. WILLIAM HARVEY died on the third of June three hundred years ago and commemorative meetings are taking place this week in London and elsewhere. Celebrations were held in 1928 to commemorate Harvey's name but this was for the tercentenary of the publication of Harvey's first book, *De Motu Cordis*, in which he announced his demonstration of the facts of the circulation of the blood in the veins and arteries of the mammalian body. The volume consisted of only thirty-eight leaves, was printed on bad paper, was full of typographical errors, and was published at Frankfurt instead of London. It has nevertheless been recognized as one of the most significant books that has ever come from the press, being the beginning of modern experimental science, of current physiological concepts, and so of the advance of medicine to its present position.

In 1928 we commemorated an idea; in 1957 we think rather of the man who elaborated the theme and died in his eightieth year as the most eminent member of his profession in England. For in order to gain an idea of Harvey's position in the seventeenth century world it is important to realise that he was primarily a practising doctor, physician for thirty-six years to St. Bartholomew's Hospital, personal physician to two kings, and not so disinterested a scientist that he could refrain from complaining that, owing to his reputation as a dangerous innovator, reduction of his private practice was hurting his purse. Nevertheless, his ruling passion was a tireless search for scientific truth in the field of biology, coupled with a marked reluctance to publish the results of his work and a cool indifference to the hostility provoked by the novelty of his ideas when publication had taken place.

We can have no knowledge of how Harvey's intellect developed as a schoolboy at the King's School, Canterbury, as an undergraduate at Caius College, Cambridge, or as a travelling student in France and Germany. It was only when he became enrolled as a student at the University of Padua that his intellectual distinction became apparent, and recent discoveries hint that it was not until he had studied for a while at Padua that he

decided to embrace medicine, having up to this point looked at general philosophy rather than any particular discipline. But at Padua he came into contact with Fabricius, the most eminent anatomist of his time, and from him learnt of the existence of valves in veins. According to his own statement made later in conversation with another great scientist, Robert Boyle, he noticed that these valves "were so placed that they gave free passage to the blood towards the heart, but opposed the passage of the venal blood the other way" and this suggested to him the truth, that the blood must move forever in a circle from heart to arteries to veins and back to heart again. Harvey was well versed in the doctrines of Aristotle and Galen, but rejected finally erroneous assumptions that the blood ebbed and flowed in the great vessels, or that it passed from one chamber of the heart to another through holes in the partition between them. Nevertheless, he remained to some extent Aristotelian in his thought to the end of his life; though he rejected the doctrine that the *heart* was the seat of the soul, he still spoke of the *blood* as "a generative part, the source of life, the first to live and the last to die, the primary seat of the soul."

The great John Hunter, late in the next century, is always credited with the laconic advice, "Why think? Why not try the experiment?" but it was Harvey who had first, since Galen, acted on this principle and proved by direct experiment that the blood moved in a circle successively through the lesser circulation of the right side of the heart and the lungs, and then through the greater circulation of the left side of the heart and the great systemic vessels. The MS notes of his Lumlleian Lectures delivered at the College of Physicians are extant and carry the date 1616. Two pages of these notes, including the famous sentence: "It is plain from the structure of the heart that the blood is passed continuously through the lungs to the aorta as by the two clacks of a water bellows to raise water," summarise Harvey's revolutionary views on the circulation and it has usually been assumed that it was in 1616

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that these views were first promulgated. It has been noticed, however, that these pages were, from the evidence of the handwriting, penned at a different time from the rest of the MS and were probably added later, so that the exact date of the first announcement remains uncertain; but the operative date is 1628, when Harvey's incisive mind cut through the trammels of tradition and orthodoxy with the arguments and their experimental proof contained in the few pages of his book. This is still regarded as one of the most perfect examples of deductive reasoning based on experiment that has ever been printed, and it is for this reason that Harvey's triumphant demonstration of scientific method in biological research is to be regarded as his greatest achievement rather than his discovery of the circulation of the blood. Yet, with all his perspicacity and scientific acumen, Harvey's concepts were inevitably limited by the lack of apparatus to which any investigator working in the first half of the seventeenth century was subject. He could see the arteries conducting the blood from the heart getting smaller as they neared their destinations; he demonstrated the return journey towards the heart through the veins. But of the actual communications of the two systems in the lungs or other tissues through the tiniest vessels, or capillaries, he could have but the vaguest idea without the help of a microscope. He had no notion of the existence of the minute cells, or blood corpuscles, floating in their myriads in the circulating fluid. The science of blood chemistry had not been born. Harvey's second great book, *De Generatione Animalium*, 1651, is almost as important as the book on the heart since it contains so much original experiment and observation on generation and the development of the chick in the fertilised egg, but in the end he became bogged down in futile speculation because he could not, without a microscope, see the spermatozoon and was unable to imagine it.

Harvey lived after the publication of *De Motu Cordis* for nearly thirty years more through the troubled years of the Commonwealth into a somewhat unhappy old age. He occupied many positions of distinction, accompanying the King on his journeys in England and being sent on more than one mission abroad. John Aubrey is responsible for the story that Harvey was present at the battle of Edgehill in charge of the two Princes. He says that Harvey told him

that "he withdrew with them under a hedge and took out his pocket book and read" until a cannon ball grazed the ground near him, when he withdrew. This is picturesque, but is not in agreement with the evidence of other witnesses who afterwards claimed to have rescued the Princes. Nevertheless, Aubrey's anecdote conveys the flavour of Harvey's character, for, though said to have been somewhat choleric as a young man—he was of small stature, had a dark complexion and wore a dagger—he carried himself through life with dignity and restraint both in good fortune and adversity. He was deeply grieved by the loss of much of his work during attacks by the Parliamentary mob on the houses of Royalist sympathisers in London. He told Aubrey that the destruction of his notes on insects was "the greatest crucifying that ever he had in all his life." Although he spoke with so much feeling of this loss, other works were also destroyed. He had written on the lungs and respiration, on the brain, on motion and the senses, and on the natural history of many kinds of animals. He had even talked to his friends of endowing a professorship of experimental philosophy at Cambridge, with laboratory and herb garden, but was deterred by the thought that he might be supporting views and doctrines reflecting the religious and political complexion of the Commonwealth which was so distasteful to him. In the end his benefactions were limited to the College of Physicians. The books and the library building which he provided perished in the Great Fire of 1666, but the annual appointment of a Harveian Orator and the holding of a feast at his behest has continued almost without interruption since 1656 to the present day.

In his later years Harvey received the reverence due to the most eminent figure by far in his College and profession, but enjoyment had departed, destroyed by civil strife and the pains of gout. By 1657 he was content to leave the scene, fully aware of the greatness of his achievement, but glad to abandon the lists of controversy and their attendant worries. He was buried at Hempstead in Essex in the chapel built a few years earlier by his brother Eliab, and there the fine bust by Edward Marshall, recently seen to full advantage in the exhibition of portraits at Burlington House, records for posterity the intellectual features of one of England's greatest sons.

HARVEY'S INFLUENCE ON MODERN TRENDS IN CIRCULATORY RESEARCH

by D. A. McDONALD

IDEALLY scientific observation is completely objective. Facts are facts and should be independent of the beliefs of the observer. Unfortunately the history of science shows us that such independence of mind is all too rare. Wrong theory begets distorted observation, and whole systems of error are perpetuated, until someone has the vision and the courage to state what he sees, like the little boy who refused to admire the Emperor's new clothes. If that man in addition can build the coherent edifice of a new and correct theory he is a genius. Such a man was Harvey. Our knowledge of the circulation begins with his disposal of the Galenical myths. Any discussion of Harvey's influence on our present knowledge of the circulation must necessarily concentrate on one or two aspects for his work forms the cornerstone of it all.

That Harvey conceived the idea of the circulation of the blood is not seriously questioned by anyone. Nevertheless the unique contribution he made has been qualified by many, usually on the grounds that the idea was by no means new. Servetus in the previous century had suggested that blood passed through the lungs and Foster (1924) has indicated that Caesalpinus certainly had the germ of the idea when he argued that flow in the veins must be toward the heart and that in the arteries away from the heart. His contemporaries, whether they opposed his views or supported them, certainly seem to have regarded them as completely novel. Furthermore, in view of the long sway of the authority of Galen, his ideas were accepted relatively quickly. Many new concepts, even though of minor importance in comparison, have taken as long to come into common currency in recent times.

We may ask "What were Harvey's special contributions that entitle him to the sole credit for the discovery of the circulation?" I would say, firstly, he synthesized all the existing evidence to make one coherent and logical whole. Secondly, on the basis of this hypothesis he made planned experimental observations on living animals as an extension of the evidence. Thirdly, he introduced

the use of quantitative data when he clinched his argument by showing that the heart must eject each day an amount of blood many times the weight of the body. Hence it must be recirculated.

Singer (1950) has said "although Harvey is, beyond question, one of the great initiators of modern biology, we can also treat him as the last of the classical tradition . . . he stands just on the frontier . . . He is in the new world and yet not of it." Foster makes much the same comment in contrasting Harvey, as the last of the ancients, with Malpighi as the first of the moderns. This judgement is, in part, based on Harvey's constant reference to authority, especially Aristotle, and in this respect is just. Insofar as the great way forward in science was to be by way of the experimental method and of techniques of measurement he was the first of the moderns in physiology even though he did not explore very far in this direction. The criticism of Harvey as a man too much rooted in the classical tradition is, I feel, partly based on the fact that the main theme of *De Motu Cordis* is the development of a logical argument to which the experiments play a secondary role. While agreeing that facts cannot be proved by logic alone, I think that this criticism indicates a narrowness of view. The experimental method alone can lead to a sterile empiricism if treated too austere. It should be based on broad general theories even if these contain some element of speculation. Harvey's book was so vital because it had the quality of generality.

Cardiac output

Harvey's own estimates of the output of the heart were very inaccurate, although they served the purpose of his argument well enough. Today methods of estimating cardiac output still constitute one of the most

Dr. D. A. McDonald, D.M., qualified at Oxford in 1942. He took his doctorate in 1951 after serving in the R.A.M.C. in the grade of neurosurgeon. He is now Reader in Physiology to the Medical College.

active fields of research in medicine. Comparison with Harvey immediately reminds us of the technical resources we now have as a result of scientific advance. Yet even here the basic ideas are not so modern as we tend to think. The Fick principle was proposed in 1870, and the great advances of the last ten years or so derive from the germinating idea that samples of mixed venous blood could be obtained by the use of the long plastic catheter. Otherwise the techniques of estimating blood gases and the spirometer are hardly new. The most modern invention in fact, depends on the plastics industry. The intravenous catheter has not only revolutionised the application of the Fick principle to the measurement of cardiac output, but also to the measurement of hepatic blood flow, and by the fertilization of ideas I suppose it could claim some credit for techniques of measuring cerebral and renal blood flow. Nevertheless, it should give us pause to think when we remember that Stephen Hales made remarkably accurate estimates of cardiac output soon after 1700, using techniques that were essentially similar in principle to those of Harvey.

The dye-dilution method of measuring cardiac output is also far from new, even though it has not yet attained a place in most textbooks of physiology. Stewart put forward the principle of the method in 1892, but it was not fully exploited until W. F. Hamilton and his colleagues reintroduced it in the late 1920's, and it was a further twenty years before it was in general clinical use.

Blood-pressure

The measurement of pressures within the circulation has also been the subject of very active investigation. At the time of Harvey the concept of pressure was only just beginning to be developed in physical science, and it is not surprising that he paid no attention to it. Within fifty years of Harvey's death, however, we find that Stephen Hales was conducting a detailed investigation of arterial and venous pressures in a variety of mammals. Very little advance was made after him until the introduction of the mercury manometer by Poiseuille about 1830. In man no method of measuring the arterial blood pressure was available until the development of the Riva-Rocci sphygmomanometer at the turn of the century. Accurate measurement

of the pressure fluctuations during the cardiac cycle soon followed with the introduction in 1905, by Otto Frank, of adequate optical manometers designed on the basis of sound physical theory. The application of precise manometry of this sort to man has indeed been dependent on technological advances in the form of strain gauges or capacitance manometers which can be used with thin catheters or needles which minimize trauma and sepsis. The information that has been collected as a result of the availability of these techniques is enormous. Normal and abnormal forms of the pulse wave, the range of arterial blood-pressure variation as a result of disease, or the use of drugs, have been charted in a great number of papers. From this data a certain amount of empirical connection of cause and effect has been made, but most of the information is relatively useless because of the difficulties of interpretation due to a lack of adequate theory. Put in its simplest form we may say that the function of the circulatory system is to distribute blood. To understand how the system is functioning we need to know the flow of blood to the various regions of the body. The knowledge of the pressure changes in the circulation are only of full significance if we can interpret them in terms of flow.

Pressure-flow relationships

We think so much of the advances in knowledge that medicine has derived from the physical sciences that it is gratifying to recall that one of the pioneers in hydrodynamics was a physician — Poiseuille. His name is mainly remembered for the law relating the pressure-gradient to the flow of a viscous fluid in a tube. Poiseuille's meticulously careful experiments on glass capillary tubes established that the flow varied as the fourth power of the diameter of the tube. The fact that it varied linearly with the drop in pressure and inversely with the length of the tube was already established when he published his first results in 1842. Expressed mathematically, the law as determined by Poiseuille was

$$Q = K \cdot (P_1 - P_2) \cdot D^4$$

L

(Q = flow; P₁ and P₂ = pressures at either end of the pipe; D = diameter, and L = length of the pipe. K = a constant.)

The constant K was shown to vary with temperature and to be different for different liquids; hence it was clearly related to the property of the liquid we call viscosity. However it had no definition in physical units that allowed it to define viscosity. About 1860 a theoretical analysis of the problem was made by the mathematician Hagenbach, and his result was expressed in the form

$$Q = (P_1 - P_2) \pi R^4$$

$$8\mu L$$

where μ = coefficient of viscosity. It is this theoretically derived form with which we are familiar. The unit of viscosity has been named the Poise, in Poiseuille's honour.

The derivation of this law is very interesting because it illustrates a beautiful welding of experimental and theoretical analysis. The experimental results were valuable in themselves, but could not be used widely without the general solution in mathematical terms. The mathematics in this case was relatively elementary, certainly in relation to the advances that had been made by the middle of the nineteenth century, but the stimulus to apply them to this important problem came from the experimental work. As a result, physicists tend to regard it as a theoretically derived law and biologists as an empirical law.

Poiseuille's law is only precise for a steady rate of flow of a liquid in a tube of fixed calibre. When the flow is pulsatile the relation between pressure and flow becomes more complex. In arteries and the large veins flow is, of course, pulsatile and so we cannot apply Poiseuille's law. In the capillaries and small veins where the flow is steady, the calibre of the vessels is hard to determine accurately, and the blood shows anomalous viscous properties so that again the law is difficult to apply precisely. Nevertheless, in spite of its limited quantitative value, it would be quite impossible to interpret the behaviour of the arterioles in controlling the peripheral resistance without an understanding of Poiseuille's law, that is to say an understanding of the physical laws determining the flow of liquids in tubes.

For this reason I consider that an investigation of the physical laws determining the behaviour of pulsating flow in elastic tubes to be of great value in advancing our understanding of the circulation. In the Department of Physiology here we have been in-

vestigating this problem in recent years. The story bears some resemblance to that of the elucidation of Poiseuille's law in that I first attempted to correlate the pulsatile flow pattern, that was recorded in a large artery such as the femoral of the dog, with the pressure-gradient measured in the same artery. Unfortunately, unlike Poiseuille, we derived no more than a qualitative relationship, but Mr. J. R. Womersley, a mathematician who was very interested in the work, soon derived a theoretical solution. When our data was tested in his formula the results were found to be remarkably accurate. Stimulated by this success he has developed a very full analysis, taking into account the elastic properties of the wall including the attachment of the surrounding tissues to the artery. The behaviour of the wall, as is well known, determines the velocity of propagation of the pressure-wave in an elastic pipe. As a result of Womersley's work we now have a sound physical theory which not only relates a pulsatile pressure-gradient to the corresponding flow, but describes the form of the pulse-wave and also the dilatation of the artery in terms of the pulsatile flow and the pulse-wave velocity. The theory also describes quantitatively the damping out of the pulse-wave in the small arteries and so the conversion of pulsatile to steady flow.

This work is as yet far from complete; many of the theoretical predictions are not yet verified experimentally and on the other hand, the theory does not always fully explain some of the experimental findings. We think that most of these latter discrepancies are due to the fact that the pulse-wave is reflected at the site of arterial branching, and Dr. Taylor in his current work is elucidating this old problem, but for the first time in a quantitative fashion.

This may seem a far cry from the work of Harvey, but I like to think that it is essentially in the same spirit. His great contribution was to synthesize all the known facts together into coherent logical framework. In the present day we need to utilize all the advances in physical and biological science that we can. The theoretical structure that emerges is somewhat forbidding in its appearance. This is to be expected, for we are dealing with a complex physical problem. It is intellectually exciting, however, because it holds out the prospect of enabling us to demonstrate in terms of a general theory the

interdependence of such variables as pressure, flow, arterial dilatation and pulse-wave velocity that are usually studied in experimental isolation. What has been achieved so far has been a group effort. In addition to J. R. Womersley and M. G. Taylor whom I have already mentioned, I should like to record my gratitude to Drs. J. F. Hale and E. P. W. Helps, who did valiant work in the past and have now returned to clinical life. It is unlikely that the results will have any "practical" value in the near future. We are, however, somewhat reassured by Guthrie (1957) who tells us that Harvey was also criticised by some of his contemporaries, "who

asked what was to be the *use* of this teaching. Did it really matter which way the blood moved? Had this so-called discovery saved any lives?" In its own humble way present-day research is still trying to solve the problems which have been created by trying to understand fully Harvey's great discovery.

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WILLIAM HARVEY AT BART'S

by M. V. STOKES (Assistant Archivist)

"FOR THE LONG service of the said Dr. Harvey to this Hospital and in consideration that he is Physician to his Majesty." These words in the Governors' Minutes of October 15, 1633, almost summarise Harvey's association with St. Bartholomew's Hospital. He had been appointed Physician twenty-four years before, supported in his application by a royal recommendation, and since then he had served diligently, although from 1629 his increasing royal duties had led to difficulties. The solution of these, as well as the steps to his appointment and other administrative matters are all to be found in the Hospital's Journals, the Minutes of the Governors' Meetings. From these official records one cannot expect to learn much of Harvey's medical practice in the Hospital, but they throw light on his relations with the Governors, who seem to have respected him and valued his judgment.

The first appearance of Harvey's name is in the Minutes of February 25, 1609. "This day Mr. William Harvey, Doctor of Physic, made suit for the reversion of the office of the Physician of this house when the same shall be next void and brought the King's Majesty his letters . . . in his behalf and shewed forth a testimony of his sufficiency for the same place under the hands of Mr.

Dr. Adkynson president of the College of the Physicians and divers others . . ." The Governors granted his request on the condition that at the death or departure of Dr. Wilkenson, Harvey had no other employment which might hinder his work at the Hospital. Harvey did not have long to wait, for it was on August 28 that year that he came before the Governors again and promised that without payment he would act as Physician in place of "Mr. Dr. Wilkenson late deceased" until Michaelmas when he could then make formal application for the office. On Saturday, October 14, 1609, he was admitted Physician and the Charge of his office was read to him. This is written out in full among the odd memoranda at the end of the fourth Journal. Harvey was to attend twice a week, or more often if necessary, having the sick brought before him in the Hall by the Hospitaler or by the Porter. The Charge continues "And you are here required and desired by us in God His most Holy Name that you endeavour yourself to do the best of your knowledge in the profession of physic to the poor then present, or any other of the poor at any time in the week which shall be sent home unto you by the Hospitaler or Matron for your counsel, writing in a book appointed for that purpose, such medicines

with their compounds and necessities as appertaineth to the Apothecary of this house, to be provided and made ready for to be ministered unto the poor, everyone in particular according to his disease. You shall not for favour, lucre or gain appoint or write anything for the poor, but such good and wholesome things as you shall think with your best advice will do the poor good, without any affection or respect to be had to the Apothecary. And you shall take no gift or reward of any of the poor of this house for your counsel” For his services he was to receive the annual salary of £25 and from the Ledgers we learn that he also had 40s. for his Livery each year until 1627.

We have no means of telling how many patients Dr. Harvey would see in a week in the Hall, or sent out to his house, for the book containing the prescriptions has disappeared together with the early registers of patients. According to the Indenture of 1546 refounding the Hospital provision was to be made for a hundred poor men and women, but the Hospital had increased since then. The inventories for 1595 list over 190 bedsteads; there were twelve wards when Harvey was appointed and two more, Katherine and Mary Magdalene, were built in 1629. The wards were not all grouped together, some we know were round the Cloister by the parish church of Little St. Bartholomew, once one of the chapels of the Medieval Hospital. The plan of 1617 shows this and the Great Hall where Harvey would have seen patients. The poor were not ill housed; there were curtains to the bedsteads and the inventories indicate an adequate provision of mattresses and holsters, both feather and flock, sheets, coverlets and blankets of various colours. One ward had a settle by the fire, others had stools and benches. The medicines prescribed by Harvey were prepared by the Apothecary, whose shop or laboratory was built in 1614, not long after Harvey came to the Hospital.

Within a week of his appointment William Harvey's name occurs in the records, but not in connection with his work. The Hospital's Steward, Martin Lewellen, a turbulent character, owed £52 10s. to John Harvey, one of his Majesty's footmen. John Harvey in his petition had been referred to the Lord Mayor and Aldermen, who in their turn called upon the Governors of St. Bartholomew's to end the matter. They called both parties before

them and “It appeared that the said Martin Lewellen is bound by his obligation to William Harvey Doctor of Physic brother of the said John Harvey for the payment of the said debt . . . at a day long since past.” The Governors ordered that Lewellen's yearly salary of £10 should be paid to William Harvey by 50s. each quarter until the debt was cleared. Presumably this settlement was satisfactory, for we hear no more of the matter.

Five years passed before Harvey next appeared in the Journals. In July, 1614, he asked that he might have one of the Hospital's houses facing West Smithfield. The Governors replied that when William Allen's lease expired they would let the property to Harvey. In 1626 Harvey reminded the Governors of their former grant, Widow Allen being dead. They offered the lease to Harvey at a rent of £13 6s. 8d. if he repaired the house to their satisfaction or at the rent of £20 if the Hospital repaired it; he would hold it as long as he remained Physician and “shall give his personal attendance for the visitation of the poor.” This was at the end of March and Harvey was to confer with the Governors in a week. However, the next reference to the matter is on June 9, when Harvey refused to take the house on the Governors' conditions. It seems that they gave him ten days to reconsider, if he did not accept by the 19th, they would lease it to John Meredith skinner, for thirty-one years at £4 p.a., but he paid a fine of £100 and was to spend another £100 in repairs. On July 7, as Harvey had relinquished all claims to the Smithfield messuage his salary was raised to £33 6s. 8d.. Most of his predecessors had resided in the precincts, Lopez and Bright among them, but the Governors do not appear to have found that Harvey's non-residence interfered with his attendance at the Hospital.

Nevertheless, difficulties were to arise on this point because of his closer connections with the Royal Court. In the January of 1630 Harvey appeared before the Governors to request that Dr. Smith might act as his deputy while he himself at Charles I's command attended the Duke of Lennox “in his travells beyond the Seas.” The Governors replied they would have “further knowledge and satisfaction of the sufficiency of the said Mr. Smith” before they made their decision. Presumably Smith did officiate in Harvey's absence on this occasion for he was later rewarded. However, in April of the follow-

ing year, Dr. Richard Andrewes was granted the reversion of the Physician's office on the death or departure of Dr. Harvey “late sworn Physician in ordinary to His Majesty's Household.” Inevitably Harvey's royal appointment interfered with his Hospital work and it is not surprising that certain of the surgeons complained that “whereas Dr. Harvey Physician for the poor of the said Hospital by reason of his attendance on the King's Majesty cannot so constantly be present with the poor as heretofore he hath been, but sometimes doth appoint his deputy . . .” The Surgeons' names are not given but Joseph Featon, John Woodhall, and Henry Boone were the three surgeons at the time, perhaps James Mullins the lithomist also joined in the complaint. In view of this the Governors ordered on January 19, 1633, that Dr. Andrewes should act as Harvey's deputy and be paid yearly as they thought fit. However, “This order not to prejudice Dr. Harvey in his yearly fee or in any other respect.”

Five months later Harvey accompanied King Charles I to Scotland and Dr. Smith came to the Compting House offering his services. He was told by the Treasurer that Dr. Andrewes would act in Harvey's absence, but that if Dr. Smith wished to assist Andrewes in his work “this house would be very well content.” To this Smith replied, “There is no need for two.”

The whole position was reviewed after Harvey's return, at a meeting on October 15, held to consider a set of rules drawn up by him. The Governors decided “Forasmuch as the poor of this house are increased to a greater number than formerly have been . . . to the greater labour and more necessary attendance of a Physician and being much more also than (is conceived) one Physician may conveniently perform” and as Dr. Harvey now had to attend daily on the King, to appoint Dr. Andrewes as a second Physician at a salary of £33 6s. 8d. Because of Harvey's long service and his royal duties the Governors gave and allowed him “leave and liberty to dispose of himself and time and to visit the poor no oftener than he in his discretion shall think fit.” At Harvey's recommendation Dr. Smith was to be paid for his services. He received £10 and was informed that as there were now two Physicians “he do not henceforth trouble himself any more to visit to the poor of this Hospital.” Thus the question of deputies was settled. On

Andrewes' death, Dr. Clarke was appointed as assistant to Dr. Harvey on August 7, 1634, but the decision was also made then that on the latter's death or departure there should be again only one Physician.

At that meeting of October 15, 1633, when the surgeons were also present, the Governors decided to adopt and enforce the Articles laid before them by Harvey. There are two copies of these among the memoranda in Journal 4, one a fair copy, the other perhaps the first draft submitted for it has deletions and corrections. The first four Articles were allowed to stand; their purpose was to prevent the Hospital becoming a home for incurables; only a limited number of such cases were to be admitted, patients certified as “uncurable and scandalous or infectious” were to be discharged or sent to one of the outhouses, which were to admit only people sent from St. Bartholomew's. [The “outhouses,” the Lock at Southwark and Kingsland Hospital, were two of the City's medieval leper houses, now administered by St. Bartholomew's.] Patients admitted for a certain length of time were to be discharged when this expired unless it was specially extended. The next rule that a certain number be limited for the doctors' patients was deleted for it ran counter to the charitable purpose of the foundation. The article “That none lurk here for relief only or for slight causes” remained, but that stating that none were to be taken from St. Thomas' Hospital unless “they bring a certificate [that] they have not been there certified cured” was struck out. Those rules which restricted the Surgeons' independence placing them under the supervision of the Physician were adopted by the Governors despite the Surgeons' protest. A man of John Woodhall's experience cannot have welcomed these articles, though they were in keeping with the thought and practice of the times. His fellows on the staff, Featon and Boone, probably joined in the protests noted in the margin against Article 12. This laid down that every Surgeon should declare his findings and treatments to the Physician so that the latter “may with better judgment order his prescriptions.” Article 9 was probably amended because of the Surgeons' opposition. In the fair copy it reads that “No surgeon or his man do trepan the head, pierce the body, dismember or do any great operation on the body but with the approbation and by the direction of the doctor.” Originally they had also been for-

bidden to "let blood, make an issue or cauterise." The Surgeons were not to take in or present patients, nor might they prescribe inward physic without the permission of the Doctor, whose directions they were also to follow in "outward operations for inward causes." In the margin of the rough version against this rule is written "The Surgeons agree to this." There is no comment against the article forbidding their apprentices or servants to perform cures without their oversight. Another rule provides for the attendance of Apothecary, Matron and Sisters when the Physician examines and prescribes, "that they may fully conceive his directions and what is to be done." Matron and Sisters were to report to him or in his absence to the Apothecary, any patients who would not go to him or who refuse to take their medicines despite the penalty of discharge. Finally the Apothecary was not to reveal the Physician's prescriptions except with his permission, to his deputy. Such were the provisions which Harvey thought were necessary for "the good and benefit of the house."

Apart from Dr. Clarke's appointment as assistant to Dr. Harvey in 1634, there are no more references to the latter in the Minutes. However, in a memoranda book there is a prescription dated 1639. It is for the Scurvygrass drink which "shall be henceforth made by the Apothecary with the help and assistance of the matron according to the direction given and agreed upon by Doctor Harvey and Doctor Clarke Physicians, Mr. Edwards and Mr. Glover (Apothecary)." It began with 36 gallons of 8s. beer and 18 pints of fresh juice from 2 bushels of scurvygrass. The other ingredients include many herbs in use then. "The juice of brooklime 6 pints, of horse radish roots sliced 1lb., of saffras ¼lb., of long pepper 3oz., grains 3oz., Callamus Aramaticus 2oz., Nutmegs 1oz., Agremoney, sage, Bettony, hartstongue, saldenella of each six handfuls." These were to be added to the beer and scurvygrass juice to steep for fourteen days. The total cost was calculated to come to 16s.

From the Ledgers we know that Harvey's salary was paid in 1643 for the last time, but his departure was not recorded in the Minutes. Civil War had broken out and Charles I had left London. Harvey had accompanied the King and his two sons to Oxford after the battle of Edgehill in 1642. Perhaps the confusion of the times may account for the

lack of any official notice of his resignation. Even on his return to London it does not appear from the Hospital records that Harvey renewed his connections with the Hospital in any way. Nevertheless, his legacy of £30 in 1657 shewed that he had not forgotten St. Bartholomew's where he had served for thirty-four years and where his rules remained in force for many years after his death.

SCHOLARSHIPS & PRIZES 1957

BRACKENBURY SCHOLARSHIP IN MEDICINE	S. Thomas
Prox. Access	C. B. S. Wood
BRACKENBURY SCHOLARSHIP IN SURGERY	A. J. Edwards
Prox. Access	I. J. Chalmers
BURROWS PRIZE	D. A. Birkett
WALSHAM PRIZE	A. J. Edwards
WILLETTS MEDAL	A. J. Edwards
MATTHEWS DUNCAN PRIZE	A. J. Edwards
ROXBURGH PRIZE	A. M. Hall-Smith
SKYNNER PRIZE	A. J. Edwards
HICHENS PRIZE	J. Hedley-Whyte
SENIOR SCHOLARSHIP in Anatomy, Physiology and Biochemistry	D. M. Humphreys
Prox. Access	J. D. Abell
HERBERT PATERSON MEDAL IN BIOCHEMISTRY	J. J. R. Almeyda
FOSTER PRIZE	J. D. Abell
KIRKES SCHOLARSHIP & GOLD MEDAL	Not Awarded
HARVEY PRIZE	Not Awarded

Professor K. J. Franklin, F.R.C.P., F.R.S., came to Bart's from Oxford in 1922 as clinical student and part-time demonstrator in physiology (under Professor C. Lovatt Evans). He was a Fellow of Oriel College 1924-47, when he returned to Bart's as Professor of Physiology. In the Great War he served in France and Belgium with the 34th Divisional Artillery.

Dr. E. P. G. Houssemayne duBoulay, D.M.R.D., F.F.R., known as George duBoulay, was educated at Christ's Hospital (which was also K. J. Franklin's school), then King's College and Charing Cross Hospital. He worked at Charing Cross, Derby City Hospital, The Middlesex, St. George's, and served in the R.A.F. and Army. He is now a radiologist on the staff of St. Bartholomew's and The National Hospital for Nervous Diseases, Maida Vale.

He is interested in neuroradiology and 18th Century English furniture and clocks.

VARIATIONS ON A THEME OF HARVEY

by K. J. FRANKLIN and G. DU BOULAY

PART 1, by Professor K. J. Franklin.

IN CHAPTER ELEVEN of his book on the movement of the heart and blood, William Harvey discussed *inter alia* the effects occurring as a tight ligature, which had been applied to the upper arm for some time, was slackened suddenly into a medium tight ligature such as was used in blood-letting. "You should see," he wrote (Harvey, transl Franklin, 1957), "an immediate coloration and distension of the whole hand, with swelling and varicosity of its veins . . . If at the exact moment that the ligature is loosened one carefully places a finger near it upon the now pulsating artery, one will feel the blood sliding forward, as it were, underneath it and away. Moreover, the actual subject upon whose arm the test is being made, from the very time that the tight ligature is loosened into a medium tight one, will instantly and clearly feel the warm blood entering at each arterial beat now that, so to speak, the obstacle in its way has been removed. And he will have a sensation along the course of the arteries as if something was suddenly distending them and being dispersed throughout the hand; he will also feel his hand itself becoming warm and tense."

I planned a modern extension of the human research described in the passage quoted, but had to defer it *sine die* because overwork on my new translation of *De Motu Cordis*, and other things, led to the occurrence of a cerebral infarct. However, one of the tests employed was a contrast cerebral angiography, performed by Dr. du Boulay, so in a somewhat unexpected way I received some information about sensation in arteries and its apparent passage and speed along and around them.

When asked, therefore, by the editor for a contribution to this Harvey number of the *Journal*, I thought that the extract from my translation, plus the note about my temporary cerebral circulatory upset, plus a statement by Dr. du Boulay about his contrast angiographic experience in this and other

cases of arterial abnormality, could well be made into such a contribution.

We pass, then, to

PART 2, by Dr. G. du Boulay.

THE LARGE peripheral arteries have numerous afferent end-organs in the adventitia which may be shown in animals to respond when irritant solutions are employed. In man, the sensation which is experienced during the injection of mildly irritant substances is usually one of heat, though occasionally of cold, but it is difficult to know how much of this feeling is due to stimulation of intra-arterial end-organs and how much to stimulation of other afferents near the capillary network which represents the eventual distribution of the artery.

Perfusion experiments on the peripheral arteries in the isolated innervated hind limb show that the nerve endings do not respond to pressure changes within the lumen of the vessel; but more severe alterations in tension of the adventitia do certainly evoke pain in man. I have observed on many occasions that distension of the carotid sheath by periaxial injection of normal saline produces pain in the region of the lower molar tooth. This is a poorly localised sensation, possibly modified by the prior infiltration of surrounding tissues with local anaesthetic.

Injection of contrast medium by accident into the wall of the artery and into the tissues around gives rise to aching and burning sensations of a more intense kind in the neck and lower jaw, perhaps because the speed and pressure of such injections is greater than the gentle perfusion with saline.

Having performed some fifteen hundred intra-arterial injections (for the most part of the carotid arteries) I have been struck by the variation in the degree of discomfort which is experienced by different patients.

Occasionally, and particularly when a large intracranial arteriovenous anastomosis causes rapid shunting of contrast medium away from cutaneous vessels and the ophthalmic artery, there may be no appreciation

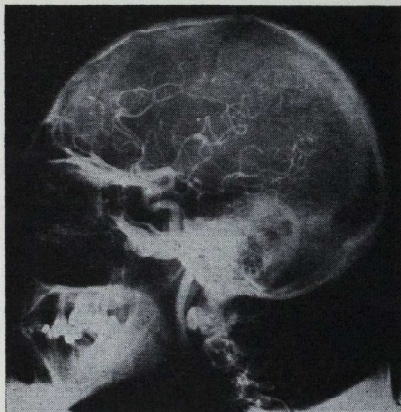


Fig. 1. Normal internal carotid angiogram. Arterial phase showing anterior, middle and posterior cerebral arteries.



Fig. 3. Abdominal aortogram showing occlusion of the common iliac artery.

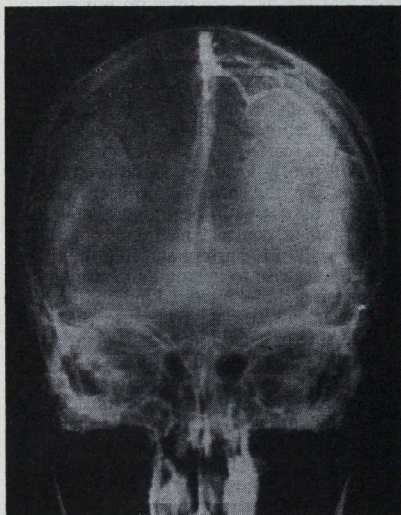


Fig. 2. Venous phase of normal carotid angiogram showing superficial and deep veins and sinuses.



Fig. 4. Brachial arteriogram showing narrowing of some of the digital arteries.

that an injection has taken place. Other patients complain of a brief warmth, an intense burning, an electric shock, a blow, bursting or fullness, but for the most part the feeling radiates and is perceived in the cutaneous distribution of the branches of the injected vessel and not in the main trunk, so that the climax of a brachial injection is in the most sensitive skin of the fingers. Injection of the common carotid causes a sensation of heat in the face and scalp, behind the ear, and often in the jaw and neck; the injection of the internal carotid is usually only accompanied by vivid sensory disturbance in the eye and the feeling of heat laid upon the conjunctiva and above the orbit.

The duration of the pain is very short (usually less than one second) and its degree depends partly on the patient's sensitiveness but probably more upon the contrast medium which has been chosen, and upon its concentration.

Upon the instant of filling of the skin capillaries, the area blanches but, immediately following, capillary dilatation occurs and a sharply localised blush is seen by the examiner. It is not usually possible to see the transient oedema which may follow this capillary dilatation; but it may be that the few hazards of carotid and vertebral angiography are related to this phenomenon.

Since Moniz of Lisbon first introduced carotid arteriography in 1927, the injection of radiopaque substances into the arterial blood stream has become commonplace. By serial radiography after the more or less rapid injection of contrast medium, information is obtained about the state of the arteries — about the presence of tumours which may displace the arteries and, if the vessels of the tumour itself are filled, about the pathology of the tumour which has been shown.

The series of roentgenograms will show how, as the arterial shadows disappear, a diffuse haze represents the contrast medium lying in the capillary network. This picture is rapidly followed by the image of circulation into the veins. As yet cinematography using an image-amplifier is only applicable to the larger vessels, as the optical resolving power is not of a high order. Moreover, the amount of radiation to which the patient is exposed is relatively great and the field which may be photographed is small.

Earlier arteriography involved the surgical exposure of the vessel, but percutaneous puncture by means of a needle of extreme

sharpness has now been established for a decade and a half as the easier and safer method; it also spares the patient the prolonged discomfort of a healing incision. With the growth in scope of the examination, its name has changed to angiography, so that its title should not exclude the importance of the capillary and venous phases.

Almost all the larger arteries of the body may be punctured directly through the skin and with a little skill and a little practice success in the examination of the aorta and its branches, of the femoral arteries and of the common, internal, and external carotids is certain. Percutaneous puncture of the brachial artery is almost as easy; and with experience the vertebral artery may also be injected with little trouble.

More recently, arterial catheterisation through a percutaneous needle has permitted a greater selectivity in the placing of the contrast substance.

In the ordinary puncture technique the needle is joined by a flexible connection to a syringe — the whole system being filled with saline. After infiltration of the skin and tissues down to and around the artery with local anaesthetic, a puncture is made in the skin with a cutting needle, so that the arterial needle's point is not blunted and the arterial needle does not pick up a core of the skin as it passes through.

As soon as the needle point is through the skin, the syringe is disconnected and capillary attraction is sufficient to keep the saline in needle and connecting piece. Puncture of the artery is then indicated by the rapid escape from the open end of the connection of saline pursued by blood. The saline syringe is reconnected to the tubing, but the needle is not touched or disturbed in any way. The gentle introduction of warm saline into the lumen of the artery is imperceptible to the patient and prevents blood clotting within the system. At the right moment the saline syringe is changed for one containing the contrast medium and after its discharge the slow injection of saline is continued again until the roentgenograms may be viewed, and if necessary a further series obtained.

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HARVEY'S GALEN

by GWENETH WHITTERIDGE

A COPY OF GALEN once owned by William Harvey is now in the possession of the library of the British Museum. It was described by Norman Moore in *The History of the Study of Medicine in the British Isles* (Oxford 1908), Appendix V, pp. 181-6, where, speaking of its interest in general terms, Moore said 'this copy of Galen shows him (Harvey) to us in the act of studying and criticizing the thoughts of another great master of the ancient world.' (The other 'great master' is Aristotle to whose philosophical teachings Harvey acknowledged a profound debt.) Throughout the book there are a number of marginal comments in Harvey's more or less illegible hand. Some of these notes merely stress or call attention to various points made by Galen and these it would be tedious to enumerate; but there are a few which do throw some light on Harvey himself.

This particular edition of Galen is not the one which Harvey used for his serious study of that writer, for it contains none of Galen's major works. It is merely the volume of the *Opuscula Varia* published in London by Dr. Theodore Goulston in 1640⁽¹⁾. The marginal comments which it contains belong therefore to the last few years of Harvey's life.

Harvey's method of work was typical of the age in which he lived, an age which sought to free itself from the trammels of the

(1) The following treatises are contained in this volume: *Oratio ad Artes et medicinam hortatoria*; *Quod optimus medicus idem et philosophus*; *De optimo docendi genere*; *De Sectis ad Tirones*; (These first four treatises have a certain number of underlinings in the text, a few odd words written in the margin, and the initials WH several times appearing where Harvey wished to call his own attention to particular points with which he probably found himself in agreement. There are no marginal comments of any interest.) *De optima Secta, ad Thrasybulum* (pp. 66-143); *De dignoscendis curandisque animi affectibus* (pp. 144-79); *De dignoscendis curandisque animi Erratis* (pp. 180-208); *De substantia naturalium Facultatium* (pp. 209-15); *Quod animi mores sequantur temperamentum corporis* (pp. 216-47).

classifications and deductive arguments of scholastic learning. While authority was still received and repeated by many, others, like Harvey, had begun to question the value of this authority and to seek to obtain proof by experiment of received opinion. It is, therefore, not surprising to find in the marginal comments in this book, echoes of Harvey's attitude to past experience, authority and experiment. From past experience, he says, no final opinion can be formed, but it is useful in matters of doubt: *ex historia non est finale iudicium, tamen in re dubia utilis esse potest* (p. 95). When Galen says that past experience is not to be accepted uncritically, Harvey adds that it is not to be accepted at all except in diseases and cases which are doubtful and uncertain: *non admitteretur omnino nisi in morbis et casibus dubiis, incertis* (p. 92). Again, in matters of doubt and things incapable of proof, Harvey will only believe what is probable. He glosses Galen's remark to the effect that the rational philosopher can pass judgement on the truth or falsity of past events by considering the causes, by saying yes, if the cause is clear, but is it? : *quia non habet causa vel incertum et obscurum; habet necne, tantum probabile* (p. 93). In the realm of medicine he will not believe authorities

Gweneth Whitteridge, M.A., D.Phil., F.S.A., educated City of London School for Girls and Lady Margaret Hall, Oxford. Spent a year in Paris learning to read manuscripts. In 1935 became archivist to St. Bartholomew's Hospital and worked with and for Sir D'Arcy Power until the war. During the war taught Old French language and literature in University of Oxford and was civilian lecturer to the Forces. Returned to the Hospital as Archivist in 1947. With her assistant, Miss Stokes, has reorganised the keeping of the Hospital's pre- and post-Reformation archives and has begun the arrangement of this material for the writing of the history of the Hospital.

For the last 18 months she has been working on an almost unknown MS. of Harvey, the *De Motu Locali Animalium*, the contribution of the Royal College of Physicians to the Harvey Tercentenary celebrations.

Is married to David Whitteridge, D.M., F.R.S., Professor of Physiology in the University of Edinburgh.

who disagree with one another in matters of doubt unless they be men of the greatest excellence, whereas in things that are probable he will be inclined to believe a less authoritative pronouncement, provided that he see no reason to gainsay it: *in re dubia non credidere auctoritatibus ubi invicem adversantur nisi probatissimi viri. In re probabile cuius probo viro (si nil me contra movet) debeo* (p. 95). By his underlining Harvey would seem to have approved of Galen's remark concerning the physiology of Plato that it never transgressed the bounds of verisimilitude or probability, for this he has repeated in the margin: *Physiologia Platonis usque ad veresimile* (p. 210).

To Galen's remarks that the art of medicine is founded on theories derived from and based upon outward appearances, Harvey has added the comment, *Not only, non solum* (p. 71); and to a similar remark made elsewhere, he has added a note to the effect that these theories can only be believed if they can be shown to follow of necessity from the said visible signs: *nisi demonstratione ex necessariis* (p. 69). When Galen says that treatment is merely a matter of applying the remedy known to be effective in the presence of certain symptoms, Harvey asks how can this be found out except by experiment: *quomodo? nisi experimentia* (p. 10). Yet he protests against Galen's statement that history should be judged by experiment, pointing out that many treatments, and some of these the very best, are empirically accepted and are incapable of rational proof: *plurima vero medicamenta eaque optima in historiis qualibet ratione probare impossibile, similiter morbi* (p. 93).

Burning curiosity, Harvey remarks elsewhere, makes the physician: *Empyria ergo medicum ratio curiosa facit* (p. 102). It was certainly a quality of Harvey's own that not only led him to the discovery of the circulation of the blood, but underlies all the minute observations of people and animals that characterize his writings. There is only one note relating to his personal observations in this copy of Galen. He underlines Galen's statement to the effect that in no two sick people can events follow an identical pattern and remarks that no one person is sick in the same way as another of the same disease, not even when suffering from plague, snake-bite or the pox: *sic enim neminem eodem morbo laborare, contendere, non in pestilentia nec ex ictu viperæ, lue venerea, etc.* (p. 88).

Of Harvey's religious view and opinions nothing is really known, for there is no direct reference to them in any of his extant works. He was indeed the physician and a great favourite of the Lord High Marshal of England, the Catholic Earl of Arundel, who, on May 6, 1636, wrote from Cologne to Mr. Secretary Windebank (a future Catholic convert) saying: "I have been this evening at the Jesuits' fair new church and college. I found in the college little Dr. Hervey, who means to convert them." Had Harvey not been well known to both men as a Protestant, the jest would have been pointless. As a friend of King Charles, it is quite possible that he was in sympathy with the High-Church party of the Church of England. John Aubrey says of him that he was far from bigotry and describes him as "a pious good man." A few remarks in this copy of Galen seem to bear out this contention. Among the notes scribbled down on the end fly-leaf, the one which is most easily legible is the remark that a man should give heed to his own sins and errors: *necesse propria peccata et errores notare*. It is true that the remark refers back to a passage in Galen's text, but it is interesting that Harvey thought it worth while to single it out for comment. Furthermore, when Galen advises that a man should again and again ask for help if some disquietude of mind trouble him, Harvey has added in the margin that this is the use of a confessor: *usus confessoris* (p. 149). A few pages further on he has underlined Galen's statement that the punishment of concupiscence is the impossibility of obtaining any of the things desired.

The chief errors which a man can make Harvey believed to spring from credulity and arrogant temerity: *prima errorum occasio credulitas, temeritas* (p. 182). His underlings show him to have been interested in Galen's statement that the first and greatest of all errors is to make a rash pronouncement out of self-love, or of ostentation of knowledge, or of arrogance or ambition, and he comments on the passage to the effect that the first error is not to be able to distinguish between these things: *primum erratum, differentias non discernere* (p. 183). But when, a little further on in this treatise, Galen claims that he himself can do certain things and can point the way to truth, Harvey has several times written in the margin the single word, *Arrogant*.

WRITINGS ON WILLIAM HARVEY BY BART'S MEN

by JOHN L. THORNTON

SINCE THE DEATH of William Harvey three hundred years ago there has been an enormous amount of literature devoted to his life and to certain aspects of his work, in addition to accounts given in general histories of medicine, biology and physiology. The "Select Bibliography of Writings on William Harvey (1578-1657)" published in *Current Work in the History of Medicine* (9, 1956, pp. 57-62; 10, 1956, p. 131), gives some idea of the extent of this material, and is obviously selective. A list of writings by and about Harvey available in the Medical College Library was compiled some time ago, from which it is apparent that Bart's men have by no means neglected their distinguished seventeenth century Physician. In 1846, Sir James Paget published extracts from the Hospital Journals relating to Harvey, and since then Sir D'Arcy Power, Sir Wilmot Herringham, and Sir Geoffrey Keynes in particular have contributed in no mean manner to our knowledge of Harvey. Several Bart's men have delivered Harveian Orations, and it is hoped that the following annotated list will remind us that Harvey has not been ignored in his own Hospital. The list also includes articles that have appeared in *St. Bartholomew's Hospital Journal* and *St. Bartholomew's Hospital Reports* contributed by persons other than Bart's men.

B[ACKHOUSE], IAN H. Where is William Harvey to go? (Editorial). *St. Bart's Hosp. J.*, 56, 1952, pp. 413-5.

A summary of the controversy regarding the Harvey Chapel and sarcophagus at Hempstead, then in a state of disrepair. It was suggested that Harvey's remains should be removed to St. Bartholomew-the-Great, and several letters regarding this were subsequently published in the *Journal*.

FRANKLIN, KENNETH JAMES. A survey of the growth of knowledge about certain parts of the foetal cardio-vascular apparatus, and about the foetal circulation, in man and some other mammals. Part 1: Galen to Harvey. *Ann.Sci.*, 5, 1941-2, pp. 57-89.

See also the same author's *A short history of physiology*, 2nd ed. (1949), Chapter VIII; William Harvey.

K. J. Franklin has prepared a new translation of *De motu cordis* to be published this year for the Royal College of Physicians.

_____. William Harvey—a speculative note. *Gesnerus*, 5, 1948, pp. 70-74. Harvey spent much time contemplating in caves in the grounds of Coombe Lodge, and the surroundings in which he thought out his writings are discussed.

HARVEY, WILLIAM. The anatomy of Thomas Parr. *St. Bart's Hosp.Rep.*, 72, 1939, pp. 17-22.

Harvey performed a post-mortem on "Old Parr," who died in 1635 at the reputed age of 152 years. This is a translation by Arnold Muirhead of Harvey's notes, with an introduction by Sir Geoffrey Keynes.

HERRINGHAM, SIR WILMOT PARKER. The life and times of Dr. William Harvey. *Ann. med. Hist.*, N.S.4, 1932, pp. 109-125, 249-272, 347-363, 491-502, 575-589.

A fully-documented account, evaluating Harvey's work in relation to its historical background. This is a greatly enlarged version of Herringham's Harveian Oration for 1929.

_____. William Harvey at St. Bartholomew's. A speech delivered at the luncheon given to the Delegates to the

John Leonard Thornton

Born 1913 at Edgware, Middlesex. He trained at University College, London, from 1929 to 1934 and attended the School of Librarianship. He then became a member of the staff of the Wellcome Historical Medical Library in 1934. Mr. Thornton came to Bart's in January, 1938, and was appointed Librarian to the Medical College the following year. During the war he served four years in the Royal Corps of Signals.

He is the author of 'John Abernethy,' and several other books on librarianship and the history of medicine and science.

Harvey Tercentenary by the Treasurer and Almoners of the Hospital. *St. Bart's Hosp.J.*, 35, 1927-8, pp. 133-6.

A factual account, with a transcript of Harvey's Charge detailing the duties of his office as Physician.

HUNTER, RICHARD A., and MACALPINE, IDA. William Harvey. Two medical anecdotes, the one related by Sir Kenelm Digby, the other by the Honourable Robert Boyle. *St. Bart's Hosp. J.*, 60, 1956, pp. 200-206. Indicative of Harvey's interest in neurology and psychiatry.

KEYNES, SIR GEOFFREY LANGDON. *A bibliography of the writings of William Harvey*. [etc.], Cambridge, 1928; 2nd ed., 1953.

The standard list of Harvey's writings, with full bibliographical descriptions, annotations, illustrations, locations of copies, [etc.]. In 1928 Sir Geoffrey also edited for the Nonesuch Press the beautifully-produced translation of Harvey's *Anatomical exercises*, [etc.], (1928).

_____. Harvey and his books. (Harveian Lecture.) *St. Bart's Hosp.J.*, 57, 1953, pp. 177-182, 212-216.

Mainly concerned with Harvey's writings, but also mentioning the books he possessed. An erudite appreciation and evaluation of Harvey's work.

_____. *The personality of William Harvey*. [etc.], Cambridge, 1949.

The Linacre Lecture for 1949, containing several portraits.

_____. The portraits of William Harvey. *Brit.med.J.*, 1950, II, p. 43.

_____. *The portraiture of William Harvey*. [etc.], 1949.

The Thomas Vicary Lecture for 1948, this contains a re-evaluation of the portraits of Harvey, with reproductions of most of the items discussed.

MOORE, SIR NORMAN. Harvey. *Proc.roy.Soc. Med.*, 9, ii, 1916, Sect.Hist.Med., pp. 9-20. Mentions some of the sources consulted by Harvey, with notes on Harvey's manuscripts and letters. Moore also wrote the life of Harvey in the *Dictionary of National Biography*, and delivered the Harveian Oration in 1901.

MUNK, WILLIAM. Notae Harveianae. *St. Bart's Hosp.Rep.*, 23, 1887, pp. 1-12.

PAGET, SIR JAMES. *Records of Harvey in extracts from the Journals of the Royal Hospital of St. Bartholomew*. . . . With notes, 1846. Reprinted in *St. Bart's Hosp. Rep.*, 22, 1886, pp. 1-37.

First published while Paget was Warden of the College, this provides literal transcripts of the entries relating to Harvey in the Journals of the Hospital.

POWER, SIR D'ARCY. Dr. William Harvey and St. Bartholomew's Hospital. *St. Bart's Hosp.Rep.*, 57, 1924, pp. 96-107; 61, 1928, pp. 1-11.

Includes Harvey's Charge and Regulations, and records all the meagre details available of Harvey's connection with the Hospital.

_____. Dr. William Harvey as a man and as an art connoisseur. [N.D.] Reprinted from *Congrès International d'Histoire de la Médecine*.

_____. A memorial group of the Harvey family [1549-1661]. *Ann.med. Hist.*, N.S.1, 1929, pp. 241-2.

Description and photograph of the Harvey family group, then at Rolls Park, Chigwell, Essex.

_____. *Portraits of Dr. William Harvey*, 1913.

A large quarto published for the Historical Section of the Royal Society of Medicine, containing numerous reproductions of portraits, some of which are now believed not to be authentic. See book on same subject by Sir Geoffrey Keynes.

_____. A purchase of land by the family of Dr. William Harvey. *Ann.med. Hist.*, 3rd Ser., 2, 1940, pp. 308-311.

Description of the original release of the property, Clifton Mabank, Wyke Manor near Sherborne and part of Bradford, Dorset. This document is now in the Royal College of Physicians Library.

_____. A revised chapter in the life of Dr. William Harvey, 1636. *Proc.roy. Soc.Med.*, 10, ii, 1917, Sect.Hist.Med. pp. 33-59.

Contains information on Harvey's travels in Europe with the Earl of Arundel, etc., gleaned from an account of the travels, from Harvey's letters to Lord Feilding, afterwards Earl of Denbigh, and from a biography of the latter.

_____. *William Harvey, 1897*. (Masters of Medicine Series.)

A concise life, and still the best general source of information on Harvey, who deserves a modern, full-scale biography.

ROLLESTON, Sir HUMPHRY DAVY. Harvey's predecessors and contemporaries, *Ann. med.Hist.*, 10, 1928, pp. 323-337.

— The reception of Harvey's doctrine of the circulation of the blood in England as exhibited in the writings of two contemporaries. In, *Essays on the history of medicine presented to Karl Sudhoff*. . . . Edited by Charles Singer and Henry E. Sigerist, London, Zürich, 1924, pp. 247-254.

The writers referred to are Thomas Winston (1575-1655) and Henry Power (1623-1668), there being lengthy quotations from the latter.

THORNTON, JOHN L. The writings of Harvey [in St. Bartholomew's Hospital Medical College Library.] *St. Bart's Hosp.J.*, 51, 1947-8, pp. 61-2.

WENDELL-SMITH, C. P. William Harvey, man-midwife. *St. Bart's Hosp.J.*, 53, 1949, pp. 212-214.

An appreciation of Harvey's work in the field of obstetrics, which is so often overlooked.

HARVEIAN ORATIONS

The Harveian Oration was endowed by William Harvey by a gift to the College of Physicians, and the first oration was delivered in 1656, the year before his death. The orations were first delivered and printed in English in 1865. It is a strange coincidence that up to 1866 apparently only two Bart's men had delivered the oration, John Latham in 1794, and his son Peter Mere Latham in 1839. Much interesting information on the subject is contained in: W. J. Bishop and F. N. L. Poynter. The Harveian Orations, 1656-1947: a study in tradition. *Brit.med.J.*, 1947 II, pp. 622-3.

In the following list, where no specific title is given, it was published as "The Harveian Oration."

1794: John Latham. (Published by Longman).

1839: Peter Mere Latham. (Published by Spottiswoode).

- 1866: Sir George Edward Paget. (Published by Bell.)
- 1872: Arthur Farre. The analysis of Harvey's exercises on generation. *Brit.med.J.*, 1872 II, pp. 1-4, 29-32.
- 1873: George Rolleston: *Brit.med.J.*, 1873 II, pp. 29-32.
- 1874: Charles West. *Brit.med.J.*, 1874 II, pp. 1-8.
- 1883: Samuel Osborne Habershon. The advancement of science by experimental research, *Brit.med.J.*, 1883 I, pp. 1265-70.
- 1888: Peter Wallwork Latham. On blood changes in disease. *Brit.med.J.*, 1888 II, pp. 859-64.
- 1890: James Andrew. Conditions of the pulmonary circulation. *Brit.med.J.*, 1890 II, pp. 939-43.
- 1894: Sir Thomas Lauder Brunton. Modern developments of Harvey's work. *Brit.med.J.*, 1894 II, pp. 853-8.
- 1895: Sir William Selby Church. Harvey and the rise of physiology in England. *Brit.med.J.*, 1895 II, pp. 1013-8.
- 1898: Sir Dyce Duckworth. The influence of character and right judgement in medicine. *Brit.med.J.*, 1898 II, pp. 1209-1215.
- 1901: Sir Norman Moorc. *Brit.med.J.*, 1901 II, pp. 1217-1223.
- 1908: Joseph Arderne Ormerod. On heredity in relation to disease. *Lancet*, 1908 II, pp. 1199-1203.
- 1920: Sir Frederick William Andrewes. The birth and growth of science in medicine. *Brit.med.J.*, 1920 II, pp. 615-9.
- 1922: Arnold Chaplin. On medicine in the century before Harvey. *Brit.med.J.*, 1922 II, pp. 707-712.
- 1928: Sir Humphry Davy Rolleston. Cardiovascular diseases since Harvey's discovery. *Brit.med.J.*, 1928 II, pp. 683-9.
- 1929: Sir Wilmot Parker Herringham. Circumstances in the life and times of William Harvey. *Lancet*, 1929 II, pp. 911-17.
- 1935: Sir Henry Hallett Dale. On some epochs in medical research. *Brit.med.J.*, 1935, II, pp. 771-7.
- 1936: Sir Walter Langdon-Brown. The background to Harvey. *Brit.med.J.*, 1936 II, pp. 793-9.
- 1953: George Graham. The value of physiology in medicine. *Brit.med.J.*, 1954 I, pp. 225-33.

HARVEY

De Motu Cordis Et Sanguinis In Animalibus

The famous Doctor Harvey was physician here at Bart's ;
He studied the biology of blood vessels and hearts ;
He carried out experiments, and this is what he found—
The blood of men and animals goes coursing round and round.

The gallant Doctor Harvey went a-riding to the Wars ;
He mobilised at Oxford, and embraced its first ' Lost Cause.'
Amid the civil conflict he divined this truth profound
That the blood of men and animals goes coursing round and round.

The loyal Doctor Harvey went campaigning with his King ;
He witnessed Rupert's Cavaliers roll up the Roundheads' wing.
His conviction did not weaken on Edgehill's battle ground
That the blood of men and animals goes coursing round and round.

Civilian Doctor Harvey returned to Bart's again :
He continued his experiments—the facts they shewed were plain.
In his lectures to his students he would patiently expound
That the blood of men and animals goes coursing round and round.

Persistent Doctor Harvey, three hundred years ago,
Eventually published his "EXERCITATIO
DE MOTU SANGUINIS," in which he firmly stood his ground
That the blood of men and animals goes coursing round and round.

He traced the circulation ; beginning with the vein
To auricle and ventricle, to lungs and heart again,
To the tissues, and once more by veins returning heart-ward bound,
The blood of men and animals goes coursing round and round.

The theory was challenged, and controversy raged :
In fact a second civil war was very nearly waged.
Once more in wordy warfare men felt their pulses bound—
The blood of men and animals goes coursing round and round.

But Truth and Doctor Harvey at length prevailed, and won !
His Alma Mater celebrates to-day her greatest son.
In proud acclaim of him, whose fame three centuries have crowned,
The blood of men, today as then, goes racing round and round.

R.B.B.P.

HARVEY AND EMBRYOLOGY

by C. P. WENDELL-SMITH

*"None age so perfectly that subtle change
With time or custom seems not new nor strange;
What's once believed is now denied and what
Was honoured once now suffers in exchange."*¹

IT WAS Geronimo Fabricio da Aquapendente (1533-1619) who stimulated the interest of William Harvey in embryology. Fabricius was mentor to Harvey in the years between 1598 and 1602 when he studied at the University of Padua. Incidentally, this dates our first glimpse of Harvey studying the chick, "upon one occasion, in the spring, by way of helping out Fabricius."²

Teaching at Padua, in the early seventeenth century was dominated by traditional doctrines, and Fabricius did little to change this. Indeed, his pupil suggested that he held to the old opinions pertinaciously "from respect to the ancients."³

Let us examine the history of those aspects of embryology with which Harvey concerned himself.

The basic method of investigation was described in the Hippocratic collection. "Take twenty or more eggs and let them be incubated by two or more hens. Then each day from the second to that of hatching remove an egg, break it, and examine it. You will find exactly as I say, for the nature of the bird can be likened to that of man."⁴

Aristotle followed this technique and presented an account of chick embryogeny on which all later work was based. On the basis of naked eye observations he concluded that the heart was the first formed and most important organ. He supposed the embryo to form from menstrual clot influenced by the male sperm, thus the male element gave form and the female substance.

On this same question Galen, following Empedocles, believed that the foetus was formed from male and female semen, sex being determined by the relative amounts contributed by each parent. He taught that the liver was the first organ and believed that observations on the internal anatomy of animals could be applied to man without modification. This was accepted without question until after the Vesalian reform.

A Vesalian student, Fallopius, was one of those who demonstrated that the appearance of homologous organs varies in different species. On this and other points Galenical authority was giving place to accurate observation.

The Works of Fabricius, who was a pupil of Fallopius, have been edited by Adelman.⁵ He suggested that Fabricius should be regarded rather as an observer than as an interpreter. He certainly made many accurate observations and dissected the embryos of man, rabbit, guinea-pig, mouse, dog, cat, sheep, pig, horse, ox, goat, deer, dogfish and viper.⁶ His pupil, Harvey, was able to supply the correct interpretation of many of these observations:

"Fabricius observed the point of origin of the chick, the spot or cicatricula, namely, which presents itself upon the tunica propria of the yolk; but he regarded it as a cicatrice or scar left on the place where the peduncle had been attached: he viewed it as a blemish in the egg, not as any important part."⁷ He gave a good account of the reproductive tract of the hen, including the first description of the Bursa Fabricii: "The foramen, into which Fabricius believes the cock to inject his fluid, is discovered between the orifice of the vulva and the rump. I, however, deny any such use to this foramen; for in young chickens it is scarcely to be seen, and in adults it is present indifferently both in males and females. It is obvious, therefore, that it is both an extremely small and obscure orifice, and can have no such important function to perform: it will scarcely admit a fine needle or a bristle, and it ends in a blind

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cavity; neither have I ever been able to discover any spermatic fluid within it, although Fabricius asserts that this fluid is stored up there even for a whole year, and that all the eggs contained in the ovary may be thence fecundated, as it is afterwards stated."⁸

Finally, Fabricius was the first to illustrate a systematic study of chick embryogeny, to describe human decidua, and to classify the forms of placenta. This, then, was the master. What more of his pupil?

We find in Harvey's writings the beginnings of the break with dogma. He made use of experiments, of comparative observations and of the quantitative method, to test theories and demonstrate facts. "And though much has already been made out by the learned men of former times, I have still thought that much more remained behind, hidden by the dusky night of nature, uninterrogated; so that I have oftentimes wondered and even laughed at those who have fancied that everything had been so consummately and absolutely investigated by an Aristotle or a Galen, or some other mighty name, that nothing could by possibility be added to their knowledge."⁹

According to the Aristotelian and Galenical doctrines after fertile intercourse the uterus would contain a coagulum of sperm and menstrual blood or of mixed semen. Harvey put the matter to the test in fowls and deer. The animals were segregated after coitus and the uterus opened at varying intervals, some being allowed to go to term. He concluded "that neither does any such imaginery mixture of seminal fluids take place in any animal, nor that immediately upon intercourse, even of a fruitful kind, is there anything in the shape of semen or blood, or of the rudiments of an embryo present or demonstrable in the cavity of the uterus."¹⁰ This was a reasonable conclusion on the evidence available without a microscope.

Before the time of Harvey no one had questioned the spontaneous generation of plants and animals from mud and putrefying matter. Harvey wrote, "all animals whatsoever may be said in a certain sense to spring from ova, and in another certain sense from seminal fluid; and they are entitled oviparous, viviparous or vermiparous, rather in respect of their mode of bringing forth than of their first formation."¹¹ Further "many animals, especially insects, arise and are propagated from elements and seeds so small as to

be invisible, (like atoms flying in the air) scattered and dispersed here and there by the winds; and yet these animals are supposed to have arisen spontaneously, or from decomposition because their ova are nowhere to be found."¹²

However, in other passages he uses language that seems to be consistent with a belief in spontaneous generation. This may be a false impression due to the difficulty of interpreting seventeenth century Latin. Thus the interpretation of his contemporaries is important. Francesco Redi (1625-98) obviously had no doubts about Harvey's meaning, for he wrote: "That greatest philosopher of our time, William Harvey, held firmly to the opinion that all living things originated from seed, as from an egg."¹³ Redi then confirmed Harvey's opinion experimentally by the observation of meat allowed to putrefy in gauze-covered receptacles.

It was Redi who introduced the dictum *omne vivum ex ovo* often credited to Harvey. The words *ex ovo omnia* are found on the frontispiece of Harvey's *De Generatione Animalium* (1651), but they are not found in the text. Indeed, Bayon (1947) thinks it likely that the frontispiece was chosen by George Ent, for Harvey gave him the manuscript with full authority to deal with it as he pleased.

In this book the first sixty-two exercises are devoted to the study of the fowl and egg. By the meticulous examination of eggs at different stages, Harvey was able to throw light on many points which had been disputed for centuries.

"In so far as we can conjecture from the course and distribution of the veins, the embryo from the commencement is nourished by the colligament; upon this blood vessels are first distributed, and then they spread over the membrane of the thinner albumen, next over the thicker albumen, and finally over the vitellus. The thicker albumen serves for nutriment after the thinner; the vitellus is drawn upon last of all¹⁴. . . an egg is a body, the fluids of which serve both for the matter and the nourishment of the parts of the foetus."¹⁵ The age-old controversy as to which part of the egg was nutritive and which was formative was quashed.

On the subject of pre-formation he said: "Now it appears clear from my history that the generation of the chick from the egg is the result of epigenesis, rather than the metamorphosis, and that all its parts are not

fashioned simultaneously, but emerge in their due succession and order; it appears, too, that its form proceeds simultaneously with its growth, and its growth with its form: also that the generation of some parts supervenes on others previously existing, from which they become distinct; lastly, that its origin, growth, and consummation, are brought about by the method of nutrition; and that at length the foetus is thus produced."¹⁶

The remainder of this book is devoted to studies on mammals, and here Harvey was



Title-page and frontispiece of the first edition of William Harvey's *De Generatione*.

in the van of fashion. Apart from an apocryphal story that Cleopatra dissected slaves at known intervals from the time of conception, his are the first recorded observations of mammalian embryogeny. During the following century, however, mammals were popular subjects with embryologists, and the chick was relatively neglected.

"It was customary with his Serene Majesty, King Charles, after he had come to

man's estate, to take the diversion of hunting almost every week, both for the sake of finding relaxation from graver cares, and for his health; the chase was principally the buck and doe, and no prince in the world had greater herds of deer, either wandering in freedom through the wilds and forests, or kept in parks and chases for this purpose. The game during the three summer months was buck, then fat and in season; and in the autumn and winter, for the same length of time, the doe. This gave me an opportunity of dissecting numbers of these animals

EXERCITATIONES
DE
Generatione Animalium.

Quibus accedunt quaedam
De Partu: de Membranis ac Humoribus Uteri:
& de Conceptione.

AUCTORE
GUILIELMO HARVEO
Anglo, in Collegio Medicorum Londi-
nensium Anatomæ & Chirurgiæ Professoris.



LONDINI,
Typis Du-GARDIANIS; impensis Olearii
Pulleyn in Coemeterio Paulino.
M. DC. LI.

almost every day during the whole of the season when they were rutting, taking the male, and falling with young; I had occasion, so often as I desired it, to examine and study all the parts, particularly those dedicated to the offices of generation."¹⁷ Opportunity as this was, it was also unfortunate, because among the *Cervidae* there is a considerable time-lag between fertilization and the appearance of

a macroscopic conceptus. When Harvey put the classical theories of conception to the test and performed segregation experiments, this factor misled him. He was led to fruitless speculation on problems which could only be solved by finer methods than were then available.

Harvey on the circulation is on firmer ground. *De Motu Cordis* (1628) is scattered with embryological references, and both books contain accounts of the foetal circulation which incorporate clinical observations. "Besides, in a tedious labour, we learn whether the infant is alive or not by the pulsation of the umbilical arteries; and it is certain that these arteries receive their impulse from the heart of the foetus and not of the mother, for the rhythm of the two differs: this can be easily ascertained if one hand is applied to the wrist of the mother and the other to the umbilical cord. Nay, in the Caesarean section, when the embryo is still enveloped in the chorion, I have often found the umbilical arteries pulsating, and the foetus lively, even when the mother was dead and her limbs stiffened. It is not, therefore, true that the 'spirits' pass from the mother to the foetus through the arteries; nor is it more so that the umbilical or foetal vessels anastomose with those of the uterus. The foetus has a proper life of its own, and possesses pulsating arteries filled with blood and 'spirits,' long before the 'conception', in which it is formed and dwells, is attached to the uterus; just as it is with the chick in the egg."¹⁸ The idea of an independent embryo with active organs was quite contrary to Fabricius' teaching.

Harvey's critics through the ages have said that he did not break sufficiently with tradi-

tion and that too much of his work is devoted to unprofitable speculation. Be this as it may, he was the most progressive biologist of his day and has proved prophetic in many respects. Certainly he achieved his aim, which was "not merely that posterity may there perceive the sure and obvious truth, but farther, and especially, that by exhibiting the method of investigation which I have followed, I may propose to the studious a new and, unless I mistake, a safer way to the attainment of knowledge."¹⁹

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SO TO SPEAK

Mr. F - - - r (muttering): "Well, well, we'll have to see if your husband is homozygous."

Patient: "Oh no, Doctor, my Jim's never done anything unnatural."

DR. MAY'S MONSTER

A chapter in the history of the circulation of the blood

by RICHARD A. HUNTER and IDA MACALPINE

"It was my fortune to be in a late communication where a Gentleman spoke of a hideous thing that happen'd in High-Holborn," wrote a horror-stricken citizen of London to Sir Kenelm Digby in May 1640, "how one *John Pennant* a young man of 21, being dissected after his death, there was a kind of Serpent with divers tails found in the left Ventricle of his heart . . . This Serpent was it seems three years ingendring . . . God preserve us from public calamities; for Serpentin Monsters have been often ill-favoured presages . . . I remember in the Roman story . . . there follow'd bloody Civil Wars" (Howell, 1655). Digby's correspondent was referring to a case history and postmortem findings published in a small book towards the end of 1639, which quickly aroused a storm of conjecture and mystification all over Europe: within ten years of its appearance it had been quoted in medical texts published as far afield as Rome (Servius, 1642), Lyons (Zacutus, 1642), Frankfurt (Severinus, 1643), Paris and Leyden (Riolan, 1648; 1649).

For more than a century consternation and speculation about the precise nature of the "serpent in the heart" continued in scientific circles, while the story was handed down from one medical author to the next. Wanley (1678) gave it pride of place in his encyclopaedic book of *Wonders of the Little World* in the section on "the Heart; and in what manner it hath been found in some Bodies." By 1700 the serpent was so well established that Nicholas Andry—soon to become Professor of Medicine in the Royal College of France—raised "Cardiack Worms" to a separate species in his *Account of the Breeding of Worms in Human Bodies* and described the symptomatology of patients so affected: "Cardiack or Heart-worms, occasion Tremblings, Swoonings, and the Lunatick disease, falsely imputed to the Moon." In treatment he wrote "all other Remedies except Garlick signified nothing," and illustrated the efficacy of this remedy by retailing the story of such a worm taken from the heart "and put alive upon a Table in the midst of a Circle drawn with Juice of Garlick; the

Worm began to contract itself on all sides, and getting still as far as it could from the Circumference of the Circle, at length, compelled by the smell of the Garlick, retired and took up the very Centre, where it died through the strength of the Smell." So firmly was the "Cardiack Worm" still entrenched in the middle of the 18th century that it remained for Morgagni (1761) in his classic *De Sedibus et Causis Morborum* to give it the *coup de grâce*.

It would have been surprising had such a remarkable pathological finding in the heart not come to the notice of William Harvey. For instance, Marcus Aurelius Severinus, the eminent professor of anatomy and surgery at the University of Naples, was so troubled by it that he wrote post-haste to a friend in England asking him to obtain Harvey's opinion on its nature (Severinus, 1643). Harvey's answer may be gathered from further letters of Severinus recently discovered and published (Trent, 1944): they show that he had recognized the nature of the serpent more than a hundred and twenty years before Morgagni.

The original of all these stories was *A most certaine and true Relation of a strange Monster or Serpent found in the Heart of John Pennant, Gentleman, of the age of 21 years* (Fig. 1), written by an obscure physician, Edward May. He had delayed publication for more than two years and perhaps chose the end of 1639 as a suitable moment to spring into prominence with this remarkable account: England was passing through troublous times of imminent civil war, and superstition had it that the appearance of snakes in unexpected places was a fateful augury—

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a point appreciated by Digby's friend Howell. More pertinent today is the fact that May thought his findings contradicted Harvey's eleven-years-old circulation of the blood, and therefore included a diatribe against it. For how, he argued, could the heart's systole

Riolan (1648), Harvey's most eminent adversary and the only one honoured with a printed reply in which Harvey (1649) eulogized him as "the prince and leader of all the anatomists of the present age," quoted May's case as a clinical example of obstructed cir-

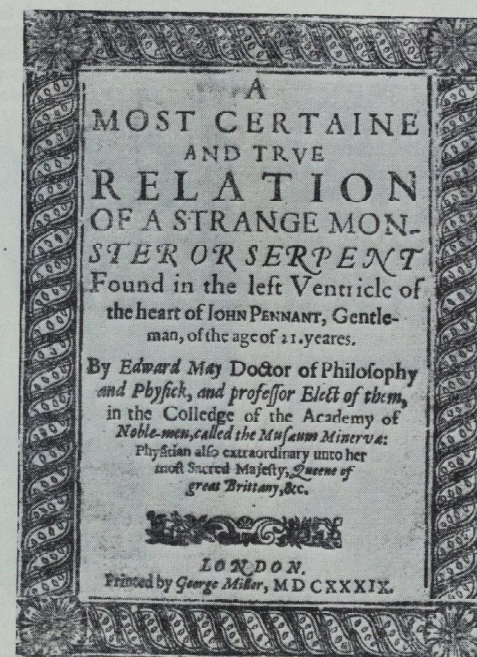


Figure 1. Title page of Edward May's book.

account for the pulse, and how indeed could the blood circulate at all, if as in this patient, it had been confined for three years in a heart blocked by a growing serpent?

Thus May's book has historical importance as the first written in English by an Englishman to challenge Harvey's (1628) *De Motu Cordis*, and the third all told following those of Primrose (1630) and Parisanus (1635). Although overlooked by historians of the circulation such as Willis (1878) and Bayon (1938-39), May's attack on Harvey did not escape the notice of his contemporaries.

ulation which excluded the possibility of a circulation of the blood as visualised by Harvey. But Trent (1944) in his commentary on Severinus's correspondence did not identify May's book, and therefore missed the significance of the serpent as a product of the early opposition to Harvey.

Indeed, May's name failed to register in any standard general, medical or scientific biographical compilation. His book remains only as a rare bibliophile's curio, while its significance as a chapter in the early history of the circulation of the blood was soon for-

gotten, although the story of "the serpent in the heart of an Englishman" lived on. Therefore it is perhaps only fair and charitable to remember him this month in which is celebrated the tercentenary of the death of William Harvey.

EDWARD MAY

May's only other known publication, a small work of 78 pages entitled *Epigrams Divine and Morall* (London, 1633), gives no personal information, its author describing himself simply as "Edw. May, Gent." It consists of short verses, sometimes coarse and often laboured, some of which contain hints that he was then studying medicine. Thus:

To Cotta [? John Cotta, M.D., physician and author]

Cot knows his wife's a whore, & saies 'tis right,
One lampe may giue a score of men good light.

On a surgeon

A Skillfull Surgeon does these three command.

A Lions heart, Hawkes eye, and Ladies hand.

By 1634 he was in practice, for he later recalled "being sent for to a yong gentleman . . . who was sick of that kind of pox which our Country people call the Flocks" (May, 1639). The *State Papers, Domestic Series*, for August 1639, contain an account of information May laid before Archbishop Laud against Captain Napier (perhaps Archibald Napier, for whom see *The Dictionary of National Biography*). May happened to meet him while on a professional visit at the house of a patient aptly called Mrs. Cromwell: in the course of casual discussion of political events Napier allowed himself to be drawn into seditious utterances against king and clergy. The documents record the depositions of witnesses, headed by May, whose motive in denouncing Napier can at best be construed as patriotism, at worst as the desire to curry favour in high places.

More information about May is revealed by his description on the title page of *A most certaine and true Relation* (Fig. 1). Surprisingly he was not a member of the College of Physicians, although this was a prerequisite for legitimate medical practitioners in London. His doctorate of "Philosophy and Physick" was a style of Continental graduation

common at that time, although it has not been possible to trace his name in published university lists. The office of "professor Elect of them, in the Colledge of the Academy of Noble-men, called the Musaeum Minervae" was not fanciful: in fact Minerva's Museum was the name given to a scientific foundation which was the direct forerunner of the Royal Society of London (Weld, 1848). Its function was to instruct the young nobility in the liberal arts and sciences. In the original licence granted on June 26, 1635, by Charles I, May headed the list

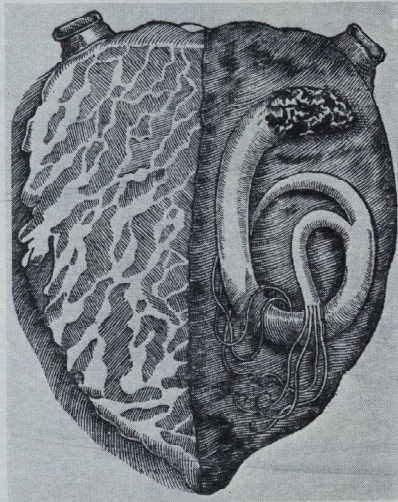


Figure 2. How the coiled serpent was found in the heart.

of six professors as "The Doctour of Philosophie and Physick" whose duties were to "reade and professe Physiology, Anatomy, or any other parts of Physick." The other professors elect were of music (Thomas Hunt, the only one to achieve an entry in *The Dictionary of National Biography*); astronomy; geometry; languages; and fencing (Sander-son, 1732).

A printed version of its constitution in 1636 defined May's duties further in terms which suggest that its governors had imbibed some of Harvey's scientific spirit: "Item, the Professour of Philosophie and Physick and his Assistant or Assistants shall from time to

time according to their abilities and opportunities make experiments of naturall things, chiefly for medicinall use, and what they finde certain shall be recorded, and what they finde otherwise shall in a book by it self be noted, how and in what manner experiment was made, and how it failed, that men may not afterwards spend their pretious time and meanes in vain, and that the licentious abuses of *Impostors* hereafter may be detected."

A building was prepared in Covent Garden and there "at the Colledge of the Museum Minervae" on February 27, 1635/6 a masque entitled "Corona Minervae" was performed before "Prince Charles His Highnesse, The Duke of Yorke his Brother, and the Lady Mary his Sister." But somehow the project came to grief, and three years later May was still only "professor Elect."

After the publication of his book in 1639 May disappeared from view. Possibly he was swallowed up in the commotions of the Civil War, or perhaps he left England with the Queen's retinue in his capacity of "Physitian extraordinary unto her most Sacred Majesty, Queen of great Brittainy"—although "Physitian extraordinary" was more in the nature of a title than an office.

A MOST CERTAINE AND TRUE RELATION OF A STRANGE MONSTER OR SERPENT (1639)

"It is an ostent and prodigy, strange and incredible which I am to paint"—thus May introduced his book, dedicated to the Earl of Dorset "as a publike obligation . . . You have honoured me before the Noble Peeres, and highest Councillors of the Kingdome: You have otherwise done me reall favours." It was written in the form of a letter to Sir Theodore Turquet de Mayerne, their Majesties' principal physician, in return for "many favours," particularly "your private, sweet, most familiar and long Colloquies with me."

The book gives an account of how on October 7, 1637, May was asked to examine the body of John Pennant aged 21, of the "writing profession," who had died the night before after an illness lasting three years. His mother, who had been May's patient for "the Stone," was anxious to discover the cause of her son's illness and death. His symptoms pointed to urinary tract disease and he had also "complained of his breast . . . and was subject to palpitations." In accordance with current practice, May as a physician did not deign to perform manual operations such as

a postmortem himself. Therefore he "sent for Master Jacob Heydon Surgeon . . . who with his Man-Servant came unto me; And in a word we went to the house and Chamber where the dead man lay." At May's direction "the naturall Region" (abdomen) was opened first: "We . . . found the bladder of the young man full of purulent and ulcerous matter: The upper parts of it broken, and all of it rotten: The right kidney quite consumed, the left tumified as big as any two kidneys, and full of sanious matter: All the inward and carnose parts eaten away & nothing remaining but exterior skins." The remaining viscera were healthy.

"We ascending to the Vitall Region [thorax], found the Lungs reasonable good, the heart more globose and dilated, then long; the right Ventricle of an ashe colour shrivelled, and wrinkled like a leather purse without money, and not any thing at all in it: the *Pericardium* . . . was quite dried also: The left Ventricle of the heart . . . as hard as a stone, and much greater then the right: which upon the first sight gave us some cause of wonder, seeing (as you know) the right Ventricle is much greater then the left [sic]: Wherefore I wished M. Heydon to make incision, upon which issued out a very great quantity of blood; and to speake the whole verity, all the blood that was in his body left, was gathered to the left Ventricle, and contayned in it." But as the heart continued "of a strange greatnesse and hardnesse . . . I desired him to cut the Orifice wider: by which meanes we presently perceived a carnose substance, as it seemed to us wreathed together in foldes like a worme or Serpent, the self same forme expressed in the first *Iconography* [Fig. 2]: at which we both wondred, and I intreated him to separate it from the heart, which he did, and wee carried it from the body to the window, and there layed it out, in those just dimensions which are here expressed in the second figure [Fig. 3]. The body was white of the very colour of the whitest skin of mans body; but the skin was bright and shining, as if it had bene varnished over; the head all bloody, and so like the head of a Serpent . . . The thighes and branches were of flesh colour, as also these fibraes, strings, nerves, or whatsoever else they were . . . I searched all parts of it to finde whether it were a pituitose and bloody Collection, or the like: Or a true organicall body, and Conception: I first searched the head and found

it of a thicke substance, bloody and glandulous about the necke, somewhat broken, (as I conceived) by a sudden or violent separation of it from the heart, which yet seemed to me to come from it easily enough. The body I searched likewise with a bodkin betweene the Leggs or Thighs, and I found it perforate, or hollow, and a solid body, to the very length of a silver bodkin, as is here described: At which the Spectators wondered. And as not crediting me, some of them tooke the bodkin after me, made triall themselves, and remained satisfied, that there was a gut, Veine or Artery, or some such Analogicall thing that was to serve that Monster for uses natural" (*i.e.* as an alimentary canal).

May departed leaving "this strange and monstrous Embryon . . . this new and rare Spectacle in the charge of the Surgion, who had a great desire to conserve it, had not the Mother desired that it should be buried where it was born: saying and repeating, *As it came with him, so it shall goe with him*: Wherefore the Mother staying in the place departed not till shee had seene him sow it up againe into the body after my going away . . . And thus this History had always bene buried from the World, (the Mother having thus buried the Creature) if your selfe [Sir Theodore de Mayerne] and others had not desired a figure and narration of it, which caused me to take the hands, and mindes of some of them who were present . . . Which from themselves and under their hands, here I have done" (see May's legend, Fig. 3).

The rest of the book is taken up by discussion of "how this Monster or such as this should be begotten or bred in the heart, so defended, as hath bene said, more then all the body, and in the most defended part of the heart, the left Ventricle three times thicker of flesh and substance then the right? as also of what matter? . . . both for the manner of their generation and the way of their cure, and by what means such rare and incredible causes of death may be found out in time and taken away."

MAY VERSUS HARVEY

May believed that "this Worme was at least of three years growth, for so long he complained of his breast," and that during all this time "the whole blood betooke it selfe into the heart" to nourish it. This seemed to him irrefutable evidence against

the circulation, and hence also against Harvey's explanation of the pulse. But because of his contempt for these new fangled ideas or because he thought them of too little consequence, he did not deign to mention Harvey by name—perhaps the reason why May's place in the history of the circulation of the blood has been overlooked. May wrote:

"Here those men may be handsomely questioned (who say that the pulse is nothing else but the impulse, of blood into the Arteries or the Systole of the heart) what was become of the pulse in this man all the while that the whole blood betooke it selfe into the heart, here was either a living man without pulse, or pulse without the Systole of the heart. For what could the arteries receive where nothing was to be received? or how could there be pulse where was no impulse into the arteries? The pulse then doubtlesse is from another cause, and is a farre other matter then most men conceive: for there are in a sound man 4450 pulsations in an hour, in a sicke man sometimes in some percutte fevers and diseases above 35600, and more, which cannot be from so many severall expressions and receptions of blood; for it is impossible the heart should make compression, and the arteries apertion, so often in that space"—and so on. Finally May claimed to have written a fuller confutation "in my 3. Booke *De Febribus*." This it has not been possible to trace, and probably it was never published. However, May's statement shows how seriously he was concerned to refute Harvey.

WAS THE SERPENT A PLANT?

In a letter dated Naples, 1 March 1640, Severinus sent his correspondent in England, John Houghton, M.D., "many sincere thanks" for the courtesy of his "exceptional communication" regarding "the multifid worm generated in the left hollow of the heart . . . entirely unknown till now to anatomical observation . . . This is indeed a thing worth hearing of, to say the least, and deserving of serious study on the part of investigators of nature." After discussing the possibilities of the creature at length and "after giving this matter much thought . . . I have come to a rather unexpected conclusion . . . Although one would naturally reason that a being of that sort should be classified

as a sentient creature, yet I believe it should be put in the category of plants . . . it is against nature for a mobile animal to be introduced into the highest visceral throne, whereas a stationary, immobile one would be less vexatious . . . the bifid shape, subdividing into many branches posteriorly, exactly fits the character of a plant, but is unlike a worm . . . a hollow structure . . . is not suggestive of any animal . . . But why do we not consult your great Harvey, that pillar of England as well as of medicine and anatomy? To him then I turn over the entire problem—in which case, please disregard everything I have said."

HARVEY CONSULTED

In his next letter dated 8 August 1640, Severinus thanked Houghton for having consulted Harvey: "Thank you very much indeed for writing me the learned Harvey's opinion concerning the anguiform body found in the heart of a man at autopsy. For my part, I did not have the temerity to wish to depreciate the story and the authority of your countryman. I only went so far as to suggest that it was a plant rather than a worm. Now that I hear, however, that Harvey, like myself, has observed those deposits lining the ducts of the heart throughout, believe me, I derive great pleasure from the fact that I seem to have hit upon the same theory and explanation as that remarkable man." However, it appears that he was not altogether convinced by Harvey's explanation, for he went on to ask Houghton to send him a copy of the book if still available: "I should have liked to translate it from the English . . . every one is very anxious to see this work, which has already been made famous by your friends in the whole city of Naples and many of the towns of its jurisdiction."

Five years later Severinus had reverted to his old beliefs, for he wrote to Houghton that the second edition of his most famous book *De Recondita Abscessuum Natura*—the first illustrated text on surgical pathology (Long, 1929)—had appeared (Frankfurt, 1643) "revived and improved with many additions: and particularly improved in that it is ornamented with the mention of your most illustrious name, in connexion with the case of the cardiac worm, a picture of which has been inserted and your letter describing it.

reproduced" The chapter devoted to May's serpent was headed *Historia mirabilis bifidi flagellati in laevo cordis sinu reperti*, and its discoverer described as "a man distinguished in all branches of the medical art."

MAY, RIOLAN AND HARVEY.

To this book Riolan (1648) referred his readers for further details of May's serpent as the most complete account in Latin: "*historiam leges apud Aurelium Severinum*." The serpent was, of course, grist to Riolan's mill in his attempts to disprove Harvey: "Harvey . . . will have it that all the blood passes from the right to the left side of the heart by way of the lungs, and he denies that any is transmitted through the [interventricular] septum . . . But this I cannot admit, and I shall show the impossibility and impracticability of it in another place." For instance, what about the well-known fact that "the ventricles are frequently obstructed . . . as and when they are filled with fleshy or fatty bodies, by which the heart is suffocated and the circulation of the blood is cut off?" What is more, "Even worms may be generated in the heart . . . Memorable is that history of the Englishman whose heart was gnawed by a worm: you may read the account in *Aurelius Severinus*." It is interesting to note how the story was embellished as it spread abroad: by the time the serpent had reached Paris it was not only growing in the heart but actually eating it away!

Riolan had visited London in 1639 with Marie de Medicis, mother of Queen Henrietta, and quite likely he and May had met as physicians to mother and daughter respectively. Certainly Riolan met Harvey and the two "had several conversations on the subject of the circulation" (Willis, 1878). Hence perhaps Harvey's undiminished if charitable regard for Riolan, when he received a presentation copy of his *Encheiridium anatomicum* (1648) containing the story of the serpent in the heart. "We may pardon this distinguished individual," wrote Harvey (1651), "that he, so well skilled in anatomy as he is, should obstinately contend against a truth illustrated by the clearest light of reason. This surely is argument of his envy—let me not call it by any worse name. But, perhaps we are still to find an excuse for Riolan, and to say, that what he has written is not

so much of his own motion, as in discharge of the duties of his office, and with a view to stand well with his colleagues. As Dean of the College of Paris, he was bound to see the physic of Galen kept in good repair, and to admit no novelty to the school."

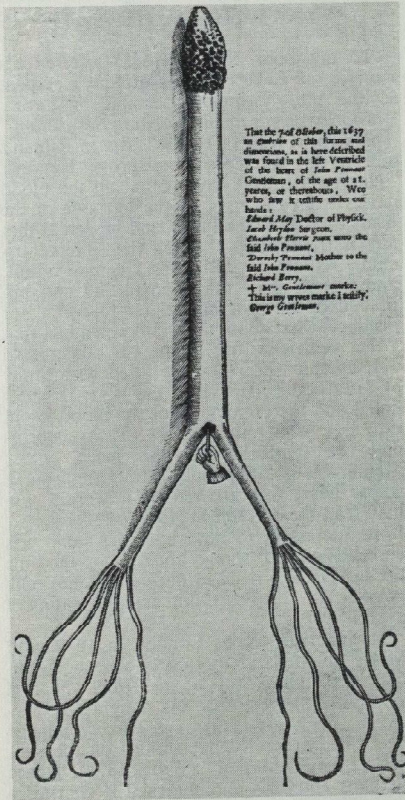


Figure 3. The serpent laid out after its removal from the body. The caption reads:

"That the 7 of October, this 1637 an Embryon of this forme and dimentions, as is here described was found in the left Ventricle of the heart of Iohn Pennant Gentleman, of the age of 21 yeares, or thereabouts, Wee who saw it testifie under our hands: Edward May Doctor of Physick. Iacob Heydon Surgeon. Elizabeth Hennis Aunt unto the said Iohn Pennant. Dorothy Pennant Mother to the said Iohn Pennant. Richard Berry. + Mrs. Gentlemans make. This is my wives make I testify. George Gentleman."

It is a chastening reflection on the credulity and temper of "scientific" or medical thought that while Harvey was bitterly attacked, May's serpent carried all before it. And such was the quality of the opposition to Harvey which caused him to say "that after his booke of the Circulation of the Blood came out, that he fell mightily in his practice, and that 'twas beleev'd by the vulgar that he was crack-brained; and all the physitians were against his opinion, and envyed him" (Aubrey).

DISCUSSION

When we first studied May's book we were inclined to believe that the serpent in the left ventricle was a rare case of embolism from the bifurcation of the interior vena cava reaching the left ventricle through a patent foramen ovale — because like all other commentators we accepted May's statement that the worm was found in the left ventricle. Had this been so, May's serpent would have antedated Cohnheim's (1877) description of paradoxical embolism by almost two hundred and fifty years. Fortunately, we took the precaution of seeking advice from a pathologist familiar with the examination of cadavers.

The protracted illness from which the young man suffered was chronic pyelonephritis and cystitis, perhaps superimposed on a congenital abnormality of the genito-urinary system: "the right kidney quite consumed" might mean that it was congenitally absent.

Regarding the serpent, it is not uncommon to find objects of this shape and colour in the heart at postmortem (Fig. 4). When such postmortem thrombi are present in the undisturbed body they lie in the pulmonary trunk extending into the pulmonary arteries and main branches in one direction, and in the other through the pulmonary valve into the right ventricle. That part of the clot lying in the pulmonary trunk resembles the body of this worm in shape, and being composed of fibrin is often "white . . . bright and shining," although it may be partly yellow in colour, hence its other name chicken-fat thrombus. The portions in the pulmonary arteries and branches are reddish — "the thighs and branches were of flesh colour, as also all these fibraes, strings, nerves or whatsoever else they were" — because in a reclining body they lie at a lower level than the pulmonary trunk so that the corpuscular

elements of the blood settle in them. There is a constriction at the point of the pulmonary valve — "the necke"; and beyond it a larger red mass — "the head all bloody, and so like the head of a Serpent" — which *in situ* occupied the pulmonary infundibulum. Such clots are solid and rubbery in consistency:

it" was of course the empty left ventricle. Indeed, May throughout his account confused right with left ventricle: this is quite evident from his surprise at finding the left ventricle of the heart so large, "seeing (as you know) the right Ventricle is much greater then the left." A glance at his drawing of

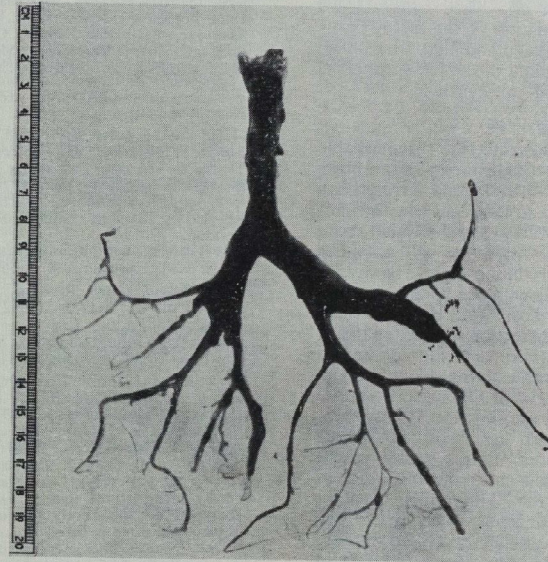


Figure 4. Cardiac 'serpent' from an autopsy performed 23 April, 1957.

that May found it "perforate, or hollow" can only be explained by his creating a channel through it when he "searched" its "body with a bodkin between the Leggs or Thighs" (Fig. 3).

Since this was a postmortem thrombus and not adherent to the vessels in which it lay, it is easy to understand how when the blood was allowed to escape from the engorged right ventricle, the clot slid down into its cavity, perhaps encouraged by the surgeon's manipulations. There it appeared to May as a coiled serpent (Fig. 2) which had grown and lived in the heart "which yet seemed to me to come from it easily enough."

"The right Ventricle of an ashe colour shrivelled . . . and not any thing at all in

the heart (Fig. 2) shows that he had only the most primitive anatomical notions.

Harvey certainly was not deceived by May describing the serpent as inhabiting the left ventricle, just as he was not deceived by its nature. In *De Motu Cordis* he had already demonstrated the cause "wherefore in our dissections we usually find so large a quantity of blood in the veins, so little in the arteries; wherefore there is much in the right ventricle, little in the left; circumstances which probably led the ancients to believe that the arteries (as their name implies) contained nothing but spirits during the life of an animal" (Harvey, 1628). When Riolan revived this old argument against Harvey's circulation of the blood, Harvey (1649)

repeated in his reply that the phenomenon "is caused by this, that when respiration ceases the lungs collapse . . . the heart, however, continues for a time to contract upon the blood, whence we find the left auricle more contracted, and the corresponding ventricle, as well as the arteries at large, appearing empty." Perhaps Harvey stressed this point because he had in mind Riolan's mention of May's serpent, for May had attached his attack on the circulation of the blood to his finding that "all the blood that was in his body left, was gathered to the left [properly: right] Ventricle and containd in it."

SUMMARY

Morgagni (1761) wrote, the "remarkable history of a certain Englishman, whose heart was gnaw'd by a worm" could hardly have arisen and survived so long had May or eminent men like Severinus and Riolan been familiar with what "now we call polypous concretions," that is blood clots. Harvey, of course, was familiar with the phenomenon of postmortem thrombosis (cf. Harvey, 1628) "from the many dissections I have made of persons diseased" (Harvey 1649), and he had at once and without hesitation identified and rejected "the Serpent in the heart." But he never referred to it in print. Unlike his opponents he considered it too absurd for serious scientific discussion: "scarce a day, scarce an hour, has passed since the birth-day of the Circulation of the Blood, that I have not heard something for good or for evil of this my discovery" wrote Harvey (1649) in reply to Riolan, with perhaps May's monster in mind. "To return evil speaking with evil speaking, however, I hold to be unworthy in a philosopher and searcher after truth . . . It cannot be helped that dogs bark . . ."

ACKNOWLEDGMENTS

We thank Dr. William Blackwood, Pathologist, The National Hospital for Nervous Diseases, Queen Square, for advising us on the nature and provenance of Dr. May's serpent. We owe the "serpent" in Fig. 4 to the kindness of Dr. R. McD. Anderson of the Department of Pathology, and Mr. A. H. Prickett of the Photographic Department of the same hospital.

THE WRITINGS OF EDWARD MAY.

1. May, E. (1633). *Epigrams Divine and Morall*. London, 38 ll.
2. — (1639). *A most certaine and true Relation of a strange Monster or Serpent found in the left Ventricle of the Heart of John Pennant, Gentleman*. London.
Entered in the registers of the Stationers Company, 14 October, 1639 (Arber, E. (1877) A

Transcript of the Registers of the Company of Stationers of London. Vol. 4, p. 457).
Collation and Contents: Ala title: Alb blank; A2a-A2b "To the Right Honourable Lord and highly renowned Peere of this Kingdome, Edward Earle of Dorset . . . Edward May wisheth all health and glory"; A3a "A peface to the Reader"; A3b "The Contents" and Errata; A4a "the first Iconography" (Fig. 2); A4b blank; inserted before B1 a folding engraved plate "the second figure . . . Place this next the heart" (Fig. 3); Bla-F4b Text (pp. 1-40) headed "To the Right Worshipfull Sir Theodore Maiherne Knight, Chiefe Physitian unto His Most Sovereigne Majesty, King of great Brittainy, &c. Edward May wisheth all health."

Reprinted in:

(1750) *The Somers Collection of Tracts. A Second Collection of Scarce and Valuable Tracts, on the most interesting and entertaining subjects: But chiefly such as relate to the history and constitution of these kingdoms*. Revised by Eminent Hands. Vol. 2, pp. 423-441. London.

(1811) Second edition, augmented and arranged by Sir Walter Scott. Vol. 5, 558-572. London.

Latin epitome by Richard London, M.D., quoted by P. Servius (1642); reprinted in Rattray (1662).

Another by John Houghton, M.D., quoted by Severinus (1643) with plates.

An edition of 1685 noted in *Catalogue of the Library of the Royal College of Physicians of London* (1912) and listed by D. Wing in *Short-title Catalogue of Books Printed in England . . . 1641-1700* (New York, 1948) is apparently a "ghost." Mr. L. M. Payne, Assistant Librarian of the Royal College of Physicians, kindly informed us that as far as can be ascertained no such copy has ever been in the library and none is listed in any other.

3. —. *De Febribus* mentioned by May (1639) as "my 3, Books" has not been traced and was probably never published.

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SPORTS NEWS

READERS MAY wonder or delight at the lack of sporting news in this month's issue. However, in order to do full justice to Dr. Harvey (not, by all accounts, much of a sporting gentleman) on this, the tercentenary of his death, we must strictly ration our accounts of purely physical and non-academic feats. Should there be any who automatically turn to the end of the JOURNAL for their literature, to them we can only offer condolences and the promise that the July issue will attempt to catch up on what has gone before.

One cannot, however, refrain from congratulating the rugby club on reaching Twickenham for the second successive year in the Middlesex Seven-a-side Competition. That the London Hospital also achieved this (at any rate for this year) is merely a fair

reflection that both sides reached the Cup final on merit. Although the hospital went down 8-3 to the eventual winners, St. Luke's College, Exeter, perhaps their moment of glory was at Beckenham after convincingly defeating London Scottish. A precedent has now been established—a Mary's professor has conceded that we can play rugby, and it is up to future captains to ensure that it is not allowed to lapse.

After the hustle of the winter rough and tumble, the summer sports have arrived in pleasant somnolence and in weather ideal for their enjoyment. The preclinicals, it is whispered, are accused of apathy in joining the summer clubs. Perhaps they are accused of this every year, perhaps secretaries get a bit touchy with the unaccustomed heat, but if there is any justification, perhaps the Charterhouse members will make themselves known to secretaries of any activity in which they are interested.

CRICKET

1st XI v. London House. At Chislehurst on Sunday, 28 April. Won by 3 wickets.

Bart's: 123 for 7 (Pagan 35, Stark 25, Harvey 20). *London House*: 117 (Gissing 65, Nichols 5-32).

The season's opening match was viewed with some trepidation, as very few of last year's regulars were available. However the Hospital won by 3 wickets in the last over but one, and so started things off on the right note.

The London House innings opened to a good seam attack from Garrod and Harvey, both of whom frequently beat the bat without getting a touch. Apart from a fighting 65 by their opening batsman, the remainder showed little determination, and intelligent bowling by Nichols kept the runs down towards the end of the innings. The Hospital fielding had worn an early season look; several catches and half chances were put down. There is room for much improvement in this department, which one hopes will be forthcoming as the weather gets warmer.

Bart's had thus been set 117 runs in 105 minutes, and with a fine opening stand by Stark and Pagan put on 56 for the first wicket. In spite of the more illustrious batsmen that followed holing out in an effort to force the pace, the game was won with three minutes to spare. Perhaps this margin would have been larger if the lady scorer had added the extras to the total during play, rather than when everything was all over!

ERRATUM

We apologise for a mis-print which occurred in the April edition of the *Journal* in the section on Golf. For Mr. Hartley please read Mr. Hankey. We would like to apologise to this gentleman in particular and to the Golf Club in general for any inconvenience caused.

SOME REFLECTIONS OCCASIONED BY ANOTHER HARVEY TERCENTENARY

by A. W. FRANKLIN

ONE OF THE most touching scenes in the History of Medicine is that painted by George Ent in the introduction to Harvey's great book on "Generation." It was Christmas, 1650. England had been riven by the Civil War and Harvey's old master, the King, had been beheaded but a few months before. Ent had gone out to see the great man, then in his seventy-third year, hoping to secure the manuscript of "De Generatione" from its modest author. Harvey spoke of the discovery of the circulation: "You know full well what a storm my former lucubrations raised. Much better is it oftentimes to grow wise at home and in private, than by publishing what you have amassed with infinite labour, to stir up tempests that may rob you of peace and quiet for the rest of your days." But he is persuaded, presents Ent with his papers on "the generation of animals," and Ent returns in triumph to the City "feeling like another Jason laden with the golden fleece."

In the recorded conversation Harvey, while explaining the need to re-examine natural objects as the boundaries of knowledge and of the known world widen, refers to the ancients as "our authorities in science." "The examination of the bodies of animals," he has just confessed, "has always been my delight, and I have thought that we might thence not only obtain an insight into the lighter mysteries of Nature, but there perceive a kind of image or reflex of the omnipotent Creator himself." So Harvey acknowledges the authority both of God and of the Greeks and reveals himself as a man of peace only concerned with learning the truth. He tried to observe, freed from prejudice, from "l'idée preconçu" and then gathering his observations together to deduce the cause. He possessed freedom of mind, clarity of thought, the seeing, accurate eye, patience, concentration and an aim. He was determined to understand the movement of the heart and of the arteries. He must discover the truth about this pulsation that was such a feature of life. He saw it in all God's creatures that he could collect and study by

observation, by dissection, and by using, as he did with wasps, hornets and gnats "an optick glass made for the discovery of the least things." But Harvey was also the first of the modern experimental scientists. He owes his place in medical history to his success in revealing truth. He saw himself as a builder in the tradition of Greek thought; but while he accepted Greek thought he felt in no way bound by Greek thoughts. The acid test was their ability to explain what he had himself observed. And to test his own conclusions he tries to alter the situation, to plan experiments to show that under these artificial circumstances his observations are still explained by the idea that the blood circulates. In his enthusiasm to discover the truth he conducted successful experiments and so advanced from search to research. As Osler wrote in his *Harveian Oration*, Harvey ushered in "the age of the hand — the thinking, devising, planning hand, the hand as an instrument of the mind."

We have long forgotten who invented the wheel — that innovation which has opened up the world and on which so much of the world's material progress has moved. Had the inventor written a book about it and had the book survived, it would be worth untold gold, but we should not need to read the book to admire the author or to use the wheel. Harvey is not quite a household name, but many have heard that he was a famous doctor. To not a few he is known as the man who discovered the circulation of the blood. In each century come three Harvey centenaries, of his book *De Motu Cordis* in 1628, of his death in 1657, and of his birth in 1578. Each year the Royal College of Physicians celebrates his benefactions in an oration on St. Luke's Day. No-one enjoying these ceremonies need read the fixed Latin 72-page quarto printed in Frankfurt on poor

Dr. A. W. Franklin, M.A., F.R.C.P., is Physician to the Children's Department. He is a founder member and Treasurer of the Osler Club of London, and has edited selected writings of Sir D'Arcy Power and Sir William Osler. He also once edited the *Journal*.

crumbling paper that made its slow way like a ship under sail, though driven by contrary winds and shot at by enemy ships on its voyage, to drop its cargo of truth in the world's ports. Yet how readable the book is in its English translation, although in three hundred years words and ideas have changed much in value and in meaning. If Shakespeare needs a glossary of Elizabethan usage, how much more does Harvey, who learned and revered the ancient authorities. He was satisfied to walk warily through argument, opinion and observation, doffing his cap where he begged leave to differ, polite, considerate, gathering such fragments of the truth as he could recognise, adding his own, testing his conclusions by experiment and coming at the last to truth.

What a long hard journey to reach so simple a matter as the truth about the circulation of the blood. The twentieth century looks back without sympathy at the impact of this truth upon Harvey's contemporaries, at the refusal by the University of Paris to accept the new teaching for half a century, when we could be persuaded of a new truth every half an hour. We would each like to suppose that we at least had we lived at the time would have recognised greatness and acclaimed the new discovery. We would like to think that among the moderns Harvey would be Nobel prize winner, Reith lecturer, O.M., sent on international lecture tours by the British Council. In fact his contemporaries behaved as all good contemporaries do. Where new-found truth follows established truth and has been reached, be the labour never so hard, by established methods, contemporary thought can accept it. But contemporaries have a nose for the scent of revolution and, on the whole and in the mass, they don't like it.

Here was a man, trained to accept authority and revelation as the channels through which truth flowed, using his eyes and setting up his own intellect against the accumulated intellects of the centuries. Does not Hippocrates teach that experience is deceitful, and yet one man's experience has to count for so much. And worse, he does experiments, and an experiment is not even experience. He measures, only with his eye, but still he measures the time relation of the systole of the ventricle to the systole of the arteries; he measures the amount of blood lost from an animal's body when a vein is

severed. From these measurements he draws revolutionary conclusions. This is all so unsettling, and one has to ask "where will it end?" If ancient techniques of thought could lead so far away from a central truth like this, what other errors are there? Harvey, a solid man, physician to the person of a Majesty who upheld the Divine Right of Kings, physician to a great and ancient Hospital in a great and ancient City, is a revolutionary. He had and he deserved a revolutionary's treatment.

In his own lifetime "to stir up tempests" was the last thing he intended. What has the quiet contemplation of nature, the observation and the dissection of the bodies of animals, to do with tempests? The key is to be found in the effect of truth upon the human mind. Harvey searched diligently for truth and in so doing proved himself exceptional. His contemporary Galileo, who revolutionised the Universe as Harvey Man, wrote, "It is really pitiful that there are so few who seek truth." To the common man truth is difficult to learn, unwelcome, and he speaks of it as dazzling, unvarnished, as naked and unadorned, as if he must turn his eyes away from it. This is what happens with new truth discerned through the arts, with new moral truths revealed by prophets, as well as with the truths proclaimed by scientists. The history of medicine teaches this lesson, how every innovator has been attacked, persecuted, vilified, not only by lay men, but by professional colleagues. The stormy controversies raised by Darwin, by Lister, by Pasteur, by Jenner, by Harvey himself show how small a welcome has new truth in the minds of ordinary men. Truth, even scientific truth, starts a chain reaction, and everyone knows how such reactions end.

Were Harvey alive today he would see no tempests in science in the Western world. A harvest of immeasurable value has been reaped in the practical understanding and treatment of disease, and in the material environment of man.

Our Lares and Penates are science and the pieces of scientific apparatus with which we fill our homes, on which we travel, by which we learn, we teach and we are entertained. Basic and ungrateful would men be, not to hold sacred truths so bountiful and so rewarding, and the techniques by which they are attained. Set Harvey down in the modern world with an electron microscope for

his optick glass, and radio-active isotopes for experiment, what results might there not be. Perhaps he would overcome the problems of the measurement of the infinitely small, in which the act of observation and measurement itself causes an error unpredictable and uncontrollable that vitiates results. Or perhaps his truth seeking mind would have busied itself in quite other spheres. In his talk with Ent he confessed a double purpose in his dissections: to gain "insight into the mysteries of nature" and this mankind has deepened and broadened following his example. To "perceive a kind of image or reflex of the omnipotent Creator Himself": where and how would William Harvey have searched for this today?

BOOK REVIEWS

ALCOHOLISM (A Manual for Students and Practitioners) by Lincoln Williams. E. & S. Livingstone Ltd. Pp. 62. 8s. 6d.

This slim manual presents a hopeful outlook in the treatment of alcoholics. After a brief survey of the various aetiological factors, and a discussion on the varied modes in which alcoholism may present, the author outlines the methods of treatment available at the present time—from parenterative to group psychotherapy.

This book should be read by all those in, or about to enter, any form of practice in which large numbers of patients are seen—for at least a few are likely to be sufferers from alcoholism, there being about half a million in the United Kingdom.

In a series of short chapters, which make for easy assimilation, most of the information required by the student or G.P. is contained—information which is not readily available outside the specialist monographs.

J. T. S.

WILLIAM HARVEY, HIS LIFE AND TIMES: HIS DISCOVERIES; HIS METHODS: by Louis Chauvois. Foreword by Sir Zachary Cope. London, Hutchinson Medical Publications, (1957). 271 pp., illus. 25s.

This tercentenary year of the death of William Harvey will result in the publication of numerous tributes to his memory. Many will add nothing to our knowledge of his life, times and writings, and none will attempt the thorough re-evaluation presented in this book. Dr. Chauvois an eminent physician and historian of medicine, has re-examined the Latin texts of Harvey's writings, re-

investigated his life history, and prepared a scholarly biography that fills a need at an opportune time.

Dr. Chauvois has obviously spent many years investigating his subject, searching for fresh material at its source, confirming certain details, taking little for granted, but approaching each problem with an open mind. His resultant biography of William Harvey is engrossing, and is published simultaneously in French. It will be valued as an appreciation from a distinguished French historian who has marshalled his facts to the best advantage. Commencing with a chapter entitled "A day with William Harvey, London, 1627," the book then proceeds with the events of Harvey's life in chronological order, followed by chapters devoted to his tomb, will, portraits and relics; his work and texts; the views of his contemporaries and successors; and his work in the light of modern knowledge.

It is impossible to offer any serious criticism of this well-produced volume, although the bibliography and the index are inadequate. On page 40, note 1 contains the misprint "Linnean" for "Linacre"; on page 175, footnote 2 is missing; and on page 176 John Hunter is confused with his brother William. Among a few other minor points for criticism we must mention Dr. Chauvois' reproduction on page 143 of Sir D'Arcy Power's description of Harvey's presence at the Battle of Edgehill, as recorded by Aubrey. More recent information (D. Stewart: Harvey and the Battle of Edgehill. *Brit.med.J.*, 1946, 1, p. 808) dismisses this as a fabrication on the part of John Aubrey.

William Harvey, revered at Bart's as our most outstanding Physician of all time, and an historical figure of interest to all medical men, is still a subject worthy of study by modern methods. There remain gaps in our knowledge of his life and work, despite the passage of three hundred years since his death, and Dr. Chauvois has given us an invaluable study that will stimulate further research, in addition to presenting us with fresh light on several aspects of Harvey's life and writings.

JOHN L. THORNTON.

AIDS TO SURGICAL NURSING by Katharine F. Armstrong.

AIDS TO TUBERCULOSIS NURSING by L. E. Houghton and T. Holmes Sellors. Baillière, Tindall & Cox. 8s. 6d. each.

Both these books are new editions of old favourites in a well known series, revised but not extensively re-written. The one on tuberculosis nursing includes a new chapter on chemotherapy, and the space allotted to excision has quite rightly been trebled. "Aids to Surgical Nursing" includes some modern ideas, such as the inadvisability of warming the patient with shock, but still contains much elderly material which might today be discarded, e.g. the Kekwick and Marriott apparatus for continuous blood transfusion, and Last's electric clock for penicillin injections. The picture on Page 88 is of interest to the older members of this hospital, but is not one that we care to see reproduced now as an example of surgical nursing.

NEW EDITIONS

REFRESHER COURSE FOR GENERAL PRACTITIONERS (Articles from the B.M.J.) 3rd Collection (fully revised). British Medical Association. Pp. 548. 25s.

General practice presents its own particular problems in keeping up with modern knowledge and many hospitals run refresher courses for practitioners, but many doctors are much too busy to attend them—the specialist articles are far too numerous for the field to be adequately covered, and textbooks are notoriously two years behind at least.

A book such as this provides a useful 'fill-in'—the brevity of the articles do not put off the tired G.P., and yet they contain what he wants to know. For the student they are a little short and too particularised.

It is rather expensive for a text which could only be used for sporadic revision by a student; but it could with advantage be borrowed from the library for an evening, when it would provide very up to date and authoritative information presented by doctors with a wide experience of their subject.

AIDS TO DERMATOLOGY 5th ed. by R. M. B. MacKenna and E. Lipman Cohen. Baillière, Tindall & Cox. Pp. 312. 10s. 6d.

This is one of the most successful of the 'Aids' series providing an excellent resumé of the commoner disorders of the skin, together with reliable therapeutic methods. Unfortunately, dermatology is a subject which requires more illustrations than most and such are impossible to produce within the compass of such a small book. If this book were used in conjunction with an atlas of skin diseases no further work need be consulted by the student, or general practitioner.

It is the author's avowed purpose to be consistent in their prescribing: Latin follows English and Metric, Apothecary. I must protest strongly: nothing is more infuriating to one who is trying to live up to the hopes of the forward-looking section of the profession who are attempting to adopt the metric system as the only one employed in medicine. Apart from this 'Aids to Dermatology' is an excellent book.

DISEASE IN INFANCY AND CHILDHOOD, 6th ed., by Richard W. B. Ellis. E. & S. Livingstone. Pp. 710. 50s.

A welcome new and up-to-date edition of a readable and reliable text. The illustrations are admirable, especially those in colour which appear for the first time. Each chapter is followed by a useful bibliography giving enough references for those wishing to pursue an individual topic further, without cluttering up the book with lists of obscure papers.

The approach is aimed at the student, with a full account of history-taking and examination of



Psyche-cum-soma

Cupid, you will remember, deserted Psyche; and I occasionally wonder whether it was not so much because she asked awkward questions as because he discovered that she was one of a pair of Siamese twins. For though it was easy enough for Cupid to leave Psyche, Psyche, poor girl, can never leave Soma. Yet to their Siamese twinship—the twinship of mind and body—we are often, like Cupid, blind.

Of course in one sense, we know quite well that our minds are constantly influencing our bodies. Suppose I ask you to think of a lemon—to remember how it smells, how it feels when you cut it with a sharp knife, and what it tastes like when you let your teeth sink into it, as we used to do at halftime. Unless you are unusually weak on imagination your mouth will water. But not because I have in fact handed you . . .

Fascinating, but owing to a shortage of space, unfinished. The complete essay, which appeared originally in The Times, is one of a collection of meditations by this celebrated medical essayist. We will be delighted to send you a copy of "The Prosings of Podalirius". Just send a card to the address below.

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children given at the beginning. The first hundred pages are taken up with general considerations of aetiological factors in disease of children. The rest of the book is arranged into chapters concerned with types of disease and stress is laid on the differences in presentation of patients of varying ages. Any classification must be artificial, but in children, where a lesion in the lung frequently presents with abdominal symptoms any system based on morphological grounds would be more misleading.

Highly recommended.

A SYNOPSIS OF CHILDREN'S DISEASES by
J. Rendle-Short. 2nd edition. 632 pages.
John Wright & Sons Ltd. 35s.

For those who like the synopsis type of work this second edition of a relatively new book can be heartily recommended. It covers its subject very comprehensively, and the table of drug dosages for children should be of particular value to both House Physicians and General Practitioners. However it must be emphasised that whilst this book is most valuable for reference purposes or for quick revision before final exams it should not take the place of standard textbooks.

C.C.

ST. BARTHOLOMEW'S HOSPITAL JOURNAL

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EDITORIAL

ALTOGETHER TOO OFTEN, medical students have been stereotyped as hard-drinking, hyper-virile individuals given to subliming their libido by indulging in such hazardous pastimes as bone-cracking rugger games or driving with careless abandon in sports cars and 'souped-up' contraptions. Such peculiarities of behaviour should endear them to Society Matrons casting their ever watchful eyes for likely 'catches' at the beginning of each Season but, alas, how many of our brood do manage to rub noses with the smart young set and reach the dizzy heights of appearing in the Tatler? The few who do so may be considered as already 'made.' The less fortunately fated majority owe their inadequacies to talking shop in the presence of lay company. Paucity of other interests and hobbies, whether due to an impecunious state or inherent diffidence are said to be some of the causes for this regrettable deficiency. It is our contention that material and interest lack are not altogether to blame. The demands of a rigorous course of training upon the future doctor leave him little leisure time in which to trifle with matters U or non-U.

Sad it is to observe that from the very beginning, impediments lie in the rugged path of the unwary individual who has become desirous of embarking upon a medical career. The 11-plus examinations with their ludicrous questions which even adults have been known to find impossibly unanswerable, are among the first hurdles to be overcome. Assuming that our stalwart would-be doctor has managed to foil his diabolical examiners, he goes on and negotiates the G.C.E. successfully. Then on to the serious business of learning the art of healing. One can commiserate with the hapless creature when woe betide him, the rude awakening is his that the xylem and phloem (to rhyme

with 'high' for upward conduction and 'below' for downward) of dicotyledonous plants is still not quite medicine! Should not greater emphasis at this early stage of instruction be laid on Mycology and Virology in this age of antibiotics and virus diseases?

Doubly sad it is, too, that in the clinical stage of training, the myriads of facts of medical interest have to be drummed into his head or forced down his throat by a 'System of Numerals.' "There were eighteen causes for bleeding gums when I did my finals; I don't know how many I can remember now," is but a single illustration of the inadequacy of the numeral system. Besides being inadequate, immeasurable harm could be done to the self-confidence of those brought up on clicking-counters should they manage to think of only thirteen causes for bleeding gums. One has heard it claimed that 108 causes existed for diffuse mottling in X-rays of lungs. The sensible should counter with indefatigable calm that there were 109 causes and remain quite firm at that.

That rare phenomenon, the individual with an encyclopaedic knowledge of almost any subject which he chooses to study, owes this enviable faculty to what is commonly known as a 'photographic memory.' For him, the numeral system of instruction is indispensable. Examiners, however, often seek in candidates for the ability to reason from basic principles. The decadent 'leisurely' system as used without change in our ancient universities involves the non-too-leisurely practice of looking up facts for oneself for the weekly essay which is discussed with one's tutor. This system of individual guidance promotes not only a sense of intellectual curiosity, but also a faculty for intelligent controversy and reasoning. Blind

acceptance of 'facts' is discouraged and pedantry is avoided. Would not time spent in compulsory lectures be spent more beneficially by students in smaller and less formal discussion groups during which they might be encouraged to put forward their views, having come prepared? Critics may denounce this as involving egotism, but even if it should comprise egotism in the strictest psychological parlance, is it too high a price to pay for the final product—a more assured and critical doctor who is unafraid of taking the step into research work? Perhaps by then the various disorders which are at best still labelled in pure defeatism 'Idiopathic' will read in textbooks: 'Malady X, Aetiology, one . . . two . . . three . . .' and this was just where we came in.

View Day

The Square, a few days before View Day, was the scene of beehive-like activity. Operation 'Face-lift' soon got into full swing. Workmen were busy scraping off whatever it was that covered the tin roofs of the four shelters ('at least half a pail from each') and painting them over with an attractive green paint. The woodwork, too,



Practice-swing for the Staff Match?

received attention. Horticulturists soon arrived with their geranium plants, which they promptly stuck into the patches of soil traditionally reserved for them at the bases of the trunks of the trees. The pigeons



. . . a dressier affair . . .

seemed to realise the import and solemnity of the forthcoming occasion. They behaved themselves exceedingly well. On View Day itself, the Square, that central focus or arena in which one sees or is seen, looked appropriately clean.

For the second consecutive year, View Day was cloudy. It was cold and it threatened to rain. Almost unnoticed, the Head Porter led the procession of the Treasurer, Clerks to the Governors, Matron, Steward and Governors, starting from the Steward's Office at 2 o'clock. The usual itinerary was followed—Surgery, Dispensary, East Wing and, finally, the King George V Block.

Morning coats were much in evidence this year. Topics of conversation might well have been sartorial. Probably only the most boorish of critics from *Tailor and Cutter* could have found fault with some of the

boutonnieres sported with rakish daring on some of the lapels of the learned. Although it was a dressier affair this year, hands in pockets seemed to be the stance of common choice. It was a cold afternoon.

Celebration

After their Annual General Meeting, the members of the Rugger Club were entertained in the Abernethian Room at the Hospital in recognition of the feats of the 1st XV in the Hospitals Cup competition. The hosts were the President and Vice-Presidents of the Club, who very kindly donated celebratory champagne, and the Medical College council who provided the accompanying refreshments. During the course of the evening, the gathering was persuaded to leave the champagne temporarily in order to see a cinematographic record of all the Cup games taken by an ardent supporter of the Club. Festivities were then resumed. Such an enjoyable end to the season must surely provide incentive for an even more successful season next year.

Full House

An audience packing the Clinical Lecture Theatre to the rafters attended the Lecture Demonstration given by Mr. J. Howkins on 'Contraceptives.' Such a unique undertaking in the hallowed atmosphere of Bart's must have provoked considerable controversy, but both advocates and opponents of the practice attended the lecture in their various strengths for their own good reasons. Could this be an epoch-making experience for Bart's students? Many felt that such a vitally important subject could remain excluded from the syllabus no longer, as expert opinion and instruction which were to be had would be far more accurate and superior to common hearsay or sketchy knowledge obtained from cursory references to the vast and often inaccurate literature available.

A short film on one of the methods held most in favour was shown. The announcement that those desirous of being 'fitted' could easily be accommodated in complete secrecy was not to be taken lightly, as evinced by the rapidity with which 'professional literature wallets' with their contents in pseudo-scientific language were snapped up. During a question-and-answer

period, a certain member of the audience nearly succeeded in getting a free passage over to New Jersey to inspect the elaborate pharmaceutical refinements and facilities at the 'parent' factory.

Landlubbers on the Crouch

A barely nautical correspondent writes:

The Bart's Regatta is a time when the Salts of Burnham shudder and there are averted eyes on the balcony of the Royal Corinthian Yacht Club. The keen beginner who has studied the technical jargon finds himself misunderstood and has reluctantly to revert to homely and unglamorous terms; he finds himself manning, not alas! the fur-rard thwarts, but the plain old seat at the front. And in the 'regulars' there is detectable that strained look which one sees in the teacher of golf.

But for us tyros it was a delightfully interesting and convivial experience. Surprisingly in view of the small number of boats there was plenty of sailing for everybody, and the row of delightful hostelrys along the quay made a pleasant setting for the 'après-sail.' Even the bunks—horrible to view on arrival—turned out to be reasonably accommodating to one's dents and bumps.

One would like to make only one small criticism of the Burnham set-up. The boats (or should I say craft?) are anchored some little way from the shore, and one fragile little dinghy is available for ferrying the multitude out to them. The result is that the races tend to be won at the anchorage by the crews who seize the dinghy first. Even more agonising is the situation after the race, when one sits forlornly in one's anchored craft, watching (almost) the party gathering at the Anchor and smelling the delightful concoctions of Barbara Barnard cooking in the clubhouse.

Otherwise the Regatta was a great success and thanks are due to the most able skipper, Robin Ridsdill-Smith, who organised it. Results of the races appear on a later page.

View Day Ball

When people are away from home they tend to behave either too badly or too well. Perhaps that is one of the delights of leaving home. And while one can't really compare a ball at the Park Lane to tea with the

Duchess or to shore leave in Cairo, it does have sufficient tang of foreign soil to lead one to expect and do the unexpected. Even the most unimpressible feel at least a greater inclination to be photographed.

Dancing seems to have become more energetic in recent years. (We hope it is that, but perhaps we are just getting old.) Rocking plus the Charleston make a formidable sporting event. And then, of course, there are the strange arrhythmias of the piper, whom the reluctant Sassenach has to excuse because there is never any doubt that he is trying. And why is it that the Gay Gordons and Eightsome Reel rather than other and better Scottish dances have edged their way into the *lingua franca* of the dance floor?

The cabaret was an enjoyable respite from these exercises. Donald O'Sullivan, Elizabeth Rowsell and John Bench sang combined and individual songs with great *élan*. Miss Rowsell's mobile expression made up for any lack of voice power, rivalling Mr. Bench in a thing at which he excels. Donald O'Sullivan gave a bloodthirsty rendering of one of Tom Lehrer's more blood-curdling songs. It is a pity that there is not a more fluid source of talent for this sort of cabaret; that the ability is there is well shown by the pot-pourri; but in the hot summer months it becomes rusty, and drab faces in front of the *tele* are reluctant to appear as gay faces before an audience. But the *Journal* tends to become a bore on this subject.

Those who went on after the ball to the Middlesex Hospital's dance at the Festival Hall agreed that it had something the Park Lane lacked. But we do not advocate a return to these old sporting grounds. There is, however, a possibility worth considering. Several people have suggested a ball on Oxford and Cambridge lines to be held on the lawn of College Hall, for which it might be possible to hire the hall of Charterhouse buildings, a most delightful room and eminently suitable for a buffet supper. It would require a lot of organisation and the financial risk would be greater, but at least the Hospital would be more or less 'At Home.'

New Treasurer

Sir Herbert B. Cohen, Bart., O.B.E., has resigned as Treasurer of the Medical College and Rear-Admiral P. K. Kekewich has been elected in his place.

English Without Tears

From 'Bart's worst student' the *Journal* has received a pamphlet which was handed to him recently in Paris. In bold type on the cover were 'Les enfants Royaux d'Angleterre ont été vaccinés contre la Poliomyélite.' On the back cover the translation was printed: 'The Royal children had been vaccinated from the poliomyelitis.' It went on, 'In England, since several years, an efficient strife is engaged from the poliomyelitis. From the statistics of 1956, more than two thousand children of every age had been partially vaccinated. In England, the Briannic vaccine that one is perceptibly different that the doctor Salk's vaccine improved by the Americans. On the front of the accomplished fond, we believe that the English vaccine from the poliomyelitis is permanently in the nick of time.'

New Dean

Mr. D. F. Ellison Nash has been appointed Dean of the Medical College as from 1st October, 1957.

MEDICAL STAFF

CHILDREN'S DEPT. (S.H.O.)	Miss P. Mansfield (succeeds Mr. Popper)
DENTAL DEPT. (House Officer)	B. Scheer (succeeds Cooksey)
Senior Registrar	Mr. Marsden becomes part-time from 10.6.57.
DIAGNOSTIC X-RAY DEPT.	
Registrar	Miss M. E. Sidaway
EYE DEPT.	
Registrar	R. F. Jones
S.T.C.	
General Practitioner Assistant	Mr. R. E. Dreaper
Mr. Corbett's firm	
Registrar	Mr. P. Paton Philip (succeeds Mr. Walker-Brash)
Dr. Cullinan's firm	
Junior Registrar	Dr. D. M. Shaw (succeeds Dr. J. R. Morrell)
Mr. Naunton Morgan's firm	
Junior Registrar	Mr. N. J. Blacklock (succeeds Mr. G. A. D. Lavy)

Journal Staff

Mr. J. S. Price has resigned from the post of Editor. The Assistant Editor, Mr. J. K. Chong, has been elected Editor in his place.

Congratulations

to Miss K. M. Halpin, C.B.E., and Dr. E. F. Scowen on their election as members of the College Council;
to Mr. D. F. J. Mason on his appointment as Lecturer in Pharmacology.

Royal College of Physicians

Fellows.—Drs. Oswald Savage, E. C. O. Jewesbury, G. W. Boden.

Royal College of Surgeons of England

Mr. A. H. Hunt has been awarded the Jacksonian Prize for 1956.

Cambridge University

M.Chir.—R. B. McGrigor.

Glasgow University

The honorary degree of Doctor of Laws was conferred on Sir James Paterson Ross on Commemoration Day, June 19.

University of London

M.S.—W. J. Aikinson.
M.D.—E. A. Boyse.
Ph.D.—E. S. Perkins (Faculty of Medicine).
Ph.D.—H. V. Wyatt (Faculty of Science).
Dr. C. F. Harris has been re-appointed Deputy Vice-Chancellor for 1957-58. He has also been nominated for appointment or re-appointment on the governing bodies of the Royal College of Veterinary Surgeons, and the Slough Industrial Health Service Ltd. Council of Management.

University of Sheffield

Dr. R. E. Church has been appointed clinical teacher in dermatology.

American Gastroenterological Association

Mr. Hermon Taylor is to visit the United States this month to speak at the annual meeting of the American Gastroenterological Association in Denver, Colorado. He will also address the American Gastroscopic Society, who have given him the Schindler Award.

Bentley Prize

The Bentley Prize for 1957 for reports of cases from the Medical wards of the Hospital has been awarded to R. C. Cook.

Change of Address

Dr. William L. Timmins — to Roswen, 22, Western Terrace, Falmouth, Cornwall.
Dr. J. R. Brown — to 57, Draycott Avenue, Kenton, Harrow, Middlesex.
Dr. Roy S. Anderson to 14, Ravensgate Road, Charlton Kings, Cheltenham.
Dr. G. Melotte, to 33, Queen's Way, Harworth, Middlesex.

ANNOUNCEMENTS

Marriages

BRADBURY—KIRBY.—On June 1, 1957, Michael W. B. Bradbury to Anne Kirby.
ELLIOTT—HAYWARD.—On March 30, 1957, Charles Gavin Elliott to Elizabeth Ann Hayward.
ELLISON—BATES.—On March 30, 1957, Anthony John Hubert Ellison to Margaret Heather Bates.
ESDALE—LINDOP.—On May 6, 1957, Mr. G. P. R. Esdale to Dr. Patricia J. Lindop.

Births

ATKINSON.—On April 18, 1957, to Veronica, wife of R. S. Atkinson, a son.
CHAMP.—On May 15, 1957, to Doris and Charles Champ, a son, Roderick Charles.
CUTHBERT.—On May 3, 1957, to Melodie and Olaf Cuthbert, a daughter, Rebecca Rose.
MASKELL.—On May 14, 1957, to Rosalind, wife of John Maskell, a daughter, Genevieve Mary.
METHA.—On May 27, 1957, to Joy and Mark Mehta, a son, James.
MURRELL.—On May 17, 1957, to Janet and John Murrell, a daughter.
PARKER.—On April 8, 1957, to Pamela, wife of Robert Parker, a daughter, sister to Richard.
ROBERTSON.—On March 29, 1957, to Alison, wife of Douglas Robertson, a daughter.
SMITH.—On April 6, 1957, to Phillida, wife of Roderick Smith, a son, Richard Anthony.

Deaths

- AUDEN.—On May 3, 1957, George Augustus Auden, aged 84. Qualified 1897.
- DALE.—In March, 1957, in Saskatchewan, Robert Henry Dale, aged 47. Qualified 1935.
- DALLIWALL.—On May 6, 1957, Roy Enyat Singh Dalliwall, aged 53. Qualified 1930.
- FISON.—On April 20, 1957, James Fison. Qualified 1905.
- LAMPLOUGH.—On April 7, 1957, Charles Lamplough, aged 84. Qualified 1895.
- MINSHULL.—On April 17, 1957, Michael John Wilmott Minshull, aged 57. Qualified 1925.
- MYERS.—On May 9, 1957, Bernard E. Myers, aged 85. Qualified 1898.
- PRATT.—On April 24, 1957, Eldon Pratt, aged 87. Qualified 1896.
- RANDOLPH.—On May 1, 1957, William Henry Randolph. Qualified 1899.
- YETTS.—On May 14, 1957, Walter Perceval Yetts. Qualified 1903. (Professor Emeritus of Chinese Art and Archaeology in the University of London.)
- GILLIES.—On May 14, 1957, Kathleen Margaret, devoted wife of Sir Harold Delf Gillies, Kt., mother of John, Margaret, Joanna and Michael, peacefully after a long illness.

CALENDAR

Sat. July 6	Dr. E. R. Cullinan and Mr. J. P. Hosford on duty. Anaesthetist: Mr. C. E. Langton Hewer. Cricket: v. U.C.S. Old Boys (H). Tennis: v. West Heath (H).
Sun. " 7	Cricket: Past v. Present (H).
Sat. " 13	Medical and Surgical Professional Units on duty. Anaesthetist: Mr. G. H. Ellis. Cricket: v. Incogniti (H). Tennis: v. Roehampton (H). Cricket: v. Hampstead (H).
Sun. " 14	Golf: v. K.C.H. (H).
Wed. " 17	Dr. G. Bourne and Mr. J. B. Hume on duty. Anaesthetist: Mr. F. T. Evans. Tennis: v. Middlesex Hospital (A).
Wed. " 24	Golf: v. St. Mary's at Moor Park.
Sat. " 27	Dr. A. W. Spence and Mr. C. Naunton Morgan on duty. Anaesthetist: Mr. R. A. Bowen. Tennis: v. U.C.H. (H).
Sun. " 28	Cricket: v. R.N.V.R. (H).
Wed. " 31	Golf: v. London Hospital (H).

Sat. Aug. 4	Dr. R. Bodley Scott and Mr. R. S. Corbett on duty. Anaesthetist: Mr. R. W. Ballantine. Cricket: Sussex Tour.
Wed. " 7	Golf: v. St. George's Hospital (Dulwich).

LETTERS TO THE EDITOR

BERNARD HUDSON

Sir.—Bernard Hudson, whose death you report in the May number, was at one time in charge of the Palace Hotel Sanatorium, at Montana-sur-Sierre, where many officers were treated after the First War.

He had a genial personality with a sense of humour, which helped him to deal with patients who were often impatient and sometimes unreasonable. I believe that his career at St. Bartholomew's was cut short by the occurrence of Pulmonary Tuberculosis, but he became the apostle of physical fitness and wore only a cotton shirt under his jacket when out of doors in the coldest weather.

Yours sincerely,

JOHN WHITTINGDALE, F.R.C.S.

Newland, Sherborne.

A NAVAL EPIDEMIC

Sir.—I offer this further information in answer to Dr. Cronk's letter published in the April *Journal*. My patients had a smear made when they reported sick, and if their temperature rose above that on admission. The smears were thick at one end of the slide and thin at the other. Leishman's stain was used as it was the only one for staining blood films on board. I must agree that the laboratory side of the work was poor. My excuse must be that my equipment was limited, my reference books rather elderly and myself inexperienced.

Paludrine and Mepacrine were used because they with quinine, formed the stock of anti-malarials carried. Malaria in H.M. ships is almost unknown these days. Paludrine and Mepacrine are carried for prophylactic use in malarial ports.

Unfortunately it will be impossible to trace my patients in that epidemic, as I did not keep a list of their names and by now they are scattered throughout the Navy.

To add to the mystery, the R.A.M.C. malariologist and pathologist who surveyed the island in 1955 told me that the malaria-carrying mosquitoes that they caught on Pulau Tioman did not fly before 11 p.m. I thought that they were pulling my leg, but they denied this. They were unable to give me any cause for my outbreak. I met them in June 1956, when my article had already been sent to the editor.

Yours sincerely,

R. J. KNIGHT,
Surgeon Lieutenant R.N.

Royal Naval Hospital,
Haslar,
Gosport.

'AN ATTACK OF THE VAPOURS'

Sir.—On reading Miss Nina Coltart's article 'An Attack of the Vapours' in your March issue, I immediately recalled an incident which supported her view that a novel may in fact be of some assistance in preparing oneself for the finals.

When my turn came, I felt that the chance of success was remote and so resigning myself to a further six months, I read some novels one of which was Neville Shute's 'Round the Bend.' One of the main characters in the book died from myeloid leukaemia. The condition was described in some detail for a novel and one feature was the deep pain which is sometimes experienced in the legs in the advanced stage of the disease.

On being asked to examine a patient's abdomen, I felt a large mass which I took to be a spleen. I asked the patient if he had noticed anything about his legs and he replied, "It's funny that you should ask that, as recently I have been getting a dull pain which feels to be in my bones".

The examiner appeared to be pleased with my handling of this case and I felt encouraged, but then there was the next patient who had a most obscure malady!

Yours sincerely,

D. H. BLACK.

King Edward VII Sanatorium,
Midhurst, Sussex.

WILLIAM HARVEY'S VIEWS
ON BLOOD

Sir.—Sir Geoffrey Keynes in an article entitled "Harvey's Discovery that Blood Circulates" in *The Times* of June 3 tells us that 'he remained to some extent Aristotelian in his thought to the end of his life; though he rejected the doctrine that the heart was the seat of the soul, he still spoke of the blood as 'a generative part, the source of life, the first to live and the last to die, the primary seat of the soul'.

I must confess to complete ignorance of Aristotle, but may perhaps point out the resemblance of Harvey's statement to the basis of the Mosaic Law laid down in the Old Testament.

The book of Leviticus alone contains 48 statements of procedure in relation to the blood of animals. A classification of these might be attempted as follows:—

(1) The majority are repetitions of the rule for sprinkling of the blood of sacrificed mammals or birds 'round about upon the altar', or of other ritual: '... the priest shall dip his finger in some of the blood and sprinkle it seven times before the Lord, even before the veil. And he shall put some of the blood upon the horns of the altar that is before the Lord . . . and shall pour out all the blood at the bottom of the altar of the burnt offering . . .' (IV, 17, 18).

(2) The eating of blood is a crime: 'Moreover ye shall eat no manner of blood, whether it be of fowl or of beast, in any of your dwellings. Whosoever soul it be that eateth any manner of blood, even that soul shall be cut off from his people' (VII, 26, 27).

(3) Yet the consecration of Aaron and of his sons required the application of the blood of a ram to the right ear, thumb and great toe (VIII, 23, 24).

(4) Leprosy was cured by application of a mixture containing the blood of a 'bird' (XIV, 6, 7).

The peculiar nature of blood is explained as follows:

'And whatsoever man there be . . . that eateth any manner of blood; I will set my face against that soul that eateth blood, and will cut him off from among his people. For the life of the flesh is in the blood; and I have given it to you upon the altar to make an atonement for your souls; for it is the blood that maketh an atonement for the soul . . . For it is the life of all flesh; the blood of it is for the life thereof, therefore I said unto the children of Israel, Ye shall eat the blood of no manner of flesh; for the life of all flesh is the blood thereof: whosoever eateth it shall be cut off' (*Leviticus*, XVII, 10-14).

'Only be sure that thou eat not the blood; for the blood is the life; and thou mayest not eat the life with the flesh. Thou shalt not eat it: thou shalt pour it upon the earth as water' (*Deuteronomy*, XII, 23, 24).

There is a profound difference between the Jewish and Christian religions in their attitude towards blood although the latter religion was, at its origin, associated so closely with the former. This matter is referred to in a paper 'Some Biological Aspects of Jewish Ritual' (*Man*, Vol. 52, p. 65, 1957).

Yours sincerely,

E. L. KENNAWAY.

Dept. of Pathology,
St. Bartholomew's Hospital.

HARVEIAN ORATIONS

Sir.—The statement made by Mr. Thornton (p. 178) that up to 1866 apparently only two Bart's men had delivered the Harveian oration must be quickly contradicted. Orations by Pierce Dod (1729) and Richard Powell (1808) were both published; a copy of the latter is in the Hospital Library. It was not the custom for the Oration to be published in earlier days and I know of at least eight earlier Harveian orators who were on the staff of Bart's—Richard Tyson (1725), Anthony Askew (1758, 1762), Christopher Terne (1663, ms. in British Museum), Richard Budd (1781), David Pitcairn (1786), Edward Roberts (1801), James Howarth (1816) and Clement Hue (1829). These orations were not published. A study of Sir Norman Moore's History of our Hospital shows that our medical staff has always played its proper rôle in the affairs of the College for which Harvey did so much.

Yours sincerely,

A. W. FRANKLIN.

Lister House,
11, Wimpole Street,
W.1.

THE SCIENCE AND ART OF GENERAL PRACTICE

ON MAY 16TH, Dr. Allen Whitaker, of Guildford, lectured to final year students, taking this as his title. He began by saying that Medicine is a mixture of applied science and practical art, which varies in the different branches. The scientist in a teaching hospital tries, by using precision tools, to make exact measurements. He devises controlled experiments and strives to eliminate the human element in assessing his results. The differential diagnosis of a blood disease or of a chronic diarrhoea cannot be made without scientific tools. In general practice, however, the art of medicine is much more in evidence, and the knowledge of it must be acquired largely by experience. 'I know of no test that can measure whether a depressed patient is likely to commit suicide, or assess the aetiological significance of a mother-in-law in duodenal ulcer. Judgment alone can guide you.' The pretence that medicine can be mechanised and practised as an exact science is quackery. On the other hand, to discard all scientific discipline on leaving hospital, and to regard General Practice as a pure art, for which no equipment is needed other than a smooth bedside manner is charlatanism.

Young doctors undergo a metamorphosis on leaving hospital to enter general practice no less profound than when they left the preclinical laboratory for the hospital ward. It is a strange experience for men, straight from a teaching hospital, to find that in general practice they are expected to diagnose and treat pneumonia first, and to investigate it later; moreover, they must learn to do this with confidence in the absence of the physical signs of consolidation. This does not mean they are to make specific diagnoses without adequate reason and call every P.U.O. Influenza. It is sometimes necessary to turn a blind eye to special reports and expert opinions, which conflict with the overall clinical picture.

The relationship between the family doctor and his patient is unique. Confidence in his general practitioner gives the patient a vital sense of security. He is the first point of contact between the patient and Medicine. Though often on terms of great intimacy, he must never allow himself to

become so emotionally concerned that he is unable to take the detached view that may be so vital to the patient. 'When you pray, and I don't hesitate to say that, in the presence of severe P.P.H., we all pray, let your hands be in the act of bimanual compression and not in the attitude depicted by Durer!'

His unique opportunity and responsibility is for early diagnosis. He must therefore encourage and train patients to come early, and must then try to enter the patient's mind to find out what has brought him. It may be the fear of serious disease, which entails a diagnosis or reassurance, particularly in the neuroses which readily occur among the relatives of those who die of carcinoma. It may be for the relief of symptoms, which indicate a need to share anxieties and for the relief of tension. Perhaps he 'only needs a certificate,' but listen carefully to the patient's own words, for 'Disease often tells its secrets in casual parentheses' (Wilfred Trotter). Handle even the most intimate history and examination in such a way, by simple methodical routine, that the patient is never embarrassed. The examination *must* be thorough; it gives the patient confidence, and it is quicker in the end. After the examination, an immediate decision must be made as to what course to set, whether to watch, to treat or to investigate; and the opinion and advice must then be given with courage and conviction, especially if it be negative. After specialist consultations and treatment, the final and continuing responsibility for the patient is with the family doctor.

The art of General Practice cannot be readily learnt from books or in the hospital wards. That is why students are advised to go out and observe it by visiting G.P.s in their practices for a week or two; and later learn by practising as assistants under experienced G.P.s.

This lecture was illustrated and enlivened by many brief but fascinating case histories, and those who heard it must have come away with a fervent hope that, should they ever find themselves in need of a physician, he will be as human and as successful as this Lecturer.

OLD MEN OF THE SEA

by W. C. SPACKMAN

*"Simon Davz has come home again
From cruising about with his buccaneers;
He has singed the beard of the King of Spain,
And sold him in Algiers."—Longfellow.*

I KNOW one ship's captain who would fill the part of swashbuckling old Simon, and there are no doubt many of his breed, 'square-rigged' men, tough and salty as deck awnings, and able to make themselves understood and respected in a hundred ports all over the seven seas, but though they mostly bear a certain resemblance to each other in figure and complexion, each must be approached by a newly-joined ship's doctor with caution till his individual idiosyncrasies have been revealed. I am referring to the large class who sail the ships of about 10,000 tons which predominate in all the ports of the world.

Lest you as ship's doctor should be over-impressed with your own relative standing and importance, the 'Old Man' will soon tell you, personally or through the Chief Officer (the mate or 'number one'), that what he says goes and no argument. If you are not very sure of your ground he will also try and teach you practical medicine as understood at sea.

Ship's doctors are notoriously divided into three classes, the young, eager and foolish, the 'dead-beats' of any age, and the elderly retired types who will tell you that they are after all, the best bets. (I am not including the limited class, mostly in big ships, who make a career of it). Ship's doctors are engaged primarily to look after the crew and not to play ball with the lady passengers though this pastime may be indulged in with due caution. All ships on deep sea voyages, i.e. not whilst going from one U.K. port to another, must carry a doctor if there are more than 100 people or more than twelve

passengers on board. Ships are generally well supplied with drugs and medical equipment and the doctor has some liberty in ordering additional items, as is easily seen by a glance at the contents of the cabinets which shew a large assortment of individual preferences, often long out-of-date or superseded. There is however a steady and considerable demand for certain items, and it is essential to carry a good stock of Mist. Mag. Trisil., Mist. Expect., Ung. Methyl Sal., 'codein', elastoplast, epsom salts and Empl. Bellad., especially with Indian crews. In the tropics, salt tablets are freely issued to the engine room crew, but be sure that they are taken with large draughts of water. The doctor is allotted an entirely untrained and only part-time hand to tidy up the surgery, but apart from this perfunctory assistance he must manage everything unaided. If a couple of stewardesses are carried one of them may, with luck, know a little elementary nursing, but they are as a class very temperamental and I had one who went off her head and ended up by accusing a terrified passenger of putting 'germs and spiders' in her bunk. Managing her for a full week before we reached the next port was some job when the news got abroad among the mothers of children on board. At some ports they refuse to take such a patient off one's hands. In my somewhat limited recent experience I have not had to do any major surgery though I have had fractures to set and much general sickness and minor surgery of all sorts. It is generally agreed that under these conditions it is better to trust to antibiotics and sedatives in dealing with most acute emergencies, rather than attempt difficult operations, tiding the patient over to the next or nearest port.

The surgeon's duties may on occasion extend to other ships who carry no doctor. You may actually be trans-shipped at sea and in

W. C. Spackman, M.B., F.R.C.S.E., F.R.C.O.G., was at Bart's from 1909-13. He retired from the I.M.S. some years ago and now divides his time largely between doing locum Consultant jobs as a Gynaecologist in Northern Ireland and elsewhere, and doing Ship's Surgeon jobs in the winter.

any weather to see or treat a casualty, but more often advice is asked by radio. A large tanker homeward bound via the Cape had a seaman with a fragment of cinder stuck in his cunea. It was 'causing no trouble, could they proceed on their normal way 18 days sail to Las Palmas or should they make an unscheduled call at Durban?' I advised the latter course and they accepted my advice but 'hoped I wouldn't mind an extra penny on Petrol'! I radioed back I was a shareholder in the Company and was not using my car on board.

Many ships carry lascar crews and these are mostly excellent especially the Pakistanis. I have of course a good colloquial knowledge of Urdu and get on very well with them, and can soon sort out the genuine from the 'phoney' in the sick-parade. Many are real wags, others habitual shirkers or hypochondriacs, and a few lend themselves to the machinations of smugglers of drugs. On my recent trip to Burma we brought back an unauthorised item of cargo down one of the engine room ventilators, viz. a huge parcel of Indian hemp worth at least a quarter of a million pounds and used for making marijuana cigarettes. There was evidently a tip-off about this, as on docking at Tilbury we were invaded by a veritable army of customs searchers who after a full two days' persistence discovered the consignment. On a previous trip, my own cabin was literally taken to pieces; with a clear conscience I urged them on with ribald encouragement and suggestions. I don't know what they were after, but they found nothing. As they left the ship I taunted them with not finding 'all those watches concealed in the surgery'. They retired in dignified silence.

I knew one captain and one mate, fortunately on different ships, who were total abstainers. Such characters are rare and it is almost a crime with good liquor available at such cheap rates. But the doctor may need to be on his toes at any time especially in rough weather when accidents are liable to occur, and passengers prefer not to be rendered unconscious by fumes of gin when being attended for one of the many small disorders and injuries so common on board.

especially if they are feeling a bit seasick already. In port, more alcoholic and social liberty and latitude can be enjoyed, especially in the Far East where night life is really understood and the hospitality of the locals can be quite alarming. On one occasion, in Kobe, we were berthed next to a Swedish ship whose skipper knew our Old Man, so he and I were invited over to lunch to which the local male Swedish community was also asked, it being their skipper's birthday. Now, unfortunately for me our Old Man practically lived on hard liquor and the Swedes knew his reputation in this respect. (He was at all times an extremely able seaman). In fact they were gunning for him.

The session started relatively quietly at noon with Bols gin in tumblers. The Swedes from the port arrived soon after us and at this stage drank in relays which as guests we were not allowed to do. Lunch was at 1.30 and very excellent it was, but by then we were drinking beer in one glass and wine in another. This might have passed off quietly, but mere politeness demanded toasts to the respective crowned heads, to the two captains and to a variety of other persons and enterprises. All these toasts were drunk with enthusiasm and some with musical honours, in Swedish gin on a strictly 'no-heeler' basis, and by the time lunch was over I for one was feeling past my best. Not so the Old Man, who went from strength to strength though several of the Swedes fell by the wayside. The session continued in the lounge with coffee and Kummel till 4 o'clock when our captain decided honour was satisfied and we took our leave, descending the gangway and returning to our ship, fortunately not far away. In spite of scurrilous reports to the contrary, I stoutly maintain I regained my cabin in a dignified and unwavering gait, though I do admit I remained there 'resting' for some hours. The Old Man on the other hand considered this a mere aperitif and after a shower and a change of clothes went off to another party which kept him on shore till 4 next morning. He did, however, concede that we had gained two 'away' points against the Swedes, or at least one for a draw.

THE SURGICAL TREATMENT OF ISCHAEMIC HEART DISEASE

by R. L. HURT.

Important advances in the surgical treatment of ischaemic heart disease have recently been made. Although it is difficult to assess accurately the value of these operations, the results so far are encouraging.

THE INCIDENCE of occlusive disease of the coronary arteries has greatly increased during recent years. This is partly due to the greater stress and strain of modern life, and partly to the increasing age of the population. The trend has been more marked in America than in England, and in 1949 there were in the United States over 300,000 deaths from this cause; in fact, it was the cause of more deaths than was cancer. An additional factor in this apparent increase is the greater accuracy of present-day diagnosis; coronary thrombosis was not recognised as a clinical entity until 1912, and its occurrence was not widely appreciated until just after the first World War.

Considerable research has been directed to elucidating the cause of arteriosclerosis, but there is still very little real understanding of the basic problems involved. Until some way of preventing its development is discovered the treatment can be directed only towards the relief of symptoms and an attempt to improve the blood supply to the heart. At the present time the treatment of this condition is mainly medical; such operations as have been devised have met with much greater enthusiasm in America than in England, though even in America there has been a difference of opinion as to their value.

There have been three main approaches to the surgical problem:—

1. **Relief of pain.** The sympathetic fibres that convey coronary pain may be interrupted by excision or alcohol injection of the upper five thoracic ganglia. This procedure relieves the pain but does nothing to treat the underlying disease process; it also removes the possible protective mechanism of the onset of coronary pain on exercise.

2. **Reduction of metabolic demands.** The body metabolism, and thus the work of the heart, may be reduced by total thyroidectomy or by ligation of the superior and inferior thyroid arteries. This operation, however, tends to convert the patient into a 'vegetable.'

3. **Revascularisation of the heart.** This is the basic approach to the problem and is an attempt to increase the blood supply to the heart. It is this aspect of the surgical treatment of coronary disease that is to be discussed here.

ANATOMY

The arterial supply to the heart is from the two coronary arteries that arise from the aorta close to its origin. The left coronary artery divides into three branches; a descending branch passing down between the ventricles, a circumflex branch passing backwards, and a branch supplying the inter-ventricular septum. The right coronary artery is smaller and passes down between the right atrium and the right ventricle. These arteries are 'end-arteries' and have little communication with each other. Recent work has shown that minute pre-capillary intercoronary connections do exist, but nevertheless functionally the coronary arteries are 'end-arteries.'

The venous drainage may also be divided into two parts. The superficial veins drain 30 per cent. to 60 per cent. of the blood into the coronary sinus, and the deep (Thebesian) veins drain the remainder directly into the atria, most into the right but some into the left atrium.

PATHOLOGY

Coronary arteriosclerosis may occur as part of a generalised arteriosclerotic process that involves most of the arteries of the body

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or it may occur as a limited process that is mainly confined to the arteries supplying the heart. Lipoid substances are deposited in the arterial wall in the media and also just outside the intima, and at a later stage the lipoid substances may become partially calcified. This produces the characteristic appearance of an arteriosclerotic vessel — thickening, loss of elasticity, and an increase in tortuosity. In extreme cases the artery may be converted into a fibrous, or almost stony, tube. These changes occur most commonly in the descending branch of the left coronary artery, about 2 centimetres from its origin, and an occlusion of this artery causes the typical infarct of the anterior wall of the left ventricle. The first part of the right main coronary artery is also often affected. The pathological changes are most marked in the proximal third of the artery and least marked in the distal third, and it is this fact that is of significance in the operation of arterialisation of the coronary sinus.

TRIGGER MECHANISM

The concept of 'trigger mechanism' has been proposed by Beck as a result of his experimental work on dogs, and provides a means of understanding the nature of coronary artery disease. The blood flowing through a coronary artery that is partially occluded by arteriosclerosis may be sufficient to oxygenate the myocardium when the body is at rest, but insufficient for the increased demands of exercise. The affected portion of myocardium will therefore, during exercise, receive less oxygen than the surrounding muscle and electrical potential differences will develop as a result of this unequal oxygenation. The resulting electrical impulses may then destroy the normal mechanism of ventricular systole by preventing the cardiac muscle from contracting as a synchronous whole. This means that individual muscle fibres will contract separately, ventricular fibrillation will occur, and death will ensue. The ischaemic area of myocardium is called the 'trigger.' Since the trigger mechanism can be inhibited by an increase in blood-flow of as little as 1.5 cc. per minute, any operation that produces even a relatively small increase in blood-flow may prevent this action taking place. It is this trigger mechanism acting as the cause of ventricular fibrillation that is the explanation

for the cases of sudden death in which the coronary arteries are found to be arteriosclerotic at autopsy but in which no evidence of a recent infarct can be found.

METHODS OF REVASCULARISATION

The following methods of revascularisation of the heart have been used with results that have been reported as showing a varying measure of success.

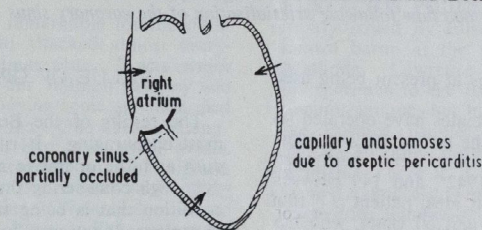
- (1) Application of grafts to the heart.
- (2) Cardiac vein ligation.
- (3) Internal mammary artery implant into the myocardium (Vineberg operation).
- (4) Cardiopericardiopexy (Beck I operation).
- (5) Arterialisation of the coronary sinus (Beck II operation).

Application of grafts to the heart. The first experimental attempts to increase the blood supply to the heart were made by Beck in America in 1935 and by O'Shaughnessy in England in 1936. Beck attempted to increase the blood supply to the surface of the heart by suturing the free end of the pectoralis minor muscle to the surface of the heart, whilst O'Shaughnessy attempted to produce the same effect by bringing up omentum from the abdomen through the diaphragm; this latter work was based on the known ability of the omentum to revascularise tissue with which it came in contact. O'Shaughnessy had performed this operation on 57 patients by the time he was so tragically killed at Dunkirk. In many instances it was possible to demonstrate small vascular communications between the grafted tissue and the surface of the heart, but the question inevitably arose as to which way the blood in these vessels was flowing — whether from the graft to the heart or in the reverse direction. In addition, it could not be demonstrated with certainty that these surface vessels communicated with the vessels in the deeper layers of the myocardium, the nutrition of which is so vital because of the action of the 'trigger mechanism' in provoking ventricular fibrillation following an acute thrombosis.

Cardiac vein ligation was first performed experimentally in dogs in 1937 in an attempt to stimulate an over-development of the myocardial capillaries, as well as to produce an increase in the size and number of the collateral vessels in the myocardium. The operation was found to provide a significant

degree of protection against death following the ligation of a major branch of a coronary artery. There has been a renewal of interest in this operation recently, and it is now combined with intrapericardial poudrage as the Beck I operation.

Internal mammary artery implant has been studied in dogs by Vineberg in Montreal. The open end of the internal mammary artery is implanted directly into the substance of the myocardium of the left ventricle. There is no tendency to haematoma formation and it is evident that the spongy structure of the myocardium is able to drain off sufficient blood to prevent the artery becoming thrombosed. Subsequent injection studies have demonstrated the development of a definite system of new anastomotic channels, but unfortunately these are mainly confined to the anterior half of



BECK I OPERATION

Fig. 1

the interventricular septum and the anterior portion of the left ventricle. Nevertheless, this is the area most commonly affected by a coronary thrombosis, and it is claimed that as a result of this operation there is a significant increase in the survival rate of dogs following ligation of a major coronary artery.

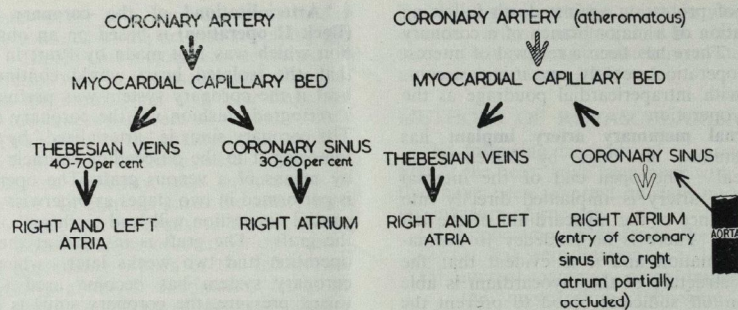
Cardiopericardiopexy (Beck I operation) Finely-powdered asbestos is introduced into the pericardial sac and causes an aseptic granulomatous reaction between the layers of the pericardium. An increase in the vascularity of the adjacent tissues also occurs and this leads to the development of capillary anastomoses between the hyperaemic area and the ischaemic myocardium. In order to encourage the development of new collateral vessels still further, the coronary sinus is partially occluded at its entrance to the right atrium, (fig. 1.)

'**Arterialisation**' of the coronary sinus (**Beck II operation**) is based on an observation which was first made by Pratt in 1898 that the isolated heart would continue to beat if the coronary system was perfused in a retrograde fashion via the coronary sinus. The coronary sinus is 'arterialised' by anastomosing it to the descending thoracic aorta by means of a venous graft. The operation is performed in two stages as otherwise myocardial congestion will lead to thrombosis of the graft. The graft is inserted at the first operation and two weeks later, when the coronary system has become used to the raised pressure, the coronary sinus is partially occluded. This results in a retrograde flow of arterial blood into the coronary system, (fig. 2.)

Beck I and Beck II Operations

The Beck I and Beck II operations have

been developed as the result of over 4,000 operations on dogs. Both procedures have been found to produce a very definite increase in the blood supply to the heart, as shown by the mortality and the size of the infarct resulting from ligation of the descending or the circumflex branch of the left coronary artery. This increase is more marked after the Beck II operation, as also is the backflow of blood from the divided ends of these arteries. This backflow is venous in character, which indicates that the arterial blood from the coronary sinus has been utilised. However, the operation is technically more difficult to perform, must be carried out in two stages, and carries a higher mortality; furthermore, it has been found that the graft loses contact with the capillary bed after about two months. For these reasons it is thought that the Beck I operation is probably the more satisfactory procedure



BECK II OPERATION

Fig. 2. On the left, normal blood flow through the coronary circulation; on the right, blood flow following arterialisiation of the coronary sinus

and is the one that is at present being used in man.

Beck and his associates have operated on 186 patients during the period 1932 to 1954. Thirty-seven operations were performed between 1932 and 1942¹, and 149 between 1945 and 1954². Their ideal patient is a thin subject, between 40 and 60 years, who has been suffering from symptoms of coronary insufficiency for a year or more, but is still reasonably active. He should not have had a coronary thrombosis during the previous six months, nor should he have any evidence of heart failure or a dilating heart; however, moderate cardiac enlargement is not a contra-indication.

During the period 1951 to 1953, when 108 operations were performed, the operative mortality was 2.8 per cent. for thoracotomy alone, 7.5 per cent. for Operation I and 26.1 per cent. for Operation II. There were only 2 deaths in the 27 patients treated by Operation I during 1954. Of those who have undergone the Beck I operation, 33 patients have survived three months to five years. The pain has been completely relieved or markedly reduced in 28 patients (84.8 per cent.), whilst there has been an increase in ability to work in 26 patients (78.9 per cent.). The Beck II operation has been carried out on 43 patients. There has been complete or partial relief of pain in 38 patients (88.4 per cent.) and an increase in capacity for work in 34 patients (79.1 per cent.).

VALUE OF OPERATION

The results of the Beck I operation are most encouraging. It is a one-stage procedure and the operative mortality is not unduly high considering the seriousness of the condition that is being treated. It must be remembered, however, that owing to the unpredictable nature of the disease it is extremely difficult to make an accurate assessment of the value of these operations for coronary insufficiency. One patient may improve without operation, whereas another patient may go rapidly downhill. Even resort to statistics (which are often so misleading) is of little help. In a series of over 1,700 cases, for example, the duration of life after the onset of severe coronary symptoms was estimated at 3.7 years, whereas in another series of similar patients the duration of life was very much longer—73 per cent. were alive after 4 years and 38 per cent. after 10 years. From these figures it can be seen that the outlook is very variable³. Although the long-term results of the Beck I operation will not be known for a number of years, it can at least be said that the operation has been shown to be based on sound physiological principles and that it has proved to be of value in the experimental animal. The late results of the operation will be awaited with interest.

Acknowledgment

The author wishes to thank Mr. N. K. Harrison for the two illustrations.

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A NOTE: WINTER 1889-90

by DR. F. PARKES WEBER

THIS WINTER was remarkable for the influenza epidemic, that attacked almost everybody about Christmas time. I was senior House surgeon for Sir William Savoury and was privileged in having some splendid men as dressers to help me. One named 'Long' West to distinguish him from other Wests, is accidentally represented on a photograph that I possess of the house staff, sitting around the fountain. West had sailed to America and the West Indies under his father, a sea captain in the old days, when long nights without any wind had to be filled up sometimes by singing Dibdin's well-known songs of the 'Tom Bowling' type. He often delighted us with his sailor songs and his sailor memories. He was a good man at amateur theatricals, and at the winter theatrical entertainment at the hospital successfully acted a leading part in one of Sheridan's plays, though he had considerable influenza fever at the time. I quite lost sight of West, but in the first world war he distinguished himself by his enthusiastic service in the Territorial Army, when my younger brother, then a staff officer, made his acquaintance in France, where West was wounded.

Another dresser, a great friend of West, was Bruce Seaton. His services to me were invaluable. How well I remember him holding up a leg, while I was applying a plaster bandage, uncomplaining, though he must have felt as if his back was breaking. He himself was always ready, and on one occasion I remember his calling me to see a case in the ward, when I was writing out some-

thing in my room. I said 'Just one jiff.' He said 'I do really believe that on the last day, when you are finally called away, you will say, "Just one jiff".' He was a patriotic member of the London Scottish Volunteer Corps, and once the door of my study room was suddenly pushed open and in marched Seaton in full uniform, playing the bagpipes. He entered the Indian Medical Service and finally succeeded to a very old baronetcy.

Another incident in my memory is a visit from L. A. Lawrence, a former house surgeon of Sir William Savoury. He was, like I, a collector of old coins, and he astonished me by showing me a silver penny issued by a Baron named Eustace. Coins of Eustace were well known, and were generally believed to have been issued by Eustace, the son of King Stephan, but the specimen shown me by Lawrence had the legend: EUSTACIUS FILIUS IOANNIS and was clearly issued by Eustace Fitzjohn, a well-known baron at the time of Stephan and Mathilda. Lawrence afterwards presented his specimen to the British Museum. It still remains unique, but has, I believe, made all the Eustace pennies to be attributed to Eustace Fitzjohn, instead of to Eustace Fitzstephan. There is, I understand, no doubt as to Lawrence's specimen being genuine.

Another member of the house staff on the photograph which I mentioned is Henry Huxley, one of the sons of Thomas Henry Huxley. I afterwards met Dr. Henry Huxley in consultation on a most remarkable case. The patient was the young Count Waldstein, representative of the old Waldstein family, of which Wallenstein, the famous general of the Thirty Years War, was a member, though he preferred to be called Wallenstein, instead of Waldstein. The young Count Waldstein was living in London under the watchful eyes of the Austro-Hungarian Embassy, when he developed what seemed to be influenza pneumonia. The Embassy asked me to look after him. When I arrived I met Dr. Henry Huxley, who had been sent by the patient's mother. She, after the death of her husband, had married an English general and was living with him on the French Riviera. Huxley and I agreed to look after him together, but we asked the President of The Royal College of Physicians, Sir Richard Douglas Powell, to help us. After a little time the signs at the lung bases slowly cleared up, and following a period of convalescence the patient accep-

ted an invitation to go to India as the guest of one of the rich Indian Princes. Apparently he caught malaria in India and was sent to one of the hill stations, but failed to respond to treatment and died. A full post-mortem examination was made, not only for the sake of his mother and stepfather, but also on account of some London Insurance Companies, in which his life was heavily insured. Fibro-caseous disease of the supra-

renal capsules was discovered and the case was regarded as one of Addison's disease, in which pigmentation was not as yet a prominent feature. A full account was sent to all those interested in the matter, including Sir Richard Douglas Powell and the North British Insurance Company, of which I was an examiner. I was shown the document, although I myself knew nothing of the patient's life having been insured.

MEDICAL EDUCATION IN VICTORIA

by SURGEON LIEUTENANT R. J. KNIGHT, R.N.

RECENTLY I was lucky enough to spend six weeks in Australia. The Medical Superintendent of the Royal Melbourne Hospital, Dr. P. N. O'Donnell, and the Director of Anaesthesia, Dr. Norman R. James, were kind enough to attach me, unpaid, to the anaesthetic department for some four weeks. Most of the time I was not on the medical register of the State of Victoria, so I had no responsibilities. For ten days I was a registered practitioner and was so allowed to give anaesthetics instead of just watching. While I was there I noticed some differences and many similarities between the Royal Melbourne and Bart's. Both are great teaching hospitals known the world over. But we at Bart's know very little of Australian medicine and I hope that this article will be able to do a little to correct this. Of course only my own views are expressed here. I can only give an account of what I understood from conversation with the doctors I met. I may have missed the point more than once. If so, I hope my Australian friends will forgive me and point out my errors.

The medical course at Melbourne starts with three years at the University covering the preclinical subjects. During these years there are occasional lectures at the hospitals. Then the students have the choice of various hospitals, the Royal Melbourne and the Alfred Hospital among them, for their clinical work. They remain members of the university and have some lectures there,

though most of their time is spent in the hospitals. The students have a less important part in the running of the hospital than at Bart's. I heard two surgeons discussing the proposal that students should spend an extra two afternoons in the surgical wards each week. Both of them could see no benefit from it as there 'would not be enough work to keep the students interested.' I remembered to keep my mouth shut for once and did not start asking the questions that I was itching to ask. The greatest difference between the two hospitals was that I only saw four students in the theatres in the whole four weeks, and they were doing their anaesthetic course. Unlike Bart's, the students are not wanted in the theatres, and so the H.S. when newly appointed is in the same clueless state about the surgeon's next move as is the first time dresser at Bart's. The teaching is spread out and not concentrated into our three-month firms. The ground covered in a year is about the same, but medicine, surgery and other subjects have all been taught each week. This system probably gives a better understanding of the interdigitation of the various specialities than our method. It does mean that the student cannot develop the same interest in, nor pay so much attention to, his individual patients as at Bart's. He is not expected to do dressing nor to take blood, which are both responsibilities of the nursing staff. The students have a long summer vacation over Christmas. There are none in the hospital for about six weeks. That, of course, means that they do not miss

lectures by going on holiday as often happens at Bart's.

The Royal Melbourne Hospital, which was due for rebuilding when the war broke out, was built by the American Forces. When they had finished with it the hospital was handed back to the Royal Melbourne Hospital Committee of Management. It is the third Royal Melbourne Hospital and a very fine ten-storeyed building (Fig. 1). The plan is a cross of Lorraine without the top-most vertical section. The Nurses' Home is at one side and the Residents' Quarters are behind. It is all a great deal more compact than Bart's and situated in a much better setting. The wards are divided into four, eight or sixteen bed rooms with glass partitions so that there are no more than four beds in each section. A ward will have



Fig. 1—The Royal Melbourne Hospital

some rooms for men and others for women. While I was there curtains were being fitted round some of the beds, like those that have been up for some years in Bart's. I cannot comment on the running of the wards, as I did no more than poke my nose into an inhabited ward. Because of the rooms, it must be very difficult to keep an eye on more than half the patients in a ward, unless you can see round corners. Just to sight all the patients at once needs three or four people. This extra call on nursing power is the big drawback to small wards, desirable though they are from the patient's point of view. They need more night nurses than big wards for the same degree of patients' safety. Snell (*Lancet* 1956 ii 1202) found an accident rate among the patients of a general hospital group of approximately 1.8% over two years.

He only considered those accidents 'recorded in sufficient detail for present purposes' which was an analysis of causes of accidents. One of his recommendations to reduce patients' accidents was 'Careful attention to patients' excretory needs by the nursing staff.' This is easier in an open ward hospital like Bart's, than in those with small wards. A commentary on the different systems of medical practice in Australia and England is provided in the 1955-1956 Annual Report of the Royal Melbourne Hospital. 110 medical staff, of a status corresponding to 'consultant' in England, are listed. This is for a hospital of 612 beds. Twelve of these senior men are salaried, the rest are honorary. Including clinical assistants, many of whom are general practitioners, there were just over 300 honoraries, 29 of whom were consultants retired from active hospital practice. This large number comes, I believe, from the competitive struggle in specialist practice, which no longer is as profitable as it was, and so men are less willing to donate large portions of their time for hospital work.

In September, 1955, the first professors of Medicine and Surgery in the University of Melbourne were appointed. They have beds in the Royal Melbourne Hospital and in the Alfred Hospital. I met Professor Ewing, who is shown operating in Fig. 2.

The Alfred Hospital has never been completely rebuilt, it has just grown. The block that was built just before the war is attached to the old buildings. A block containing the new kitchens is as far as the post-war money has gone in new buildings, though much has been modernised. While I was there an endocrine ward and laboratory were being completed in what had been a ward. It is a friendly rabbit warren of a place and very easy to get lost in.

The standard required to pass the final examination in the University of Melbourne, which is the only medical school in Victoria, is high. I was privileged to attend a discussion by a group of final year students, with a pathologist asking questions, of a case report and the post-mortem findings. Much of what they were expected to know had either not been learnt or had been forgotten by me. When the young man or woman has qualified there is no legal obligation to serve a year in a hospital as there is in this country, but most do. A rough outline of the system at the Royal Melbourne is that the

housemen are appointed for a year. There is only one qualifying examination a year. During their year on the 'House' they do three months of surgery and of medicine, a month of anaesthetics, two months of casualty and three months of other departments. Some people might say that this rotating leads to a superficial knowledge of their subjects, but the results quite definitely justify the system. About half the Housemen do a Senior House Physician or Surgeon job, which lasts another year. There are three Resident Surgical Officers and two Resident Medical Officers who correspond to our registrars.

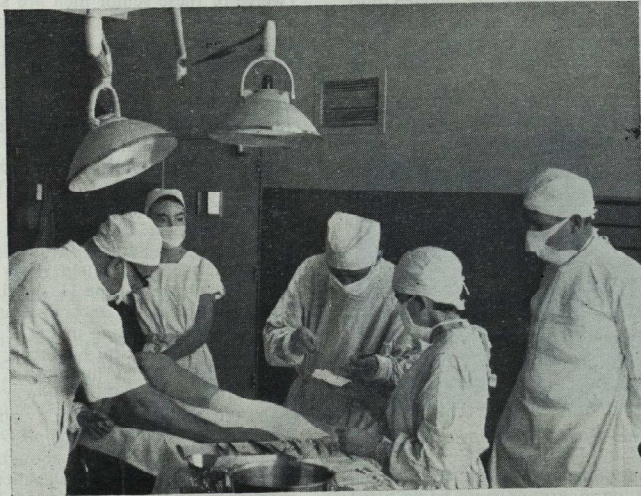


Fig. 2 — Professor Ewing operates

During the time that the junior residents are working in the anaesthetic department they are only allowed to give open ether without supervision. This is the only anaesthetic technique that the students are taught. In England this seems strange, but one must remember that outside the capital cities, where about three-quarters of the population is concentrated, there are, by English standards, very few large towns, and even fewer which can support specialist anaesthetists. This means that many anaesthetics have to be given by general practitioners. Add to this the cost of anaesthetic machines, gases and their transport, the remoteness of many doctors who may spend their working lives

many miles from the next doctor, the dangers inherent in occasional anaesthetics given by an inexperienced man, it is obvious then that the teaching of open ether becomes a very wise insurance. During their time in the department the residents are taught the more elegant methods in common use, but may only use them under supervision.

Though the standard of knowledge required by the examiners is the same in the two countries, the methods and emphasis of the teaching are different. Australia has no health service with its rigid division between hospital and general practice. Only in the capital cities can a doctor earn his living at

a speciality alone. So the emphasis is on general practice. But I believe that the practical techniques are learnt, even more than in this country, after qualification. The whole aim seems to me to be to produce a safe and knowledgeable general practitioner who can practise if necessary without the backing of hospital specialists. This our system does not do, though Bart's gets nearer to it than some of the Provincial Medical Schools. Perhaps their system is not as good as ours, but it is workable and with the size and population of Australia, it is the only possible system; with G.P.s running many of the hospitals.

PULMONARY FUNCTION TESTS AND THEIR CLINICAL APPLICATIONS

by R. MARSHALL.

FUNCTION TESTS have played, for many years, an important part in the investigation and management of diseases of the urinary and hepatic systems, but tests of respiratory function have been developed to any appreciable extent only during the last 15 years. There are several reasons for this difference between the investigation of hepatic or renal function and the investigation of pulmonary function. The patient's history, the clinical examination and plain radiographs give a far fuller picture of respiratory disease than they do of renal or hepatic disease, and in many patients with respiratory disease there is no need for further investigation. In the past a chest physician was mainly concerned with the cure of acute or chronic chest infections such as pneumonia or tuberculosis. Now acute chest infections are more easily controlled and tuberculosis is becoming less frequent and, on the whole, more easily managed. Chest disease is now more often due to the other scourges of our ageing, tobacco-addicted and soot-breathing population, namely chronic bronchitis, emphysema and carcinoma of the bronchus. Medical treatment has as yet made no great progress against these diseases. Chronic bronchitis and emphysema both produce effects on pulmonary function which may be out of proportion to findings on clinical or x-ray examination and the lung function in carcinoma of the bronchus is often of importance if surgical treatment is contemplated. Now that acute infections play a smaller part in chest medicine, an interesting but less common group of chest diseases, such as sarcoidosis and other infiltrative diseases has been thrown into greater prominence. The shift in the type of chest disease has therefore placed more emphasis on the importance of lung function in the diagnosis and management of lung diseases.

Because of the time and equipment

required to carry out a full investigation of pulmonary function, laboratories equipped to perform these tests are not numerous. Such a laboratory is of most value in a chest hospital or in association with a department of thoracic surgery. The purpose of the present article is to outline some of the pulmonary function tests which are available and to indicate the uses and limitations of these tests.

PULMONARY FUNCTION TESTS

1. **Lung Volumes.** The subdivisions of the total lung volume are shown in fig. 1. A group of American respiratory physiologists agreed to standardise this nomenclature for the subdivisions and most British respiratory physiologists have followed suit. For practical purposes these lung volumes can be considered in two groups; first, the subdivisions of the vital capacity which can be measured by the use of an ordinary spirometer and secondly, those which require more complicated apparatus for their measurement. Into this latter group fall the functional residual capacity and the residual volume. These volumes cannot be completely expired from the lung and methods capable of measuring the gases whilst still in the lung have to be used. Several techniques exist for measuring this remaining gas in the lung, but the simplest method, the helium dilution method, depends on mixing helium in a closed circuit with the gas in the lungs until the gas in the circuit and in the lungs are in equilibrium. The volume of gas in the lungs can be calculated if the initial volume of the circuit, the initial concentration of helium and the final concentration of helium are known. This method is possible because helium is almost insoluble in lung tissues and blood and it is therefore confined to the gas space of the

and that due to a shunt of venous blood into the arterial system.

Failure to eliminate carbon dioxide is common in patients with emphysema and is also liable to occur in patients during anaesthesia. In subjects with normal lungs CO₂ retention can be detected by analysis of the alveolar air but in emphysema the composition of the alveolar air is not uniform and the CO₂ tension of the arterial blood must be measured.

6. The Mechanics of Breathing. The mechanical resistances of the lungs which have to be overcome during breathing are the elastic resistance of the lungs and the non-elastic or frictional resistance to lung movement. The elastic resistance, or stiffness of the lungs, is measured as the pressure in cm.H₂O required to distend the lungs by 1 litre. This is sometimes expressed as its reciprocal, the number of litres that the lungs are distended by 1 cm.H₂O increase in pressure; this is called the compliance of the lungs. Stiff lungs may cause difficulty in breathing because of the muscular work required to distend them. Increased stiffness of the lungs is often found in mitral stenosis, congestive heart failure and pulmonary fibrosis.

The frictional resistance to lung movement is due mainly to the resistance to movement of air through the airways and is therefore considerably increased in asthma. Frictional resistance in the lung tissues themselves usually contributes only a small part of the total non-elastic resistance.

Measurement of the mechanical properties of the lungs requires simultaneous measurement of the force exerted on the lungs, that is the intra-pleural pressure, and the rate of air flow and volume change produced. During recent years it has been possible to make these measurements in patients by use of the intra-oesophageal pressure instead of the intra-pleural pressure. A thin walled balloon situated in the lower one-third of the oesophagus can be used to record pressure fluctuations which have been shown to be almost identical with the fluctuations of intra-pleural pressure which occur during breathing. The non-elastic resistance of the lungs measured by these methods is measured in absolute units and is not dependent upon the co-operation of the subject so it provides the ideal measurement for assessing the effect of treatment on air flow resistance.

7. Bronchspirometry. This is the technique by which the respiration of each lung can be observed separately. A special double lumen catheter is introduced into the trachea under local anaesthesia. One branch of the catheter lies in the left main bronchus which is sealed by an inflatable cuff around this branch. The other lumen of the catheter connects with the trachea above the cuff and thus receives air from the right lung. Escape of air around the catheter is prevented by a second inflatable cuff surrounding the catheter in the trachea. The catheter can be introduced 'blind,' but it is advisable to check the position by x-rays and to ensure that the cuffs when inflated are not obstructing any branches of the bronchi. Care must also be taken to avoid leaks from one lung to the other or from either lung to the outside air. The measurements usually made during bronchspirometry are the relative ventilation of the two lungs, the vital capacities and the oxygen uptake. Measurements of the functional residual capacity, the lung mechanics and the diffusing capacity of each lung are also possible. These measurements show the amount contributed by each lung towards the total ventilation and oxygen uptake so that the effect on the pulmonary reserve of the removal of one lung can be assessed.

APPLICATIONS

The most useful applications of pulmonary function tests can be considered in the following groups:—

(a) When the diagnosis of the disease is known, e.g., asthma, for the objective assessment of treatment. Pulmonary function tests may also reveal the existence of other lung disease.

(b) In heart disease they may indicate to what extent the dyspnoea is due to primary respiratory disease, e.g., in elderly patients with heart disease dyspnoea may be due more to emphysema than to heart disease. Cyanosis due to respiratory disease can be differentiated from that due to a shunt of venous blood.

(c) In dyspnoea of unknown origin. Measurements of pulmonary function may detect the presence of respiratory disease. The use of a battery of tests, measuring all aspects of pulmonary function, may often give information which is of diagnostic value in difficult cases.

(d) The objective assessment of exercise tolerance and the differentiation of effort syndrome from respiratory disease.

(e) For better understanding of the changes in function which occur in respiratory disease, e.g., the cause of the rapid shallow breathing in pneumonia.

(f) Observations on the progress of lesions of pulmonary function in relation to the natural history of respiratory diseases.

(g) Assessment of the fitness of patients to withstand anaesthesia or the removal of lung tissue.

It must be stressed that pulmonary function tests are solely measures of function. The place of pulmonary function tests in medicine may be illustrated by two examples of common pulmonary diseases. Consider first a patient with tuberculosis. In such a patient the diagnosis is bacteriological and the extent of the lesion can be determined radiologically. Pulmonary function tests are of little value in a young patient with minimal lesions, but if surgery is contemplated, particularly in the older age groups, pulmonary function tests will be of value in estimating the respiratory reserve and the reduction in lung function to be expected from the removal of lung tissue. Secondly, in asthma, the diagnosis is made clinically from the history and the examina-

tion of the patient, but pulmonary function tests can help by objective assessment of treatment and by distinguishing bronchial asthma from emphysema which is likely to be resistant to bronchodilator drugs.

It is difficult, in a few lines, to give normal values for the results of pulmonary function tests. Normal values for all tests depend on the size of the patient or upon the size of his lungs and in some instances are also affected by age, sex, height and weight so that normal values have to be calculated for each subject. Tests, such as the maximum breathing capacity and the forced expiratory volume, in which high flow rates are reached, are also affected by the mechanical resistance of the apparatus used and normal values should be stated for each particular apparatus.

For a more complete and readable account of respiratory physiology and the application of pulmonary function tests the book 'The Lung' by Comroe et al. is recommended.

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REGATTA

THE Sailing Club Regatta was held this year in very kind weather. The Clubhouse was filled to capacity every night—indeed, some of the ladies slept in the Royal Burnham Yacht Club.

The sailing on Wednesday started at an early hour, several eager sailors having spent Tuesday night in the Clubhouse. The wind freshened considerably during the day, and sailing was stopped for that afternoon as the N.W. wind and a strong ebb tide had knocked up quite a steep sea; however, everyone had a chance to sail in the late afternoon and evening. There was no racing on that day.

On Thursday morning and afternoon, two heats of the Commodore's Trophy were sailed off, there being a steady four-knot wind throughout the day. Those who did

not sail in the U.H.S.C.'s 1 footers either went out with the Secretary in the twelve square metre sharpie 'Halloween,' or went cruising in two sixteen-footers with cut-down rig which were owned by the local yacht chandlers; it is said that one of the sights of the day was one of these boats tethered to the bows of a yacht with a cursing crew trying to free her rigging from the yacht's bowsprit. On Thursday, Jane Chambers won a substantial fortune by giving an impromptu aquatic display.

Friday started as a dead calm in the sweltering heat of an unclouded sky. The Ladies' Race was raced in the morning, a provident land breeze springing to life at the same time as the race started. This race was won by Bethan Thomas. The secretary had taken a sharpie and an eagle-eyed crew which in-

cluded Mr. Alment and John Dawson, and sailed upstream to look for Amber, one of the U.H.S.C. dinghies which had vanished overnight, trailing 3 fathoms of rope and an anchor. Needless to say, this search party found nothing, whereas those racing found her downstream and she was collected during the afternoon.

The final of the Commodore's Trophy was raced during the afternoon and was won by David Welch, with Brian Pitcock second, and Tony Ellison third.

The dinner, which took place in the evening, was attended by about 20 people, and the prizes were presented by Mr. Alment, the Rear Commodore.

Due to the good support, the lovely weather and brilliant catering by a team headed by Barbara Barnard, this year's regatta can fairly be counted amongst the successful events of the summer, but had the weather been more difficult, a different picture might well have been presented, as the general standard of helmsmanship and boat knowledge was appallingly low and it was this factor which caused us to cancel the seamanship race. Unless support for the U.H.S.C. is more enthusiastic and unless more experience is gained in the handling of the firefly on the Welsh Harp, or by more frequent outings at Burnham, there will be no reasonable helmsmen left in the hospital, and the regatta will become a farce in anything but light weather.

GOLF: THE STAFF MATCH

ONCE a year, soon after View Day, numbers of people are to be seen converging on the square, from places as divergent as the Skins Department and that of Radiotherapy, carrying all the cumbersome impedimenta of the golfer's art for the Match between the Staff and Students.

This year there were signs that the match had started long before a ball had been struck as many of the Staff teed off with the 'I'm starting from Harley Street—gambit—surely with at least one extra bisque?

In brilliant sunshine we set off for Denham, and after many excursions to avoid

If this state of affairs came to pass, we would have to drop out of Inter-Hospital racing, in which we are still a formidable force. The subscription to the U.H.S.C. is only £1 per annum, extras being paid by the Sailing Club. Those interested should contact Robin Ridsdill-Smith (Clinical) or David Welch (Preclinical).

Results

Commodore's Trophy

Heat 1—

- | | | |
|---------------|-----|---------------|
| 1. Amber | ... | D. Welch |
| 2. Turquoise | ... | A. Ellison |
| 3. Jet | ... | B. Pitcock |
| 4. Tourmaline | ... | M. Bonnemeyer |
| 5. Garnet | ... | J. Neely |

Heat 2—

- | | | |
|---------------|-----|-------------------|
| 1. Jet | ... | Miss W. Donaldson |
| 2. Tourmaline | ... | M. Harlan |
| 3. Amber | ... | B. Richards |
| 4. Garnet | ... | L. Farrow |
| 5. Jade | ... | H. Richards |
| 6. Turquoise | ... | D. Wells |

Final—

- | | | |
|---------------|-----|---------------|
| 1. D. Welch | ... | in Jade |
| 2. Pitcock | ... | in Tourmaline |
| 3. A. Ellison | ... | in Jet |
- Retired: Miss W. Donaldson, L. Farrow.

Ladies' Race

- | | | |
|---------------|-----|-------------------|
| 1. Turquoise | ... | Miss B. Thomas |
| 2. Jade | ... | Miss J. Chambers |
| 3. Garnet | ... | Miss W. Donaldson |
| 4. Jet | ... | Miss M. Coakley |
| 5. Tourmaline | ... | Miss B. Barnard |

traffic delays arrived at the course. Luncheon having been taken and the matches arranged, the business of the day began. This year the Staff were to receive two bisques, having carried all before them with three last year.

With the first drives accomplished (for the most part successfully), fourteen matches were soon in progress. There was much bisquing on the earlier holes and everyone was enjoying the congenial surroundings very much.

Denham is a charming course; the fairways, of generous width and kindly length, have a splendid variety about them and a

freshness not surpassed even by that of the geraniums in the Square the week before! Under a warm sun the battle raged all afternoon, but by teatime the result was clear—next year the Staff are to have three bisques again. However, some matches were close and the Staff had some convincing victories. Dr. Graham had worn down Dobson by sheer accuracy from the tee, and on the green. Dr. Hayward, playing his annual game of golf, had corrected any arrhythmias him swing might have had in previous years to beat Mulcahy, and Mr. Hankey and Dr. Hanbury each had good wins against Fuge and Sugden.

After tea, nine holes of foursomes were played and in these the honours were equal. It was a highly satisfactory result for all concerned.

Results:—

- Dr. G. Graham bt. J. C. Dobson.
 Dr. G. W. Hayward bt. Dr. P. D. Mulcahy.
 Mr. G. T. Hankey bt. C. A. Fuge.
 Dr. Young halved with P. Drinkwater.
 Dr. Brewer lost to G. F. Abercrombie.
 Dr. P. Borrie lost to R. C. G. Hughes.
 Dr. Kemp-Harper lost to C. G. Stephenson.
 Mr. I. G. Williams lost to C. G. Stephenson.
 Dr. J. P. D. Thomas lost to A. W. Galbraith.
 Dr. A. Parrish lost to E. J. Batterham.
 Dr. Hanbury bt. J. C. Sugden.
 Dr. McIlroy lost to M. J. Scorer.
 Dr. J. Morrell lost to J. McKenzie.
 Dr. Davidson lost to Dr. H. J. O. White.

We are most grateful to all the members of the Staff who provided us so generously with all the comforts which the Denham Golf Club had to offer.

SPORTS NEWS

VIEWPOINT

ALTHOUGH at the time of writing one may view such sporting events as the Regatta at Burnham, Sports Day and the semi-final of the Cricket Cup with interest and anticipation, such is the time-lag in the production of this magazine that by the middle of July any observations will be well out of date. An innovation in the sports news is the printing of cricket scores. This we feel will give a more personal atmosphere to what otherwise tends to become an anonymous diatribe with the occasional star picked out. The Cricket Club are to be congratulated on their double success over the London Hospital in both the Senior and Junior sections of the Cup. One may thus derive some sense of retribution from previous defeats at their hands.

The Sailing Club, by means of intensive publicity and goading by its more active members, have received their dividends in the form of a strong turn-out of hands in their Regatta—other clubs please note!

By organizing a dance in College Hall, the Rugby Club have shown that they are by no means dormant in the summer months. In this sphere they are all-powerful because of the large following which they enjoy and

they are to be congratulated on having provided some initiative. Other clubs have often been criticised for not providing summer dances, but as one can gather from any one of the treasurers, similar efforts in previous years made by the less well patronised clubs have met with dismal financial failure, irrespective of the social success they might have been at the time.

At the Golf Club's Annual Match with the Staff at Denham, it was remarked that several former illustrious golfers on the Staff were not present. Although academic reasons might have been responsible, it is to be hoped that the Staff will be able to continue to support the annual matches with whichever club they favour. Student-Staff matches are usually regarded as important events during which social intercourse may be indulged.

A new scene has been dominating the peace of the lawn at Charterhouse. Croquet seems to have taken over the place of Miniature golf. Could it be that we are witnessing the birth of a new club in the hospital? Perhaps someone with a knowledge of the real rules of the game will soon come forward to found a Croquet Club.

CRICKET CLUB

The following gentlemen have been awarded Honours:—

J. B. Nichols
H. P. H. Bower
A. P. Marks.

CUP MATCH (SECOND ROUND)

St. Bartholomew's v The London Hospital

Played at Chislehurst on May 22nd and won by six wickets.

Having been drawn a bye in the first round, the hospital faced the London with several scores in other athletic fields to settle. In spite of a sharp shower, play started on time with the London winning the toss and choosing to bat on a damp but innocuous wicket.

The Hospital opened with Garrod and McKenzie, and had an immediate success when Nicholson took a catch behind the wicket off Garrod's second ball. Further accurate bowling saw the London wickets falling steadily, and in spite of some sturdy blows from the tailenders their innings closed at 167. J. Nichols had bowled with intelligence and without much luck, and well deserved his four wickets, while it was heartening to see Whitworth bowling at something like his old pace. The bowlers were backed up by fielding which although workmanlike was not adequate for further cup ties.

Bart's had thus 168 runs to make to win, on a very easy paced wicket, and this they achieved for the loss of four wickets. Nichols crowned a most successful day's cricket with an unbeaten 65 full of delightful strokes, and Whitworth was unfortunate to be run out after looking well set.

Although this game resulted in a win, as a spectacle there was little about which to enthuse. The hospital must try and maintain a firmer grip on the game, especially when the opposition lower order batsmen are hitting the ball hard and tending to get on top. The first Cup game against the Middlesex was almost lost in this fashion, and if the hospital are to proceed further in the Competition this must be rectified.

London Hospital

H. J. Lloyd, c Nicholson, b Garrod	0
J. Fosh, b Whitworth	11
A. J. Simmonds, b Nichols	27
G. Hawke, b Whitworth	36
R. Gaertner, c Garrod, b Whitworth	13
W. H. Marshall, b Nichols	2
A. Dastur, b Nichols	14
A. C. Fernando, b Harvey	27
T. McEwan, not out	20
M. Kettle, b Nichols	1
N. Gibbons, run out	1
Extras	9

167

Bowling

A. Garrod	12-5-13-1
J. C. McKenzie	4-2-14-0
A. Whitworth	11-6-19-3
J. B. Nichols	18-1-62-4
J. Harvey	13-1-36-1
R. J. Mitchell	3-0-9-0

Bart's

J. E. Stark, c Fosh, b McEwan	35
W. H. Pagan, b Kettle	6
J. D. Abell, st Hawke, b Gibbons	11
A. Whitworth, run out	32
J. B. Nichols, not out	65
J. Harvey, not out	10
J. R. Nicholson, R. J. Mitchell, E. J. Batterham, J. C. McKenzie, A. Garrod, did not bat.	
Extras	9

168

Bowling

M. Kettle	15-4-33-1
T. McEwan	18-8-40-1
A. J. Simmonds	15-2-47-0
N. Gibbons	9-2-27-1
R. Gaertner	2-0-8-0
A. C. Fernando	2-0-5-0

1st XI v U.C.H.

Played at Chislehurst on May 4th. Match drawn. Bart's won the toss and batted first in ideal conditions, but got off to a somewhat slow start. However, Whitworth was able to declare at 171 for 6 wickets, leaving U.C.H. 2½ hours to get the runs. The Bart's innings was dominated by a splendid aggressive knock by Whitworth, who with Mitchell was able to put on 88 runs for the fifth wicket. Harvey and Garrod opened the Bart's attack, and met with early successes. U.C.H. soon fell behind the clock and the match ended in a draw.

Bart's

W. Pagan, c Barnett, b Lewis	25
E. J. Batterham, c and b Lewis	8
D. Abell, b Ridley	17
J. Harvey, c Barnett, b Lewis	13
A. Whitworth, c Ridley, b Toms	69
J. Tabert, b Ridley	2
R. J. Mitchell, not out	29
M. Orr, J. C. McKenzie, A. Anderson, A. Garrod, did not bat.	
Extras	8

171

Bowling

A. C. W. Lewis	23-3-55-3
M. Ridley	14-2-47-2
J. Cummins	12-1-49-0
J. Ayling	4-0-12-0

U.C.H.

145-7

(M. Barnett 72, K. Harrison 30)

Bowling

A. Garrod	10-1-24-1
J. Harvey	13-2-33-2
J. C. McKenzie	14-4-28-2
R. J. Mitchell	10-0-41-2

1st XI v Putney Eccentrics

Played at Chislehurst on May 5th, 1957, and won by Putney by 109 runs.

Although Bart's got off to a good start by taking the first three Putney wickets for 18 runs, lapses of fielding combined with aggressive middle-order batting by Putney enabled the mto score 276 all

SHOOTING

Two teams of four were entered for the Inter-hospitals competition for the Armitage Cup at Bisleys on Saturday, May 18th. Despite the effects of the View-day ball the previous evening the results were encouraging.

The 'A' Team won the trophy by a clear margin from Guy's 'A' who were placed second. Of the 'B' teams competing, Bart's 'B' tied with Guy's 'B' but were conceded first place on a 'count-out'.

The two highest individual scores at the meeting were returned by Bart's men who carried off all but one of the trophies for which they competed.

The match was fired over 300x and 600x in bright showery weather with a variable cross-wind which at times proved tricky. Apart from one brief shower at 600x, however, conditions were as good as could be expected. The 'A' team came back to 600x with a healthy lead and this was increased slightly but comfortably at the longer range.

Scores were as follows:—

'A' Team	300x	600x	Aggte.
G. R. Hobday (Capt.)	34	33	67
R. P. Ellis	34	31	65
R. W. Gabriel	31	30	61
G. F. Abercrombie	32	29	61
Total	131	123	254

(Max. possible score=280.
Guy's 'A' 247, St. Thomas's 243)

'B' Team

'B' Team	300x	600x	Aggte.
R. Miller	28	30	58
R. B. Church	28	30	58
J. R. Parker	29	29	58
T. S. Matthews	31	25	56

Total ... 116 114 230
Tankard for highest individual aggregate at 300x and 600x:—

G. R. Hobday ... 67/70

Tankard for highest individual score at 300x:—

R. P. Ellis ... 34/35

(Awarded on 'count-out' ending 45555)

This result is gratifying and is indicative of the improved standard of the club's shooting in the past six months.

In the Hospitals Smallbore Winter League the club was placed fourth, which, although encouraging, might have been higher but for a rather shaky start to the series. It is hoped that next winter will return the cup to the Hospital. Teams for the league matches were drawn from some 10 members of the club and of these G. R. Hobday, J. D. Hobday and G. F. Abercrombie were invited to fire on behalf of the United Hospitals.

Within the club a monthly spoon and medal are awarded to the winner and 'runner-up' in a handicap competition, where the handicap is adjusted to favour the general improvement in an individual's shooting relative to his previous month's showing. Such competitions provide a stimulus to the newer and less experienced members of the club and are made possible by the kindness of Dr. G. E. Francis in his gift of the prizes. Results for the first part of the year are as follows:—

out. Bart's were left three hours to make the runs and in spite of a brisk start and a stubborn defensive 59 by Abell, were all out half an hour before time. The middle order batsmen were out trying to force the pace, while the tail was not strong enough to last out time. A rather disappointing but not discreditable result.

Putney

276

(Chappell 75, Emmett 113, Bartlett 56)

Bowling

A. Garrod	5-0-24-2
J. Harvey	17-1-65-1
A. Whitworth	9-1-50-3
J. Nichols	11-2-58-1
R. Mitchell	13-3-52-2
R. Pilkington	2-0-16-0

Bart's

W. Pagan, c sub b Chappell	29
R. J. Mitchell, c Merredew, b Chappell	17
D. Abell, c Pook, b Armstrong	59
J. B. Nichols, c Ambler, b Chappell	0
A. Whitworth, b Redford	2
H. B. Ross, b Pook	13
J. Harvey, c Ambler, b Armstrong	11
R. Pilkington, c Ambler, b Chappell	16
J. Tabert, b Armstrong	8
M. Orr, not out	0
A. Garrod, b Chappell	0
Extras	12

167

Bowling

Redford	12-1-41-1
Chappell	13-4-41-5
Pook	6-1-19-1
Armstrong	10-2-38-3
Merredew	3-0-16-0

1st XI v Radcliffe Infirmary

Played at Oxford on May 26th, and won by 72 runs.

This game provided a delightful and informal contrast to the previous day's disaster. Bart's batted first on a more than lively wicket, and with some rustic strokes from the middle order batsmen scored 146 quick runs. The Radcliffe never recovered from a disastrous start, losing three wickets for one run, and were all out half an hour before time for 74.

Bart's

J. E. Stark, c Porter, b Denborough	9
W. H. Pagan, c Pashmore, b Currey	9
J. D. Abell, lbw, b Denborough	0
E. J. Batterham, b Currey	0
J. A. Harvey, c Burgess, b Currey	20
R. J. Mitchell, st Barham, b Scott	20
B. Richards, run out	22
R. B. Harcourt, run out	24
J. Tabert, b Scott	0
A. Garrod, run out	11
J. Martin, not out	12
Extras	19

146

Radcliffe Infirmary

74

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* Reprint received and herewith gratefully acknowledged. Please address this material to the Librarian.

BOOK REVIEWS

THE PRINCIPLES AND PRACTICE OF DIATHERMY by Brian O. Scott, M.R.C.S., L.R.C.P., D.Phys.Med.

This book gives a very clear, detailed and reasoned description of Diathermy currents, especially those more commonly referred to as 'Short-Wave' diathermy.

Starting with an excellent explanation of the physical principles involved, and going on to describe the apparatus and finally the physiological effects and methods of applying treatment, a complete picture is given of the variety and scope of these treatments.

It would appear that the author habitually uses a machine of low output, as he repeatedly advises the use of narrow spacing between skin and electrode despite the marked surface heating that such a technique produces, on the argument that although wider spacing produces more even heating of the body tissues, the radiation losses are such as to make the total treatment ineffective. Most good machines, contrary to this theory, have sufficient output to compensate for this.

Apart from this minor criticism the book is far in advance of anything yet published on this subject. It is a most readable and interesting exposition of the whole subject and should be of great use to all students of Physical Medicine or Physiotherapy.

The text is well set out and the diagrams are clear and attractive, divided into short paragraphs with essential points well stressed.

T.W.

A GENERAL HISTORY OF NURSING by L. R. Seymer. Faber & Faber.

The number of nursing books of original scholarship, written in a style that can be justly described as literary, has never been a large one in this or any other country. Mrs. Seymer's name, however, comes readily to mind when nursing authors of academic distinction are sought. Those who heard her give the Florence Nightingale oration at the International Congress of Nurses in Atlantic City ten years ago will not soon forget it.

Her book has been a classic in its field since its publication in 1932, and that a new edition should be needed only three years after the last is an indication of its popularity. It is full of information and easy to read in spite of the formidable nature of the terrain, full of dates and names, that has to be covered. There is a fine bibliography and a good index.

A point that occurs to readers of the history of nursing is how short that history is. Its beginnings in the Pre-Christian era and the first millenium were quite unlike what we mean by nursing today. Washing the feet of lepers has an emotional not a hygienic purpose. Only fifty pages is needed to cover these early centuries. After the Reformation the pace of change begins to quicken, and today the profession is moving rapidly in all countries, even if we are not all agreed as to the direction it should take or the ends at which it should aim.

W. E. HECTOR.

A MANUAL OF HUMAN ANATOMY, Vol. III. Abdomen and Pelvis, by Aitken, J. T., Causey, G., Joseph, J., and Young, J. Z.; Vol. V, Central Nervous System, by Aitken, J. T., Sholl, D. A., and Young, J. Z. E. & S. Livingstone, Ltd., London, 1957.

These two books complete a series of five new dissecting manuals. In both volumes the general pattern of presentation is similar to that in the earlier members of the series, and, as the authors state in their preface, much detail has been omitted. The results have been good in the case of Volume V but, unfortunately, in Volume III as in Volumes I and IV, the effort to condense and simplify has led to a certain laxity of expression.

In Volume III the spleen, for example, is described as "a very vascular organ consisting of lymphoid tissue", and the tributaries of the superior mesenteric vein are said to "correspond with the branches of the artery". Numerous errors have been introduced. Thus, the ilio-inguinal nerve is described as giving branches to the buttock, and the posterior fibres of the internal oblique muscle are stated to be attached to the 7th, 8th and 9th ribs; the descriptions of the greater omentum and transverse mesocolon are inaccurate, and the account of the anal sphincters is poor and misleading. The diagrams are, for the most part, clear and informative, but in one figure the lumbosacral trunk is shown lying along the pelvic brim parallel with the psoas major, and some other figures exhibit minor defects. Instructions for dissection often lose in clarity from over-abbreviation.

Volume V, on the other hand, is the most satisfactory book of the series. Dissection of the spinal cord and brain stem is well correlated with the study of sections, and the instructions for dissection are concise and unambiguous. The book has been written to meet a particular set of circumstances, being based on the course in neurological anatomy at University College. It is, no doubt, ideal for the students of that College but other institutions will not always find it convenient to arrange their courses in precisely the way recommended. This will, in many cases, prove the most important limitation of an otherwise good text-book of practical anatomy.

HALE-WHITE'S MATERIA MEDICA; PHARMACOLOGY & THERAPEUTICS. 30th edition by A. H. Douthwaite. J. & A. Churchill Ltd. 24/-.

'Hale-White' first appeared in 1892 but it is kept up to date by frequent revisions, this being the eleventh to appear since 1931 when Dr. Douthwaite undertook the task. In it drugs in use today are noted, preparations and doses recorded, while for each drug there is an adequate description of its actions and a section on its use in therapeutics. All that is of value in the 1300 pages of the Extra Pharmacopoeia is condensed into 500 pages. This 'bible'—which was not designed to be read from cover to cover—is one into which one dips, for

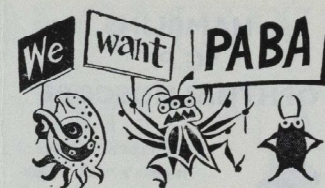
here concisely and cheaply, is the basic information required by qualified and unqualified medical students who wish to learn and refresh.

In its very strength of conciseness must inevitably lie its risk of weakness, for there must be ruthlessness in discarding outworn ideas and in incorporating new facts. Your reviewer's task is difficult therefore when he comes to consider matters of detail for he cannot know if there was purpose in, or sin of, omission. Morphia is rightly said to be contraindicated in conditions of respiratory weakness, but would not the addition of the word 'emphysema' lend point, for many such patients have been too early sent from this world by treatment with morphia? If the answer to this be as the plaintive statement of the examination candidate, 'No time for more' then is it necessary still to state that the use of sodium sulphate in bacillary dysentery 'always of doubtful value, has been superseded'—and is sodium sulphate intravenously still given in cases of suppression of urine?

Your reviewer also takes exception to the sections devoted to calciferol and to heparin. Why are seven lines spent in giving information about events following heparin dosage of from $\frac{1}{2}$ to 1mg. per kilo when it becomes evident that the usual dose is from 2 to 3 mg. per kilo? Are its actions confined to the delaying of clotting? Are the only conditions for which it is used that warrant heavy type, blood transfusion, prevention of post-operative thrombosis and thrombophlebitis migrans? Does its use in coronary thrombosis only aim at the prevention of clot extension or the formation of intra-cardiac thrombus?

THE CYTOLOGY OF EFFUSIONS IN THE PLEURAL, PERICARDIAL AND PERITONEAL CAVITIES. A. I. Spriggs, D.M., M.R.C.P., Heinemann, London, 1957, pp. 67. Price 42/-.

This is a well produced and interesting monograph intended to help in the identification of cells found in pleural, pericardial and peritoneal fluids. The cytology of the serous fluids is often of much diagnostic and prognostic importance especially when malignant disease is suspected, but frequently unsatisfactory techniques prevent the examination being as helpful as it should be. The author employs and gives directions for the preparation of good quality Romanowsky-stained films. These are considered to be the best for cell identification. The cells met with in the various types of effusion are well described and the illustrations, many of which are in colour, are a feature of the book. Haemorrhagic pleurisy is stated to be very seldom tuberculous and a high percentage of lymphocytes and absence of mesothelial ('endothelial') cells are not specific for this type of infection but can also occur in post-pneumonic patients. 'L.E. cells' may be demonstrated in the serous fluids derived from cases of disseminated lupus erythematosus, a condition in which effusions are common. The significance of pleural and peritoneal eosinophilia is discussed and also the cytology in effusions occurring in leukaemia and the reticuloses. In malignant effusions it is only when there is metastatic involvement of the serous

**The Bacterium at the Breakfast Table**

"Eat up your nice flannel," the clothes-moth is credited with saying to her child, "or you won't get any mink."

Bacteria have no mothers. They merely split into two, and it would puzzle even a Freudian to discern a mother-child relationship between the halves. This method of reproduction, besides sparing them many complexes, enables them to eat whatever they like. Nature, however, is a universal mother, and one of the old school; she sees to it that they eat the right things, or else.

I need hardly remind you that the bacteria which cause disease are very fond of battenning on the likes of you and me. And what is it, you may well ask, that they find so delicious?

Well, one of the things, which it seems we keep always on the menu, is known to biochemists by the insufferable name of . . .

If only we had space for the rest of this instructive medical essay, which appeared originally in The Times, you could read it here. What we have got, however, is a collection of these diverting articles from the same celebrated pen. Would you like a copy of "The Proving of Podalirius"? Just drop us a card at the address below.

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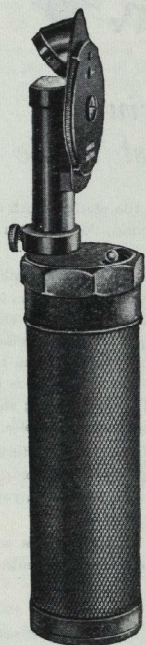
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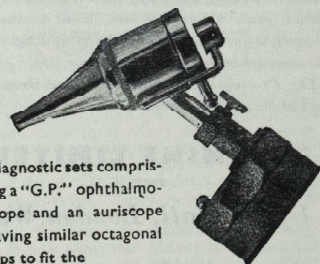
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St. B.H.J. July 1957

membrane, that the characteristic cells are likely to be found. Criteria of malignant cells are defined and a description given of the various types met with. As regards reliability of cytological diagnosis, in the author's series of 103 consecutive cases of malignant pleural or peritoneal effusions 71 per cent. had positive findings and 29 per cent. were 'false negatives.' It is well recognised that some primary sites are likely to give a much higher proportion of positive results than others, e.g. ovarian carcinoma, 92 per cent. In carcinoma of the lung, unfortunately, the results are relatively poor.

The book contains a comprehensive bibliography and an adequate index. It is one of the best monographs dealing with this specialised field of cytology and should be of much value to the clinical pathologist. The only adverse criticism is the high price, due ostensibly to the quality of the microphotographs and coloured plates.

H. F. BREWER.

BOOKS RECEIVED

OUTLINE OF FRACTURES by J. C. Adams, E. & S. Livingstone Ltd., pp. 248. Price 27/6.

PATHOLOGICAL HISTORY by R. F. Ogilvie, E. & S. Livingstone Ltd., pp. 482. Price 52/6.

A TEXTBOOK OF SURGICAL PATHOLOGY by C. F. Illingworth & B. M. Dick, Churchill. Price 63/-.

CLEFT LIP & PALATE by W. G. Holdsworth, 2nd Edition. William Heinemann, pp 187. Price 42/-.

TEXTBOOK OF MEDICINE edited by Sir John Conybeare & W. N. Mann. E. & S. Livingstone, pp. 861. Price 42/-.

SURGERY OF THE ANUS ANAL CANAL AND RECTUM by E. S. R. Hughes. E. & S. Livingstone, pp. 304. Price 50/-.

A MANUAL OF HUMAN ANATOMY by Aitken et al. Vols. III & V, pp. 130. Price 12/6. E. & S. Livingstone Ltd.

RECENT ADVANCES IN ANAESTHESIA AND ANALGESIA by Langton Hewer & J. Alfred Lee. J. & A. Churchill, pp. 295. Price 40/-.

**ST. BARTHOLOMEW'S
HOSPITAL JOURNAL**

Vol. LXI

AUGUST 1957

No. 8

EDITORIAL

DURING THE SUMMER MONTHS, a lull prevails within the hallowed walls of our ancient hospital. For is it unnatural that during the season of long, hot days and brief, cool nights, thoughts are given to the planning of one's holidays, to getting away from it all? A great diversity of ways exists of spending one's fortnight away from the sterile atmosphere of Bart's: the possession of a healthy bank-balance or of indulgent parents are decided advantages in helping one get to distant and exotic places. For those, who even though not genuine devotees of the nautical art of sailing, a fortnight on the 'Broads' with the 'right' sort of company will provide the dividend of an inexhaustible supply of amusing tales which are shared with Machiavellian delight with whoever it is who cares for such tales. The less fortunately endowed spend their fortnight as best as they can. Staff and students alike return in time, some refreshed, some more harassed, to exchange experiences and to compare notes in the theatre or in the Refectory.

The summer editions of the *Journal* likewise undergo a seasonal slump. Circulation is curtailed because of a decrease in revenue from advertisers who for inexplicable reasons find it opportune not to advertise in the summer. Increased apathy on the part of our erstwhile student readers has also been incriminated as a contributory cause giving rise to the effect of enforced curtailment. To some, apathy—a dirty word!—on the part of individuals destined to be responsible for the health of the nation is a formidably dangerous entity against which drastic measures should be taken. To others, apathy on

the part of students for the period of a fortnight of all things pertaining to medicine is a legitimate right and privilege about which nothing should be done. With the latter view we concur *only* to the extent of a fortnight. Otherwise, apathy in its strictest connotation cannot be justifiably applied to the demeanour of most of the students at Bart's.

Two months ago, however, the invitation for applications for the post of Assistant Editor of the *Journal* was extended to our student readers. The qualifications required were given—viz., no previous journalistic experience but keenness, enthusiasm and a fresh mind. With more than considerable optimism, the *Journal* awaited the onslaught of applications from the scores of apparently keen and enthusiastic individuals who had just begun their clinical instruction, for as the aphorism in popular use among other medical schools in London has it, 'one can always tell a Bart's man, but one can't tell him much' would seem to justify our optimism in every way. No frenzied spate of correspondence has resulted and the sum total of nil letters of application has been received.

Such a despicable state of affairs can be interpreted in two ways. Either the preceding comments on the demeanour of Bart's students as being not apathetic is inaccurate to the most flagrant degree or the aphorism that 'one can tell a Bart's man, but one can't tell him much' must carry with it a connotation of shameful mockery. Our readers, particularly those who find themselves in the best position to uphold the reputation of Bart's should act accordingly.

PERSONALITY

THE NEW PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS

THREE BART'S MEN have served in a similar capacity during this century, and now a fourth has been elected President of the Royal College of Surgeons of England. The choice must be hailed as a most salutary one, for the personality of Professor Sir James Paterson Ross, suggests a continuation of the progress maintained by the College since the war. He was born on the 26th May, 1895 and was educated at Christ's College, Finchley. In 1912 he entered Bart's having won the Entrance Scholarship in Science, and followed this by winning the Treasurer's Prize and Junior Scholarship in Anatomy and Physiology in 1914. In the Great War, he first served with the R.A.M.C. and was later appointed Temporary Surgeon-Lieutenant by the Royal Navy. His academic prowess during his earlier clinical days went from strength to strength culminating in the award of the Gold Medal in the M.B. examination by the University of London in 1920. He became a Fellow of the Royal College of Surgeons in 1922 and a Master of Surgery (London) in 1928.

A complete list of Sir James' achievements and official posts would prove embarrassingly long. Suffice it to say, however, that the outstanding ones are his being appointed Surgeon to H.M. Queen Elizabeth II in 1952 and his occupation of the Chair of Surgery in the University of London since 1935. Candidates in Surgery finals in seven provincial medical schools also have the pleasure of meeting him!

His connections with the Royal College of Surgeons have involved no mean amount of work. As the Dean of the Institute of Basic Medical Sciences, he has been concerned with the rapid post-war expansion of

facilities for post-graduate studies at the College. Early this year, awarded the Sims Commonwealth Travelling Professorship, he went as an ambassador of goodwill on a lecture tour of Australia and New Zealand, strengthening liaison between the Royal College of Surgeons of England and its Australasian counterpart.

As Director of our Professorial Surgical Unit, he has stimulated active research and has also managed to pursue his personal interest in vascular surgery. The more timorous of us have often wondered as to the nature of the machinations on the fifth and sixth floors, little realising the identity of the person behind the scenes. He has devoted himself unselfishly to affairs at Bart's discharging his professorial duties fully and energetically. In spite of his heavy duties, he has still managed to find time to take a great interest in the welfare of the students. A name is remembered not by the owner's face but by the impression left by him after the brief encounter made during the Introductory Course. Anyone going up to see Sir James does so without trepidation or fear and can expect to be asked about his progress through the course of training.

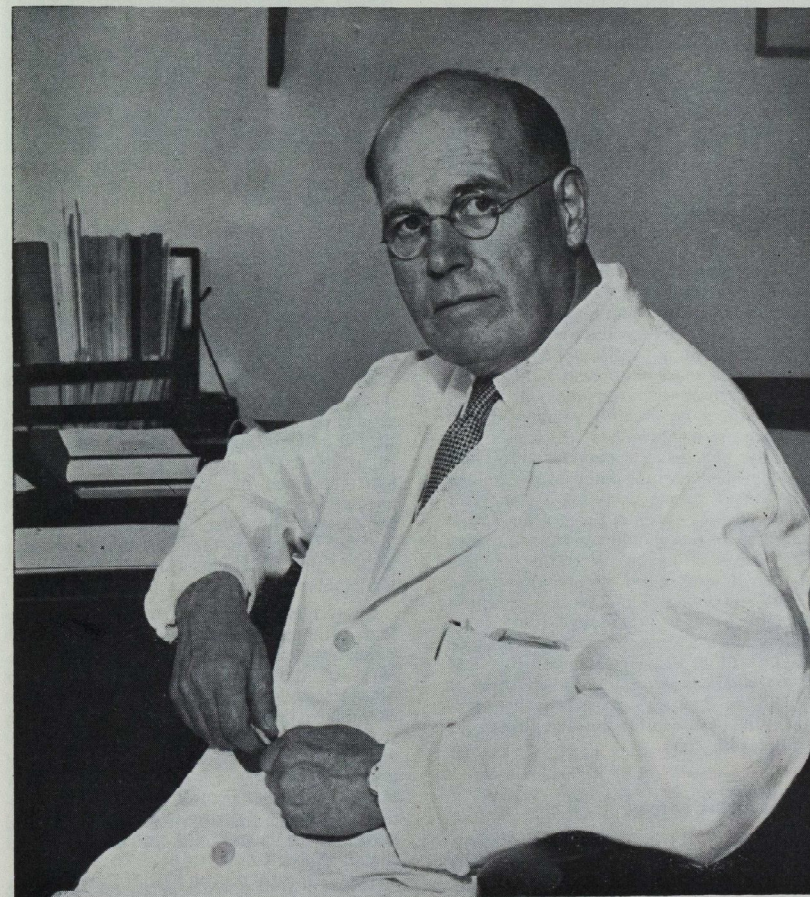
As an individual, Sir James is delightful, eminently fair and very approachable. He is immeasurably modest in temperament and prefers the solitude of home-life whenever a pause in his multitudinous duties makes this possible.

As a teacher and clinician, he is without peer. A willingness to consider every case as a special challenge to be met, and his faculty for clear thinking has made every teaching session of his an interesting ex-

perience. Candidates for the Final examination for the Fellowship who have attended his Surgical Out-Patients have often been known to express their gratification at his insight and approach to even the simplest surgical case. Under his instruction, "any case can be made interesting and every

surgical problem is approached with a clear and fresh mind."

Our heartiest congratulations to Sir James Paterson Ross on his election as President of the Royal College of Surgeons of England. We wish him a long and successful term of office.



Sir James Paterson Ross at his desk.

A New Teaching Aid?

Between May 30 and June 1, the joint meeting of the Royal College of Surgeons and the French Academy of Surgeons held at the Royal College of Surgeons saw a series of demonstrations of colour television. As part of the Harvey Tercentenary Congress, a similar series was given at the College. Surgical operations were televised 'live' from Bart's and many of us were fortunate to have witnessed this novelty.

To the accompaniment of fanfares, the claim that colour television was a milestone in the history of the teaching of medicine is not to be disputed if applied to the country of its origin. There, in the land of 'gimmicks', anything new is exciting. It is true that larger audiences can be admitted to the intricacies of surgical techniques and medical procedures and with powerful enough microphones, the sound-effects reproduced can be ever so realistic. The techniques of the television crews were of such high standards that one saw coherence, vividness and a laudable sequence of presentation. In spite of all these virtues, one felt that something was lacking. There is a vast sea of difference between actually being in a theatre with its heavy atmosphere of anaesthetic gases sufficient to numb the senses of even the most alert dresser, particularly on a hot summer's afternoon when the windows have to remain shut necessarily, and being seated uncomfortably on the polished parquet floor in the lounge of the Nurses' Home watching a somewhat distorted picture from a necessarily askew angle. Perhaps one should continue to regard colour television as an interesting novelty until such time as when methods have been perfected to convey to audiences a sensation of actually being in the theatre—with some automatic device tripping off ether, trilene or what-you-will at appropriate moments and with sound-effects simulating the gnashing of teeth by the theatre sister when the 'pro' dropped the basins in the sterilizing room for the umpteenth time.

The Undertaker's Gate

It has been said that the sight of black, stately hearses coming through Henry VIII gate to discharge their cargoes of solemn-faced individuals intent on their errands of conveyance has often sent shivers down the spines of even the most cold-blooded. As the

morale of patients or would-be patients plays such an important part in the process of recovery or cure, it seems only befitting that at long last, steps have been taken to ensure that patients' morale will not in future be undermined by the macabre sight of long wooden boxes being removed away under their very noses—however discreetly or unobtrusively this may be accomplished. The answer lay in the erection of a "Stone Curtain" and the opening of another portal of entry or exit, both of which should make for a more reassuring stay for our more nervous patients. It is of significance that no formal opening of the "Undertaker's Gate" has been planned. Common sense and respect for the departed being some of the virtues of the powers-to-be have once again triumphed.

Fun Below Stairs

On the fourteenth of June the Chislehurst caves were transformed into a mad metro rush-hour for the annual B.M.S.A. dance. The participants in these almost Mithraic rites numbered three or four thousand, and in spite of the rumoured 22 miles of continuous cavern the party was far from lonely.

The music was skiffle, traditional and jazz in its various presentations, at least fifty groups of musicians performing, from Chris Barber and his band down to the odd guitarist in his remote grotto. Flickering candle-light illumined the swaying figures of the musicians and the intently vibrating faces of the dancers, who were remorselessly pounding their rhythm on the bare rock floors only inches from those who were quietly picnicking against the walls.

Many members of the Hospital were present, although it was difficult to maintain social contact for long in the eddying gloom. Most of the guests appeared to be jazz devotees, at least temporarily, and indeed it would have been difficult to remain unresponsive to the echoing throb of so much hot music. Later on there were some forays of unescorted youths who evidently had few medical pretensions, but on the whole disturbances were few in view of the informal nature of the party and the unaccustomed surroundings.

The arrival of dawn was scarcely felt deep in the earth, and the celebrations continued long after your correspondent retired to his bed. It was rumoured that later the caves

would be flushed out by policemen with bloodhounds, but even if this sport took place, one still feels that somewhere in some distant cavern there are still dancers jiving wearily but determinedly to the music of the lost remnants of one of the more devoted bands.

Oxford - Bart's Club

The annual Sherry Party was held on June 13, a date appropriately close to the Harvey celebrations.

Some forty members were present and were pleased to welcome their new President, Professor K. J. Franklin, now fully recovered, and his wife. Professor Franklin claimed to be a classical scholar rather than a physiologist: those who helped themselves found evidence of this for a copy of his recent translation of "De motu cordis" lay beside the sherry.

The evening was a warm one and reminded Dr. Macdonald of Texas. He was not sure whether he had been to Texas or not. He had flown over it and surely the air belonged to Texas. It became a question of height.

Among the guests were Dr. Brewer and a charming girl brought by Mr. Donald O'Sullivan whom he compelled to help with the cleaning up afterwards.

It is to be hoped that those brought face to face with the Treasurer for the first time this year were not too embarrassed, and were able to agree with the others on the success of the evening.

Many remarked on the elegance of their surroundings and all were most grateful to Dr. Strauss for having invited them to his rooms.

Change of Address

Dr. Percival A. Dingle—to Flat No. 5, "The Glen", Seaton, Devon.

Dr. D. L. Pedersen—to Pear Tree House, South Ockendon, Essex.

Journal Staff

Miss N. Coltart has resigned from the post of Women's Representative. In her place, Miss J. Chambers has been elected.

The post of Assistant Editor is still vacant. Applications should be sent to the Editor, not later than August 30th. It is to be emphasized that previous journalistic experience is not a *sine qua non* for the post.

Queen's Birthday Honours

A knighthood has been conferred on Joseph Henry Pierre.

Peter Geoffrey Burgess, Surgeon-Commander, R.N., has been made a Member of the Royal Victorian Order.

Royal College of Surgeons

Primary Examination—H. W. M. Collymore, R. A. Roxburgh, C. M. Vickery.

Final Examination—G. R. Bennett, P. H. E. Courtenay, G. Kazantzis, P. Knipe, G. A. D. Lavy.

Primary Examination (Faculty of Anaesthetists), G. E. Chorley, M. W. Glossop.

ANNOUNCEMENTS

Engagements

GREEN—KAY. The engagement is announced between Benjamin Green and Sheila Kay. NAINBY-LUXMOORE—MOORLOCK. The engagement is announced between Richard Nainby-Luxmoore and Ruth Moorlock.

Births

ANDREW.—On June 15th to Joan and James Andrew, a daughter (Catherine).

BALME.—On June 24, to Joan and H. Wykeham Balme, a son, brother to Ann, Katherine, Nicholas and Stephen.

BOYSE.—On June 7, to Jeanette and Edward Boyse, a son (Dominic).

GRAY.—On June 27, to Rosemary and Anthony J. Gray, a daughter.

MASKELL.—On May 14, to Rosalind (née Rewcastle) and Dr. J. F. A. Maskell, a daughter (Genevieve Mary).

MATTHEWS.—On June 1, to Jean and P. D. Matthews, a son (Alistair John), brother for Jane.

REES.—On June 7, to Eluned and Ernest Rees, a son (Richard Gwyn).

ROBINSON.—On June 25, to Barbara and Keith Wallace Robinson, a daughter (Clair Elizabeth).

ROXBURGH.—At University College Hospital, to Muriel (née Jones), wife of Robert A. Roxburgh, a son.

VICKERY.—On June 18, to Nancy and Kenneth Vickery, a son (Anthony Jackson).

OBITUARY

Alfred Henry Coughtrey

On April 18, 1957 Alfred Henry Coughtrey died at his home at Sunbury-on-Thames after a short illness, at the age of 82. His passing will be regretted by generations of Bart's students whose examination schedules went through his hands, and who remember him as the familiar figure at the central desk in the Library presiding over his domain.

Alfred Coughtrey first came to Bart's in 1895 when he was associated with Sir James Berry in the compilation of the Statistical Tables, and later assisted Sir Archibald Garrod and Sir Holburt Waring in a similar capacity. In 1900 Mr. Coughtrey was appointed the first Registration Clerk to the Hospital, and moved his headquarters from the Library to the Steward's Office until 1903, when upon the sudden death of his predecessor, he was appointed Librarian.

The Hospital and College that Mr. Coughtrey first knew was very different from that of today. There were still shops and houses on the present site of the Pathology Block, and there was no entrance to the Hospital from Giltspur Street; the south window of the Library overlooked The Plough, a public house in Windmill Court. He saw many changes, and could tell stories of many members of the lay and professional staff of the Hospital and College. He particularly admired John Langton, C. B. Lockwood, Sir Anthony Bowlby and Sir William Church.

In his spare time Alfred Coughtrey was intimately associated with the Incorporated Association of Hospital Officers, and was Editor of *The Hospital Gazette*, to which he contributed numerous historical articles. He was Treasurer and a Trustee of the Hospital Officers Benevolent Fund, of which he was founder, and also intimately connected with the Rahere Lodge.

In addition to his duties as Librarian, Mr. Coughtrey kept records of attendance at lectures, and filled in the examination schedules, which occupied much of his time. When he retired in 1939 he maintained his former spare-time interests, and was actively engaged in these to within a few weeks of his death. The funeral service took place at St. Mary's Church, Sunbury, on April 25, and the interment was at Sunbury Cemetery. The Medical College was represented by the



The late Mr. Alfred Henry Coughtrey.

present Librarian, who succeeded Mr. Coughtrey in that position.

Many old Bart's men have come into the Library after years abroad, enquiring after Mr. Coughtrey. They will still gaze at the central desk expecting to see the familiar figure, which during almost forty years' service came to symbolize Bart's to prodigals in search of friendly faces.

JOHN L. THORNTON.

CALENDAR

Sat.	Aug. 10	Dr. E. R. Cullinan and Mr. J. P. Hosford on duty. Anaesthetist: Mr. C. E. Langton Hewer. Tennis: v. St. George's Hospital (H).
Wed.	" 14	Golf: v. City Police (Blackheath).
Sat.	" 17	Medical and Surgical Professorial Units on duty. Anaesthetist: Mr. G. H. Ellis.
Sun.	" 18	Cricket: v. Bromley (A).
Wed.	" 21	Golf: v. Middlesex Hospital (Hendon). Tennis: v. West Heath L.T.C. (A).
Sat.	" 24	Dr. G. Bourne and Mr. J. B. Hume on duty. Anaesthetist: Mr. F. T. Evans.
Wed.	" 28	Golf: v. Westminster Hospital (South Herts).
Sat.	" 31	Dr. A. W. Spence and Mr. C. Naughton Morgan on duty. Anaesthetist: Mr. R. A. Bowen.

THE INVESTIGATION AND TREATMENT OF RENAL TUBERCULOSIS

by R. M. T. WALKER-BRASH

STREPTOMYCIN began to be more widely used in 1948. Prior to this, the treatment of renal tuberculosis, in general terms, consisted of nephro-ureterectomy in unilateral cases, and Sanatorium treatment only in bilateral disease. In non-pulmonary tuberculosis it was extremely difficult to obtain a bed in a sanatorium.

Streptomycin was at first used as a supplement to surgery, but as the result of the work of Cosbie Ross and his associates in Liverpool, and Latimer in New York, it became more generally realised that some unilateral renal lesions could be safely treated without surgery.

In this short paper, the lines of treatment practised on the Green Firm will be described, as the subject is not adequately dealt with in the more commonly used current text books. The late treatment of the complicated case will be omitted.

INVESTIGATIONS

The clinical diagnosis is established by means of an intravenous pyelogram and examination of the urine. At least three consecutive early morning specimens of urine are examined for acid fast bacilli before discarding the diagnosis of tuberculosis. A specimen of the deposit is cultured on Lowenstein medium. This method is believed to be as accurate as guinea-pig inoculation.

Cystoscopy is carried out to assess the degree of bladder involvement and to exclude other bladder disease.

Ureteric catheterisation is rarely indicated as it is no longer imperative to find out whether the disease is unilateral or bilateral, but it may be required in bilateral cases to detect the site of active disease. (Case III.)

In all cases, a skiagram is taken of the lung fields, and a search is made for other secondary foci. If active pulmonary disease is found its treatment will almost invariably take priority.

As a result of investigation the cases may be classified as:—

1. Unilateral

(a) *Mild or early*, when the intravenous pyelogram changes are indefinite or slight.

(b) *Intermediate*, when the intravenous pyelogram changes are marked but renal function is still good.

(c) *Severe or late*, when the kidney is grossly diseased with poor or negligible function.

2. Bilateral

Symmetrical, when the lesions, which may be early, intermediate or late, are similar on each side.

Asymmetrical, when one kidney is affected more severely than the other.

TREATMENT

General. All patients are treated at first with complete bed rest and an adequate diet with added vitamins. It is preferable that they should be nursed in a sanatorium or hospital out of London but may be kept at home if the conditions are particularly good. If the response to treatment is satisfactory, activity is gradually increased and in many cases, with the disease quiescent, the patients may be allowed back to work after six months.

Drugs. Clinicians use several slightly different regimes and claim almost equally good results. At present we advocate Streptomycin G.1 twice a week by injection, Sodium P.A.S. G.7 t.d.s. and INAH 100 mgms. t.d.s. by mouth, although many of our patients have not had exactly this dosage.

The treatment is continued for a period of twelve months at least.

Patients are reviewed and fully or partially re-investigated at three-monthly intervals.

Of the mild cases, i.e. with minimal radiological change, nearly 90 per cent. may be expected to heal under treatment. The urine usually reverts to normal with the first three months of treatment.

Intermediate cases are reviewed at the end of three months. If they are improving, treatment will be continued, but then or later surgery may be indicated. Even large cavities will epithelialise but 60 per cent. will break

down within five years. Large cavities are therefore better excised by partial nephrectomy after they have been defined accurately on a retrograde pyelogram. Nephrectomy is performed on kidneys unsuitable for partial nephrectomy which either fail to heal or relapse. Nephro-ureterectomy is done if the ureter, as well as the kidney, is seen to be diseased radiologically, on cystoscopy or at operation.

Severe cases are treated by nephrectomy or nephro-ureterectomy after a minimum of one month's medical treatment to lessen the risk of local complications or dissemination of the disease at operation.

In all cases drug treatment will be continued for at least a year post-operatively.

Bilateral cases will be treated on similar lines. If one kidney is extensively diseased it will be removed. Partial nephrectomy may be practised on one or both sides when indicated.

Results. Before 1946, the treatment of renal tuberculosis resulted in a 50% 5 year cure rate with a 25% mortality. Approximately 50% of bilateral cases died in 5 years. Today, although it is still a serious disease, one

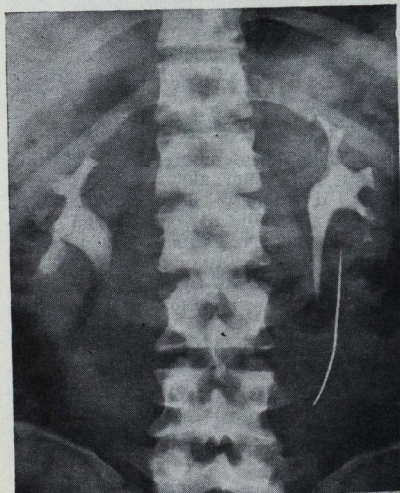


Fig. 1. Case I. I.V.P. shows ulceration and deformity of the middle calyx of the right kidney with slight dilatation of the other calyces.

expects an 80% overall cure rate and a higher figure in the early cases, while the late mortality has fallen to 4%.

ILLUSTRATIVE CASES

Case I. An early case.

P.M., male, aged 18, attended in August 1955 complaining of intermittent haematuria for six months. Nothing abnormal was found on clinical examination.

M.S.S.U. contained protein, red cells and acid fast organisms.

I.V.P. (Fig. 1). The right kidney showed ulceration and deformity of the middle calyx with slight dilatation of the other calyces.

Cystoscopy revealed ulceration around the right ureteric orifice.

Drug treatment was started and he was sent home.

4 months later the I.V.P. showed great improvement. (Fig. 2).

The urine contained occasional leucocytes only and cystoscopy revealed healing of the bladder.

At the end of one year in July 1956 treatment was stopped and now no abnormality can be detected in the urinary tract.



Fig. 2. Case I. After four months' treatment the improvement is striking.

Case II. An intermediate case.

Mrs. E. L., aged 26, was found to have urinary tuberculosis in January 1955 during her second pregnancy. She had been treated for pulmonary tuberculosis from 1941 to 1953. Investigation of her renal tract was postponed until after delivery.

In April 1956 after 9 months' treatment she was re-admitted with severe deafness as a result of having her Streptomycin increased to G.1 daily at the sanatorium. The drug was stopped.

Left retrograde pyelogram confirmed the presence of cavitation in the left upper pole. (Fig. 3).

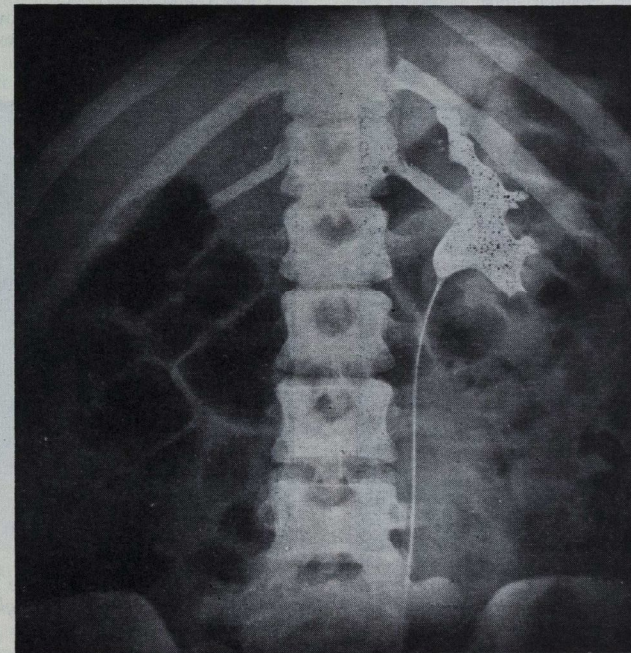


Fig. 3. Case II. Left retrograde pyelogram defines the cavitation in the upper pole.

In June 1955 cystoscopy showed oedema of the left ureteric orifice and an I.V.P. revealed calcification and cavitation in the upper pole of the left kidney.

She was discharged to a sanatorium under treatment.

After 4 months the urine had reverted to normal but otherwise there was no change.

Owing to the risk of relapse, partial nephrectomy was carried out. Section confirmed that the cavity had epithelialised.

She was discharged to continue P.A.S. and INAH for another year at home.

In February 1957 a third pregnancy was terminated on medical grounds and no active disease could be detected at this time.

Case III. A severe case—bilateral asymmetrical

Mrs. B., aged 57, attended in November 1955 complaining of frequency of micturition and haematuria. She had been in a sanatorium in 1924 with pulmonary tuberculosis.

Investigations. C.S.U. contained pus and acid fast organisms.

I.V.P. showed a non-functioning left kidney and an irregular upper calyx on the right side. (Fig. 4).

Cystoscopy revealed ulceration around the left ureteric orifice.

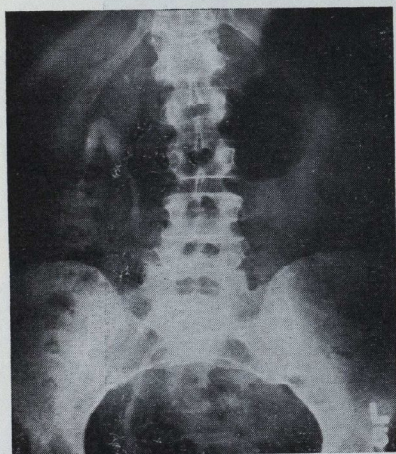


Fig. 4. Case III. The I.V.P. shows a non-functioning left kidney, with serious involvement of the upper pole on the right side.

Chest X-ray showed an active lesion with a small cavity at the apex of the right lung.

Treatment. The patient was transferred to the Brompton Hospital where she was treated with Streptomycin G.1 on alternate days, P.A.S. G.20 daily and INAH mgms. 300 daily.

In January 1956 the Streptomycin was discontinued owing to vertigo and the P.A.S. was stopped owing to diarrhoea. Subsequently the patient tolerated P.A.S. G.10 daily.

In July 1956 when the pulmonary condition was quiescent she was re-admitted to

Bart's. Her urine still contained acid fast organisms. It was now important to decide from which kidney these were coming. A right ureteric catheterisation and retrograde pyelogram were carried out (Fig. 5). No organisms were found but the large cavity at the upper pole was delineated.

A left nephro-ureterectomy was performed and organisms thereafter disappeared from her urine.

The patient continues under treatment with P.A.S. and INAH.

Should a relapse occur, removal of the upper pole of the remaining kidney will have to be seriously considered.



Fig. 5. Case III. The retrograde pyelogram reveals the extent of the upper pole lesion.

Acknowledgements. I wish to thank Mr. A. W. Badenoch for permission to publish details of his cases and help and encouragement in preparation of the paper, Dr. R. A. Kemp Harper for permission to reproduce the skiagrams which were photographed by Mr. Harrison of the Department of Medical Photography.

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HYPNOSIS AND STATES OF ALTERED AWARENESS

by JONATHAN GOULD*

MR. PRESIDENT, LADIES AND GENTLEMEN, It is an honour of which I am indeed sensible, to be asked to address this Society, composed as it is, of medical students. For medical students are the most critical listeners and form the most critical of all audiences, for their concern for the facts and truths of a situation is unembarrassed, and hence at times, perchance, capable of embarrassing. Any lecturer or speaker facing such an audience is at ordeal by scrutiny and knows it. The psychiatrist perhaps is an extreme case, for he carries the memory of his discipline as Cinderella in the Clinical Pantomime, and so he is apt to plead his case too fully, and fall into the error also, of confusing your evident critical powers with evidence of special informedness upon his topic.

The signs of the times, however, lead me to believe that this Society is not only aware, but welcoming to the discipline of Psychological Medicine for it is but a matter of a few weeks since you heard Dr. Emmanuel Miller talk on Dreams, Dreamers and Poets, and yet you are here tonight.

The Abernethian Society has a wide and burgeoning interest in the growing edge of medicine, and, Ladies and Gentlemen, it will be you, in your professional lifetime who will bring about the integration of Psychiatry — which is, willy-nilly, the other half of Medicine, with the rest of medical knowledge, whence it has more recently been divorced owing both to developments within itself in part, and the unduly mechanistic direction in which 'physical medicine' latterly has proceeded.

You form a sophisticated audience — too sophisticated and too acquainted already with the drama of health and ill-health and of our art and science, to wish to be regaled by me with sensationalism. So, I will ask no pardon for omitting, when Hypnosis is discussed, the popular 'sensationalistics.' Not to omit such would impair our perspective.

The theme I have to put to you:—*States of altered awareness* with special relevance to *Hypnosis* is very wide and I propose briefly to discuss *Normal Awareness*, to contrast this with *States of Altered Awareness* and then put Hypnosis in this setting.

Normal Consciousness may be taken, for the purposes of this discussion to be characterised by:—

(1) A dominance of awareness of reality in its everyday aspects.

(2) A tendency for attention to be, in the main, directed towards a relatively small group of objects or events at any one time.

(3) A receptivity with regard to noticing other objects or events with a varying range of clarity of awareness, which objects or events may, in suitable conditions, claim or engage the attention, to the relative or complete exclusion of the former focus of attention.

It is noteworthy that certain qualities of the interrupting incident may determine this shift: (i) primitive (biophysiological), e.g., loudness, brightness, movement, pain; (ii) individual significance of the event, e.g., a familiar footstep or voice; an emotionally toned change of quality, as in the alteration in breathing of an anaesthetised patient (and the response of the anaesthetist); classically, the infant's cry and the mother's response.

Certain qualities of the occupants of the area of focal awareness may militate against this shift, such as the intensity of significance of the events for the observer ("the brown-study"): (i) intellectual, (ii) emotional, (iii) instinctual.

Certain factors may determine the lability of the area of focal awareness:

(i) *Fatigue* in increasing intensity is conducive to distractability, preoccupation and inability, or reluctance, to attend to other themes; to the investment of the central theme with essentially irrelevant value; to withdrawal and sleep, or if this be prevented, to agitation and restlessness in which there remains no field of focal attention as such.

* A lecture given to the Abernethian Society on February 5, 1957.

(ii) *Temperament*: some temperamental types are more distractible than others, although, in the personality of the individual as encountered, character and temperament interact.

(iii) *Character*: certain forms of character make-up are conducive to tenacity and application.

(iv) *General physical health—Illness*: particularly the more generalised infections or conditions involving much discomfort, sleeplessness or pain increase the distractibility of attention.

(v) *Age*: at either end of the age scale distractibility increases.

(vi) *Critical biological phases*: at puberty, pregnancy, and the climacteric there is frequently observed an increase of distractibility and a temporary impairment of tenacity of focal awareness. At the menstrual period many women find for a few hours or a day or so, that the normal tenor of mind is invaded by a state of mild tension and distractibility.

(vii) *States of emotion* of normal and healthy intensity may much affect the lability of the field of attention. In states of emotion of mild or moderate intensity, where the quality of feeling is pleasantly toned the field of attention tends to be more stable, and in proportion as feeling is canalised by the experience, so attention is the more firmly held, as in effective theatre. Conversely, unpleasantly toned mental states tend to distractibility, although in certain temperaments, moderate degrees of anxiety or unhappiness may act as spurs to further concentration on real affairs. Certain abnormal mental states may be characterized by pre-occupation with unpleasant or painful experience.

To recapitulate those qualities of Normal Awareness mentioned so far:—

(1) A dominance of awareness of reality in its every day aspects.

(2) A tendency for attention to be, in the main, directed towards a relatively small group of objects or events at any one time.

(3) A receptivity with regard to noticing other objects or events with a varying range of clarity of awareness, which objects, etc., may in suitable conditions claim or engage the attention to the relative or complete exclusion of the former focus of attention.

In addition should be mentioned:—

(4) An awareness of the self as opposed to the field of outer reality (Subjective—Objective Polar organization of awareness).

(5) A threshold awareness of the emotional (or affective) background of experience, against which the self and the perceived external reality are organised in polar fashion. "Normal" consciousness is associated with a relatively equable, though by no means stagnant, affective background, at any rate as far as awareness goes.

(6) A threshold awareness of the body, in its relations to objects, position in space, etc., and its responses to stimulation.

(7) An awareness of behaviour in response to experience. (This awareness becomes more, and then less, acute, with increasing intensity of affective response. So do, to a great degree, all forms of awareness, until various types of abnormal mental states supervene.)

(8) Investment of perceived reality with affective significance, whether conscious, or unconscious (projection or identification). Abnormal intensity of the unconscious affective investment of perceived reality may be compatible with "clear" but not normal consciousness, as rational judgment and evaluation are thereby impaired.

To return to the Polar organization of Normal Awareness, this may be considered as comprising three axes:—

(i) Focal attention—roving background of awareness (i.e., attention is both focal and diffuse, the relative dominance and stability of the two phases varying).

(ii) Objective—subjective experience (i.e. experience may be perceived as entirely one or other, the other being the backcloth, or even obliterated or, differently, the contrast between objective and subjective may be, come dimmed or lost).

(iii) Rational—non-rational mental content.

Rational mental activity is that carried on under the more or less adequate guidance of the two principles of (i) expedient relation to objective reality and (ii) reason. It is a natural development in our culture. Rational mental activity permits, even necessitates, a modicum of feeling, but this is not a dominating factor. It seeks to establish, perpetuate, and exploit the perceived relationships between objects and events in the outside world on the one hand, and the perceived or known self on the other, in such a way that, as far as possible some degree of comfort-

ableness or congeniality of adjustment is maintained. [*Logical thought*, however is a form of mental activity which comes with difficulty to the human mind, and needs special conditions for its exercise. Among these are the almost complete quiescence of feeling, and a focusing of attention upon the relationships between symbols which are often highly abstract representations of the events or facts which it is wished to submit to logical evaluation. The subjective element in such thought is, conventionally, deemed not to exist. If this be only to some considerable degree achieved, it is plain that logical thought is itself a state of altered awareness, albeit one which we prize greatly as one of our avenues to knowledge. It may be of interest to mention here that in some forms of *schizophrenia* logical thinking may remain intact while relation to reality (i.e. rational mental activity) is disrupted and non-rational mental activity dominates behaviour.]

Non-rational mental activity is not necessarily irrational. On reflection it will be agreed that many of our enthusiasms, loyalties, affections, dislikes and particularly some prejudices are non-rational in nature. That they are comprehensible to ourselves and to others, and command support and assent, is not disputed. But not all our daily activities are organized rationally, and we are all aware of the need to provide for this in recreation, diversion, dispute and that wide field of our more or less private activity subsumed under the rose suspended from the ceiling or carried on under the darts of the winged lad with the bow and arrow, whose quiver never empties.

Non-rational mental activity precedes rational mentation in development, both personal and cultural.

Generally speaking, and as my examples infer, we think of non-rational awareness as limited to awareness of our own subjective state, or of the state of mind and feeling of another person. Yet, the awareness of an artist when he observes an evocative theme is non-rational—and so also was that of the chemist on the summer afternoon, soporifically travelling by tram in Hamburg, I believe, when he envisioned that perhaps most cherished of psychiatric symbols, the snake, curl itself into a Roman C (he could not have been employing Teutonic script) before it carried out the final gesture of self-love and self-destruction and commenced to consume itself tail first, thus revealing to him

the structure of the 6-carbon ring in benzene. And *this* non-rational mental act is the source of so many of the organic chemical woes of so many medical students, and also of so many therapeutic agents sought diligently by means both rational and logical.

Have I, then, ladies and gentlemen, established, or perhaps better, made plausible to you my theme? Normal Awareness is composed of polarities or dynamic equilibria between contrasting tendencies. These may be enumerated again:—

(i) Focal attention—a roving background of awareness;

(ii) Objective—subjective experience;

(iii) Rational — non-rational mental activity;

and along these axes as it were, the field of consciousness moves quiveringly or hoveringly and it is difficult to disentangle what has come about by virtue of the immense and unremitting pressure of our upbringing, and what is pre-determined.

Three further points, and then we can get on.

(1) As you will already have recognised, the characteristics I have outlined do not preclude two people, each in normal awareness, being yet in states significantly different from each other—those of you who are more or less quite bored but polite and those, if any, who are interested—not in what I am saying, but let us suppose at another lecture!

(2) The shift of awareness along its various axes (from focal attention to generalized background awareness, for instance, or from objective to subjective poles of experience, or from rational to non-rational mentation) is influenced by many factors. *Stimuli arising from without or within*; these may have a rational and a general significance—such as the cry of "fire" for a theatre audience. Or a special personal significance such as the cry of the child for the parent or a gesture, reminding one of friends absent, and thus evoking nostalgic trains of thought leading perhaps to a complete departure in mind from the situation at hand, and so on. *The changing biological milieu*—hunger, fatigue, strong emotion, chemical interference.

(3) Finally I must capitulate — *The Unconscious*. Here I stand revealed as a *psychiatrist*. I mention, however, the unconscious as the convenient term to designate unawareness as applied to the subjective mental state. It is a polar opposite to awareness.

There is traffic, of course, heavy traffic between the unconscious and awareness, and the flow of traffic is much determined by non-rational mental processes and forces.

Lest you be misled, and consider that order reigns in logical thought, becomes earthy and corrupt in the rational sphere, and sinks into chaos, presided over by lust, aggressiveness and guilt in the non-rational, do let me say that in the non-rational sphere there too is order, and its laws are a little known. We will not, however, discuss them now. Indeed, there is order in all spheres, but the laws differ, and those of one are not apt guides to the constitution of the others.

So much for normal awareness.

States of altered awareness

As you may anticipate, I have tried to arrange these so that they may be comprehensible as developments, in one or other direction, of the state of normal awareness, and logical thought has been touched on already—it is achieved with difficulty and by the special manoeuvre of excluding feeling and subjectivity to an abnormal, but culturally valued, degree.

Trained in many sciences, you are destined to become clinicians, and must pass through this experience before you opt for your further career. Most of us never leave the clinical field—that is the direct endeavour to heal or alleviate the malaise and suffering of our fellows. So, let me turn to some clinical conditions.

States of acute anxiety. In states of phobic anxiety the patient experiences acute and unreasoning panic in certain situations. From without awareness, torrents of feeling flow into a field of objective reality which then becomes terrifying to the subject, so that his non-rational responses are elicited by the situation and his attention riveted by it. Thus, focal awareness, objective reality, non-rational response are associated with a state of experienced subjective terror. Rational considerations are invalidated and background awareness is dulled. A similar situation, but with aggressiveness and fear mixed together, is characteristic of some battle experiences.

In states of *protracted anxiety*, short of panic, affect from outside awareness invades subjective reality, provokes non-rational activity and suffuses the background awareness, to the impairment of focal attention and rational responses.

In the clinical condition of *conversion hysteria*, where a limb or some other apparatus becomes functionless, there is an absence of overt anxiety or tension while at the same time effective relation with reality, objective, or subjective or both, is in some degree impaired. The tension of anxiety is invested in the annulment of function as it were, and in this instance there is a by-passing of awareness so that anxiety is not experienced, but subjective and/or objective reality are relinquished. The ultimate stage is hysterical stupor or loss of memory (and identity) or hysterical fainting or trance. In such states the polarities cease, more or less completely, to operate. The patient "would rather yield his awareness," as it were, than experience the impact of pain.

The neuroses show the variations in these polarities best, but they require some clinical acquaintance for full appreciation.

Certain states that affect each of us, or our friends, are familiar, and also illustrate the themes of altered awareness. I need merely list them for you to appreciate the changes involved. They all involve the evocation of strong emotion:—fury, terror, infatuation, in-loveness. Mixing the first and last, produces—the mental state of *La Crime Passionelle*—recognised abroad. How much is our normal awareness influenced by the feelings we proudly control!

Living as we do in a society so stable that bloodless revolutions come easily to us, we may consider that *crowds* exhibit only the tendency to cheer at sports meetings, queue quietly for transport and move shuffling along wet streets. Crowds, however, may become spontaneously disturbed—usually aggressively—when discontent is marked, or be worked up into states of feeling by leaders, orators or agitators—the term depending on the taste of the observer.

It is necessary for a pool or reservoir of frustrated feeling (not usually unconscious) to exist—and this is readily so in complex societies. The evocation of this feeling may be most readily achieved if there be certain prejudices common to many members of the crowd. Lynching mobs in the Southern States or the phenomena in Germany in the late war, or some of the reported situations in the Hungarian refugees' hostels here at present may serve.

As the feeling is evoked, the fact that it is shared by others enables rational assessment of objective reality to be supplanted by non-

rational assessment, and this will be influenced by the quality of feeling elicited. Thus, behaviour of the mob would become an index of its emotional needs, and not of rational requirements.

Pardon me, ladies and gentlemen, for lifting this small corner of the ugly side of social phenomena, happily so unfamiliar here, and let us now turn, remembering the mobility of the field of awareness, to consider Hypnosis.

Hypnosis may be regarded as a state of altered awareness induced by sensory stimuli, usually involving the evocation of apt mental images (called suggestions). The characteristics of the state of awareness so induced include:—

1. Focussing of attention upon the stimuli selected for induction.
2. Reduction of alertness of the background of awareness.
3. Reduction of attention to sensory stimuli arising from the avenues not selected for purposes of induction. (This would include, for instance, proprioceptive experience.)
4. Reduction of critical analytical thought.
5. Reduction of tension, both mental and physical.

The means by which hypnosis is induced include the regular repetition of stimuli, and the evocation of apt mental images. The pre-requisites for hypnosis involve the ability to form personal contact, i.e. the acceptance and development of non-rational means of communication; flexibility of attitude to oneself, and to one's mental and physical state; apt contribution of feeling, as interest or, typically, clinical illness, so that the suggestions presented are mordanted in the psyche by the feeling. Thus we have all experienced, from infancy on, some degrees of hypnosis. The hypnotist lacks "occult power"—but may be invested with this concept by the laity, or now rarely, by himself. The "power" or "animal magnetism" which Mesmer thought he tapped from the aether, is the power of an individual to respond in a relationship in a coherent, self-aware, accepting, non-rational, subjectively oriented fashion.

Hypnosis does not require an hypnotist always. It may be induced by a gramophone record, or by oneself as in *autohypnosis*. An ancient form of autohypnosis was the Delphic Oracle's state of altered awareness.

The qualities of Trance, when the subject has achieved regardlessness for the environment differ from normal wakefulness, and from sleep (i) in muscle tone and spontaneity of movement, (ii) in the withdrawal of attention from the background of the situation, (iii) in the more or less marked and generalised inhibition of sensory awareness, (iv) in the partial abrogation of the critical approach to the situation, particularly that involving the subject and hypnotist, and (v) in the greater ease of expression of affect, where emotional stress exists, and the recollection of affectively charged material.

It is to be noted that one or more of these characteristics may occur in normal awareness, but when many, or all are present together, trance ensues, and the axes of normal awareness become modified:—

1. The roving background attention is dimmed.
2. The subjective aspect of experience becomes dominative, the hypnotist being the objective field which actively and selectively reflects the subjective, so that a reinforcement of subjective awareness, and concurrently a diminution of objective awareness supervenes.

3. Focal attention is directed towards subjective awareness of physical or mental events and background awareness of the hypnotist is intensified, or vice versa.

4. The whole procedure rests upon the non-rational aspect of the psyche of the subject—its flexibility and availability for contact with reality, particularly the reality of the inter-personal relationship with the hypnotist.

He, for his part, must be non-rationally aware of (in other words, be intuitive to or have a flair for) the responses of his subject, and at the same time respond critically and rationally to the clinical demands of the situation. Where the hypnotist becomes ruled by his non-rational components in this regard, he stands in danger of failing to recognise the limits of his skill or powers of healing, and of lapsing into "magic." On the other hand, where he becomes unduly rationally aware of what he is doing, he is at risk of disturbing the balance of non-rational/rational in his contribution to the relationship, and so endangering his ability to hypnotize.

Thus to sum up at this stage. The characteristics of normal awareness involve certain polarities. In certain clinical states

one or more of these is disturbed in a discernible fashion with consequent alteration of the state of awareness. One may similarly describe certain conditions of man when affect is intense, and also certain social phenomena.

Hypnosis, a topic long-standingly fraught with mixed feelings for the majority of people is a special case of very well-known phenomena, its special qualities being that one individual (the hypnotist) serves for another (the subject) as an active and selecting mirror of the subjects' state, thereby substituting a reflection of subjective reality for objective reality.

In closing, it is apt to touch on the apparent difference between hypnosis and the other states of altered awareness which have been mentioned. On the face of it, all the other states involve an upsurge of disturbing emotion, whereas the hypnotic state is one of quiescence. This contrast holds only as long as, in hypnosis, affect from outside awareness does not spontaneously irrupt into the hypnotic awareness, or as long as the

hypnotist does not initiate its release. Once the release occurs, phenomena comparable to the anxiety states (phobic or not) may be met, or a fugue state similar to hysterical fugue may ensue, or, in certain circumstances, if the affect and associated memories, which one is attempting to evoke, are sufficiently repugnant to the subject, he may break trance and wake up. During the phases of induction of hypnosis, on occasion, emotional reactions may be met—tears, anger, laughter or anxiety—and pass as the induction progresses. These phenomena (the emergence of affect as the field of awareness alters) serve to underline the affinities between the neuroses (and other states of altered awareness not mentioned) and hypnotic states.

Now, Mr. President, ladies and gentlemen, the techniques of surgery are taught in the theatre. The techniques of psychiatry are less easily demonstrable, it is said—but if you would wish it, I will endeavour to show you how one goes about the induction of hypnosis, and perhaps some of the phenomena.

COLOUR TELEVISION—I



(Photograph by Norman K. Harrison, F.I.B.P., F.R.P.S.)

What's my line?

LORD HORDER — THE CLINICIAN

by W. V. CRUDEN

LORD HORDER, who was Physician at Barts from 1912 to 1936, was an outstanding clinical genius. He was described by the *British Medical Journal*⁴ as "the greatest clinician of his time," and the *Lancet*¹ stated that "as a clinician Horder was supreme."

It seems worth while therefore to put on record some of the distinctive methods and mannerisms of his clinical approach, and to attempt to analyse his teaching on the art of diagnosis. The following account, by one of his house physicians, is mainly derived from memories of his teaching rounds in Rahere and Colston wards. Horder himself championed the cause of the clinician in a world of increasing specialisation and mechanisation. "Someone" he said, "must retain his poise, and if the clinician does not, no one does."¹⁸ "We should never have left the bed-rock of clinical medicine."¹⁹

THE APPROACH

His approach to a patient was characterised by a forthright and complete mastery of the occasion, yet with a kindly humanity and complete absence of pomposity. This was in keeping with his² aphorism "Successful medicine is understanding touched with sympathy." Of his bedside manner one cannot do better than quote the *Lancet*¹. "When at the bedside it was his custom to remain quietly seated, and he would often hold the patient's hand. While the patient talked, he would look and stare at the hand very much like a palmist; but with his experienced clinical eye he would gather a great deal about the patient without him realising it. The questions were always concise, clear and consecutive, building up stage by stage through the history a likely diagnosis and a forecast of what the examination would reveal. He was gentle in his inquiries and he would probe into the inner self of the person with all delicacy. He would be equally gentle in his examination and there would be little of the machine in the examination. When the examination was over, the consultation would remain incomplete until the patient and he saw the situation with the

same eyes. The understanding between him and the patient would have to be a reality before there could be any discussion on treatment . . ." And the consultation usually ended with a quiet smile which revealed a sympathetic understanding of the patient's situation. This attitude seemed to be forthcoming, not only to likeable folk, but to the most unlikeable. "I would treat Beelzebub himself" he said, "if he came into my consulting room."

Perhaps the dominating recollection of his clinical examination was one of quiet concentration. There was no atmosphere of fuss or hurry (even if the time spent on the patient was of the briefest) and no unnecessary questions, taps and prods. The preliminary bird's-eye view was quick and penetrating.

THE HISTORY

"A good history in many cases takes the observer a long way to a correct diagnosis" he said.⁷ "Leading questions should be avoided as far as possible." He would stand beside the bed with the case-board tightly grasped between his left hand and chest and with the end of his stout fountain pen resting on his chin, often pursing his lips, whilst he gazed down at the record sheet, all ears for the story. The salient points were written down with unusual brevity in his bold clear handwriting. Key words were underlined, a few dots sometimes used to denote intervals between events, and connected items (especially a series of important negatives) grouped together with a boldly formed bracket. Often the clinical clerk would read the entire story without any interruption except perhaps an interjected "Oh!" ("Oh!" was his favourite exclamation and had about six different meanings according to the tone used). At the end there might be a few pertinent questions. In the history the patient's own words, in inverted brackets, were often used, but "if things are said which cannot be understood in technical thought, or which have no connotation, the observer should get from the patient the nearest thing he can to a statement having an

intelligible meaning and one which admits of no doubt."⁷

INSPECTION

"Inspection, palpation, percussion, auscultation. Let not the practitioner be tempted to depart from the traditional sequence of these methods, for it results in fuller and more accurate data than does any other. Knowledge of this fact explains why the experienced observer, who could the more afford to, rarely changes the sequence; ignorance of the fact explains why beginners, bent upon change, often do."¹⁰ "One physical sign" he wrote, "is of more value than many symptoms."¹¹

He was particularly keen on the first of these methods. "Inspection before palpation, please" he would say. Maximum light, and always daylight rather than artificial light, (he would hasten to a consultation so as to be in time to see the patient before daylight waned) were essential, and so the bed was drawn out to the window and anyone casting a shadow was waved aside. In this way such diagnostic minutiae as a trace of icterus or a few tiny petechiae or rose-spots, unnoticed in a poor or artificial light, could be found. Chest and abdomen were fully exposed to note any deviation from the average and "the important question of symmetry is often settled more accurately by inspection from the foot or from the head of the bed, than from the side. The observer's eye should be nearly on a level with the patient's body during this examination."¹² "In the examination of the abdomen careful inspection is probably, of all methods employed, the most frequently neglected, and yet it is often the most profitable."¹³

PALPATION

Warm hands and a firm but gentle touch were advised. Where possible bimanual examination should be practiced. "Get as near as possible to the organ under investigation."¹⁴ Palpation of the liver should begin "sufficiently low down—in the right iliac fossa—to ensure not missing the edge of an organ that is larger than was anticipated."¹⁵

One of the main features of his examination of the heart was the forthright way in which he placed the whole of his right hand closely over the precordium to note the

thrust or impulse of the heart against the chest wall. Location of the apex heart came afterwards.

PERCUSSION and AUSCULTATION

In percussing, he was usually content with a single tap instead of the customary two, but one was conscious of a staccato touch followed by quite a pause while he listened for the character of the sound produced.

His stethoscope was perhaps slightly shorter than the average and had thick-walled red rubber tubing in the shape of a Y. Whenever he borrowed any other instrument he would look it over and search for any sign of perishing of the rubber near its junction with the metal and then, with a twinkle, comment. "By their stethoscopes ye shall know them!" Of auscultation¹⁶ he said, "Get the stethoscope as near to the bony thorax as possible." "If a physical sign which is present in health is found to be less marked on one side of the chest than on the other, the side showing the lesser degree is probably the abnormal side."¹⁷ He always called heart murmurs "bruits" and was quick at diagnosing them, especially those almost inaudibly soft aortic diastolic murmurs so easily missed by others. Auscultation with him never seemed a prolonged and puzzled uncertainty, but once again one was conscious of complete concentration for a brief time.

INVESTIGATIONS

The temperature chart was sometimes held horizontally and viewed almost at eye level to detect small gradual changes of contour as in Pel Ebstein pyrexia. The cuspidor was peered into and rotated to observe the viscosity of the sputum. "Skiagrams" were always examined before reading the radiologist's report. And one who was described¹⁸ as "the father of clinical pathology" often accepted pathological reports only after a knowledgeable quizzing of the pathologist. The ward round was invariably preceded by a visit to the post-mortem room and a close questioning of Sir Bernard Spilsbury and others. And in all these dealings with patients, students and doctors, he was quick to seize upon any opening for the exercise of his quiet Horderian humour—brilliant shafts of wit that made his clinical occasions doubly enlightening. Only once, was it said, was he ever at a loss for a *partee*!

DIAGNOSIS

"He was a wizard at diagnosis," someone said. It was indeed his goal. His "Medical Notes" begin with the words¹¹—"It has been said of medicine that the most important thing is diagnosis, the next most important thing is diagnosis, and the third most important thing is diagnosis." Treatment would automatically follow. But although himself a master of the art, he owned⁹ that "to teach diagnosis itself . . . is not possible. The most that any teacher can do is to help the student to be accurate in the use of his terms, to be careful and thorough in his methods of physical examination and to observe correctly . . . If he succeeds in this, experience and a logical faculty will do the rest. If he fails in this, experience may do much, but it is unlikely of itself to make a diagnostician". He taught¹⁹ that "the process of differential diagnosis begins to take form at the very outset of a clinical examination".

HIS TEACHING ON OBSERVATION

If one tries to analyse his teaching, it appeared to consist of three main doctrines—observation, precision and logic. To Sheffield medical students²⁰ he made the following profound commentary on observation " . . . The first essential is that you must cultivate the power of observation, without which . . . nothing. Observe anything, everything . . . especially men and women and children and the things connected with them. Observe the colour of their eyes, the shape of their heads, the length of their hair, the clothes they wear, the way they walk and hold themselves, how they shake hands, how they say good-morning—and a hundred other things. . . . At first, and probably for some time, you will observe a lot of things that are quite useless. . . . But later it will be found that your observations tend to become systematised, purposeful and synthetically useful. In time you will develop the power of observing things that are not obvious, you will look not only *at* things but *for* things—associated things that together make sense, that make in the fullest meaning of the word, a diagnosis. . . .

"Your ears also are important and not only in the field of auscultation. The character of a cough, the rhythm of breathing, the lack of overtones in a voice, even on the telephone, these are observations that are full of meaning

to the initiated. Then I might expand all this by reference to touch and smell. These large but vitally important observations are all the more important nowadays when instruments of precision become so numerous and so popular. . . .

"When you have made observation a familiar habit and . . . developed mental antennae, you will find that two other things happen. You make many observations without knowing it and your observations take on a selective character, they group themselves in terms of affinity and you develop the faculty of distinguishing the essentials from the non-essentials.

"I believe that those people who possess what is called the 'clinical sense' really owe it to these two facts: they make many observations of which they are unconscious and they effect a synthesis of those observations that are causatively associated. At the same time they are able to discard those that do not possess these characters.

"Herein lies the nearest explanation I can give of the mental processes involved in diagnosis. And diagnosis is, of course, the end to which all observations should tend. Diagnosis, like ripeness, is all".

PRECISION AND LOGIC

The second doctrine he taught was precision. One must be both accurate and sparing in one's statement. It did not do to say that a patient's temperature was high. "What is the temperature?" "Oh, it is quite high, sir". "No, I asked what is the temperature". "Well, it's 103.6, sir". And a categorical assertion that some particular disease had been excluded from the differential diagnosis led to a quizzing²¹ of the student which often ended in proving that one stone at least had been left unturned!

He hated the prolix and verbose. Statements should be as brief as possible. To a student who read out the words "No cough, no sputum", he hastily interjected "Just a minute, Mr. Smith, you have used too many words. If there is no cough there cannot be any sputum—the words 'no sputum' are redundant". And so his own clinical notes were masterpieces of brevity. The nine letters of "umbilicus" were compressed into the symbol of a small circle with a dot in its centre, the seven letters of "alcohol" reduced not to six, C₂H₅OH, but to five, C₂H₅O, simply because it saved time and space.

Diphtheria was Δ . Epilepsy Ep and so forth. But although there was this brevity, his precise mind made him re-read his notes, make doubly sure that all commas and stops were correct and touch up any letters that were not quite clearly formed, so that the whole could be precisely understood.

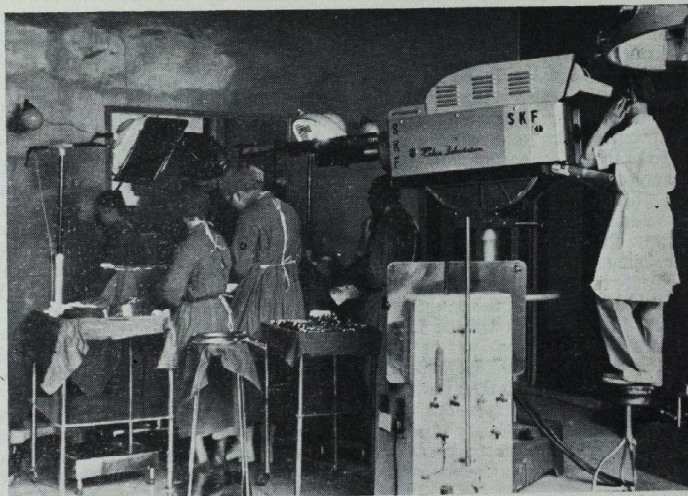
The third doctrine he taught was logical thought. He used to say that the best book to read in medicine was Jevon's "Primer of Logic". Having observed carefully and noted precisely, one thought logically. And so irrelevances were dismissed, outstanding facts underlined and essentials correlated in studying the differential diagnosis in which he so delighted. And so, often with a pathological report to confirm, the diagnosis was made with certainty. If this could not be done, then "probability is the very guide of life", "common things occur more often than uncommon ones", and so the diagnosis was made in a more tentative manner.

It is hoped that this inadequate account will prompt others to contribute their own viewpoints and remembrances on this "prince of clinicians" (as Sir Arthur Macnalty described him*).

REFERENCES

- ¹ *The Lancet*, 1955, Aug. 20, p. 397.
- ² *Ibid.*, 1948, Nov. 6, p. 716.
- ³ *Ibid.*, 1955, Aug. 20, p. 398.
- ⁴ *British Medical Journal*, 1955, Aug. 20, p. 479.
- ⁵ *Ibid.*, 1955, Aug. 20, p. 493.
- ⁶ *Ibid.*, 1955, Aug. 20, p. 496.
- ⁷ Horder and Gow "Essentials of Medical Diagnosis", 1928, p. 1.
- ⁸ *Ibid.*, p. XV.
- ⁹ *Ibid.*, p. XVII.
- ¹⁰ Horder "Medical Notes", 1921, p. 5.
- ¹¹ *Ibid.*, p. 1.
- ¹² *Ibid.*, p. 5.
- ¹³ *Ibid.*, p. 14.
- ¹⁴ *Ibid.*, p. 8.
- ¹⁵ *Ibid.*, p. 15.
- ¹⁶ *Ibid.*, p. 7.
- ¹⁷ *Ibid.*, p. 12.
- ¹⁸ Horder "Health and a Day", 1937, p. 177.
- ¹⁹ *Ibid.*, p. 184.

COLOUR TELEVISION—II



(Photograph by Norman K. Harrison, F.I.B.P., F.R.P.S.)

An operation being televised 'live' on a 'three-way, closed circuit' without the use of 'land-lines.'

A BAFFLE OF COMS

by ALAN H. HUNT*

MISS POPPOFF forms the subject of my extraordinary case. She was referred to me by Dr. Bodley Scott one Saturday afternoon. He rang me up and said that he had been called to see an old lady of 74 with acute intestinal obstruction. She lived in a squalid flat near Victoria but wanted private treatment and he thought that she was a suitable case for a private room in a hospital. Could I fix a bed for her? I said I could at G. House, the private wing of a hospital to which I had access, where it would cost her six guineas a week. This, of course, was before the days of the National Health Service. Then the private doctor rang up. Her version was that she had an elderly authoress with intestinal obstruction who demanded to be admitted to the most expensive room in the most expensive nursing home in London to die. I told her that I had got just the place and we proceeded to admit her. She had been obstructed more or less completely for six weeks, so there were a number of deficiencies to make good before we could operate. I could not get Miss Poppoff to agree to any form of safe two-stage or exteriorization resection, so we did a one-stage resection of an obstructing carcinoma of the splenic flexure and gave her a temporary caecostomy for safety's sake. She recovered well and the caecostomy closed.

We discharged her and arranged to follow her up at regular intervals. Here I must tell you what she looked like. She was a small, thin and very Victorian spinster, with long fangs of teeth which were ill-kept and made her look like a witch. She always wore a black dress with half-length sleeves which fitted tightly. It had a high neckline, the V in front filled in with a little bit of "modesty lace." And indeed she was an extremely modest person. She did not like being examined, but in order to make this

possible without offending her modesty she wore three pairs of combinations. They all had the usual slit up the back, but in addition she had slit them up in the front—com. superficialis in the right mid-clavicular line, com. intermedius in the left and com. profundus again on the right—so that the approach to the examination of the abdomen was through a sort of trap door or baffle. One soon got used to this and it was the least of our difficulties in keeping a reasonable check on her case, because she always had innumerable questions to ask us once we had asked ours and completed the examination. The questions were scribbled out on large scraps of paper. It was not a case of Charcot's "malade aux petites pièces de papier" but aux grandes pièces de papier, and these questions became very tedious.

One day she was waiting to be examined on the couch and I saw sheets of paper lying by her side but not in her hand, so I took the opportunity of getting her to hold her head up and put her tongue out. Unobserved I pushed the pieces of paper down behind the couch. I completed my examination, asked all my questions and then asked if she had any. She said yes, but when she could not find her pieces of paper, a dumb-founded silence settled over the consulting room. Finally she said she had no questions to ask and pushed off in rather a puzzled frame of mind.

When she next attended, she had no pieces of paper with her. I asked my questions, examined her and then asked if she had any questions. She looked me straight in the eye, lifted her chin, hooked her index finger behind the modesty lace and produced a little silver chain from around her neck. This she drew on and at the end of a length of about two or three feet was suspended a little silver-bound notebook. It had recently been cleaned but it was somewhat tarnished from contact with the flesh; and in this notebook were written her questions. Game and set to Poppoff.

* A talk given to the Abernethian Society on May 7, 1957.

But that particular gambit was soon forgotten. At her next attendance she came up looking very determined. She looked me straight in the eye and said "Mr. Hunt, I've got cancer." I said "What makes you think that, Miss Poppoff?" She said "Because I've got a lump." I said "Well, that doesn't necessarily mean cancer. Let me have a look at it," and she said "Oh, will you have to examine me?" I said "But, of course." And then she began to flutter, her eyelids drooped, her head turned to one side and her hands started fluttering, palm upwards, as she said "But you will have to examine me here", indicating her left breast. Well, it is no mean feat to examine a breast through a black dress and three pairs of combinations, not to say sundry other garments which have been put on depending upon the weather. I entered my right hand through the baffle and passed it upwards until I could feel the breast and, sure enough, there was a lump; but it felt like a cyst or a fibroadenoma. I could not get any further through that route, so I did a reece out on to the flank and found that in the axilla she had a hole in her dress just big enough to take a pencil torch, and, by putting the torch down through this hole and putting my hand up through the combination-baffle below, I was able to transilluminate the swelling very well indeed. It was a cyst. This extemporary and unorthodox method of examination convinced her completely and never again apparently did the thought of cancer enter her head.

However, friends of hers died, she became very depressed, she stopped eating properly, she developed cardiac failure with auricular fibrillation and we had to admit her to adjust these diseases. We had to persuade her to eat properly. And then one day she made an urgent appointment to come and see me. She had developed a faecal fistula at the site of her old caecostomy. It did not look very healthy so I took a piece for biopsy and it was adenocarcinoma. This meant only one thing, that she had developed a second carcinoma at the caecum and it had come through, fortunately, at a site where it could be detected early. We persuaded her that she needed another operation for the closure of the caecostomy and she persuaded herself that this was only a minor operation. So we were able to readmit her for further surgery. I excised a large portion of her flabby abdominal wall around the caecostomy and proceeded to explore the colon. She not only

had a carcinoma of the caecum, but two others, in the ascending and transverse colon. The terminal ileum looked suspicious (it turned out to be tuberculous) so we resected that as well and anastomosed distal ileum to the left half of the transverse colon. She recovered well from the anaesthetic. Since she believed she had only had a minor operation, she ate her dinner on the night of the operation, made an extremely rapid recovery and went home to Bournemouth by herself on the 11th post-operative day. She was then 79 years of age. That all goes to show the power of mind over matter.

At about this time Queen Elizabeth II was crowned. One day I went down to my clinic at G.H. and found that it had been put off for three-quarters of an hour because the Queen and the Duke of Edinburgh were going to do one of their drives round London and they were going right past the hospital. So I wandered round to see if I could get a good view of the procession. There, on the edge of the pavement in the hot sunshine, right in front of the hospital was Miss Poppoff. Having nothing better to do, I went out to have a word with her and, as I came up to her, she said "Ah, Mr. Hunt, how nice of you to come and keep my place." With that she disappeared to some cool room where she waited until a moment or two before the procession came along.

At the age of 81 old age and her disease began to catch up on her and we had to admit her with a severe attack of constipation for a series of wash-outs. She came in protesting vigorously that she was always treated brutally and without any consideration by both the medical and nursing staff. Everything was wrong. For instance, it was quite unnecessary for her to have her temperature taken every four hours. It gave her a sore mouth and in any case she had been told by Dr. so-and-so that she never got a temperature and that it was futile to take her temperature anyhow. And this led to a strange pre-occupation with the dangers to her sight of splashes of antiseptic lotion from the little jar in which her thermometer was kept. Every time the nurse came in to take her temperature, which, of course, was necessary, she would cry out in consternation "Wait a minute, nurse, wait a minute" and shoo her out of the room while she fished about in her locker and produced a large pair of motor-cycling goggles. They had fur rims to the sides which rendered them quite impervious

to any stray droplets that might be floating about the room. One of the most vivid memories I have of Miss Poppoff is this strange little hunch-back scrawny Victorian lady walking down the passage of G.H., wearing a black dressing gown, going to the "bathroom" wearing motorcycling goggles so that no splash from the cistern could possibly get into her eyes.

We got her going again and sent her back to her flat, but soon after that I was rung up by her solicitors to say that they had instructions from her to effect the immediate purchase of an annuity. Did I think this was a wise step? They knew she had been ill for

many years—seven to be precise—and how much longer had she got to live? I told them that I would like to see her and where was she living at the moment? They told me that she had gone into a little Home down by Earl's Court, and would be grateful if I could see her there that afternoon. I went and saw that she was dying, so I rang back her solicitors and told them to stall on the purchase of the annuity for 48 hours. It was not an annuity that she needed, and, sure enough, 24 hours later Miss Poppoff was dead. What little money she had, she left to certain charities of her own choice and it did not go into the pocket of an unscrupulous insurance agent.

EXAMINATION RESULTS

UNIVERSITY OF OXFORD

2nd B.M. Examination, Trinity Term 1957

Pharmacology and Principles of Therapeutics	Chong, J. K. K. H.	Mitchell, A. J.	Woolrych, M. E.
General Pathology & Bacteriology	Burfoot, M. F.	Chong, J. K. K. H.	Smith, R. G. L.
Final M.B. Examination, Trinity Term 1957	Addison, M. M.		Crightmore, J. Q.
Midwifery	O'Sullivan, D.		

UNIVERSITY OF CAMBRIDGE

Final M.B. Examination, Easter Term 1957

Allenby, C. F.	Hughes, R. C. G.	Palmer, J. W. B.
Dunkerley, D. R.	Mackenzie, J. C.	Scorer, M. J. S.
Edwards, A. J.	Maurice-Smith, J. M.	Shaw, J. H. W.
Galbraith, A. W.	Morgan-Hughes, J. A.	Stainsby, G. D.
Hall-Smith, A. M.	Newton, M. A.	Waldron, B. Le G.
Herniman, R. H.	Nichols, J. B.	Wood, C. B. S.

Supplementary Pass List

Part I—Pathology & Pharmacology	Godrich, J. E.	Goodwin, C. S.	Mather, B. S.
Part II—Medicine	Godrich, J. E.	Grant, N. J. C.	
Part II—Surgery	Chalstrey, L. J.	Mather, B. S.	Nicholls, S. A.
Part II—Midwifery	Tidmarsh, D.		
	Chalstrey, L. J.	Godrich, J. E.	Mather, B. S.
	Nicholls, S. A.	Tidmarsh, D.	

CONJOINT BOARD

1st Examination, June 1957

Pharmacology	Stephenson, C. G.	Fenn, P. J.	Martin, J.	Farren, P.
			Cawley, M. I. D.	

A VISIT TO SOUTH AFRICA IN CONNECTION WITH CANCER EDUCATION OF THE PUBLIC

by MALCOLM DONALDSON

THE INVITATION to travel to South Africa as the guest of the National Cancer Association of that country, came as a very pleasant surprise, as I had no idea that anybody in the Union knew of my efforts in this country to persuade people to take Cancer Education seriously.

The object of the visit was to lecture to the lay public on Cancer, and to lecture to doctors, nurses, and students on the subject of Cancer Education. I also was asked to give advice on the organisation of the Branches.

My journey was made in a Britannia, one of the "Whispering Giants", and the whisper was certainly that of a giant, but this did not interfere with the comfort and stability, or the luxury of the food and drink. Unfortunately I arrived in Johannesburg with a cough and temperature which necessitated a few days' stay in hospital. This gave me an opportunity of seeing a hospital from the inside, where I was treated with the greatest kindness and care by the Nurses and Medical Staff. The authorities believe in "Bright and Early" (see the February number of *Bart's Journal*) and at 4 a.m. a large native, I think a Zulu, arrived to polish the floor. I persuaded him that nothing serious would happen to the floor if he left it for another four hours, and although he seemed a little doubtful, he agreed and after that I was allowed to sleep on each morning.

Later I was able to see the rest of the hospital, which in spite of being housed in a somewhat old building, is doing magnificent work. In the Radiology department some interesting animal experiments are being done to see the effect on the radio sensitivity and radio curability of certain tumours by giving certain drugs.

Attached to the hospital is a very up-to-date and efficient medical school. How long it will remain under the University is a matter of doubt.

I was particularly struck by some cancer work being carried out in the Physiology department of Prof. Gillman where I spent

a fascinating morning. For a person like myself who is not a pure scientist it is difficult to be certain that one understands all the facts mentioned. The research in his department chiefly concerns the effect of hormones and food on the aetiology of malignant disease. The impression that one obtained after talking to Prof. Gillman, was that by juggling with these two factors a surprising variety of cancers could be produced including primary cancer of the liver, cancer of the cervix uteri, etc. All this work will be published, and then others better qualified than I will be able to assess its value.

One wing of the Radio-therapy department is devoted to malignant disease among natives. The differences between natives and the white population is very striking. For example, carcinoma of the oesophagus is very common among natives and a possible factor may be the illicit drink made and stored in tar barrels which they buy from the road contractors and which of course contain much tar. In one hospital I was told that 19 per cent. of the natives admitted with malignant disease suffered from this type of cancer. The natives suspect a connection between their condition and the drink, but believe it is due to some 'evil spirit' cast on the drink by an enemy, rather than the evil spirit already in it.

In Africa the women natives carry everything on their heads and the objects they carry range from bundles of very heavy poles 15 feet long, to an empty cup. Jugs of the native drink are carried in the same way. One keen research worker wishing to obtain some of the liquid arranged for a few bicycle accidents in which the pedestrians were knocked over. He said that the liquid at first caused anaesthesia of his mouth when he tried some of it.

Another frequent type of cancer is that of the upper air sinuses, the factor in this case being native snuff. This was described in *British Journal of Cancer* 1955, Vol. IX, and the snuff was analysed at Bart's. Cancer of

the lung seems to be much less common than among whites, presumably because the native cannot afford to smoke cigarettes.

The fate of many albinos, some of whom I saw, is very sad, as they die of multiple cancers of the skin, wherever it is exposed to the sun.

In the course of my tour I visited six different towns in addition to Johannesburg. These were Durban, East London, Port Elizabeth, Cape Town, Blomfontein and Pretoria. The last has been well named the "City of Gardens", as the gardens are magnificent, although it was autumn when I visited it.

There is great keenness among the leaders of the National Cancer Association, concerning Cancer Education, and this is true of the Red Cross, St. John Ambulance, and the Society of Pharmacists, and they have all promised support to the Branches of the N.C.A. which I went out to help organise. The public lectures I gave in each centre were well attended, in one case 300, and fifty of these had to stand.

In South Africa there seems to be many more cancer quacks than in this country in spite of their more stringent laws. No unqualified quack is allowed to charge for treatment, but they get over this difficulty by charging £80 per week for lodgings, but give the treatment free. At one of my public lectures the 'King of Quacks', unknown to me, sat in the front row. As in all my lectures I warned the audience about the danger of seeking advice of quacks who diagnose every case as cancer, and therefore have little difficulty in curing most of them.

This particular man stood up at question time and made a speech saying that cancer is due to 'poisoned blood' and eating pork. He said that you never found cancer among the natives. I told him I had seen a great many cases, and some doctors in the audience pointed out that he was talking nonsense. One of the things that helps quacks is when a doctor gives a case up as hopeless. The patient may have a slow growing tumour and live for several years, the credit for which is given to the quack.

The nurses also are very keen to help. The medical profession, although less enthusiastic perhaps than the public, were willing for Cancer Education to be tried. In all seven towns the local branch of the

S.A. Medical Association arranged for me to give a lecture and to have a discussion on the subject.

What a contrast to this country, where many of the leaders of the B.E.C.C. are scientists who rarely meet members of the ordinary public and are dead against Cancer Education. So many of the profession are apathetic about cancer that it is impossible to persuade them even to meet and discuss it. Many doctors in this country have the mistaken idea that to speak of cancer to a healthy lay person will increase cancer apprehension. Further they think if a patient, or indeed if any man or woman speaks of it, they are suffering from 'cancerphobia'. No wonder there is this fatal delay in the diagnosis of the accessible cancers.

There seems to me little doubt that in South Africa, the N.C.A. will make as great a success of Cancer Education as had been done in Canada and other countries.

Politics in South Africa

No one can be a day in South Africa without becoming interested in the political situation. Let me say at once that the N.C.A. takes no part whatsoever in politics, and my own interest was purely a sideline that had nothing to do with my hosts.

There is a well known story about the Pope receiving visitors to Rome, and the first of these said that he was staying in the city for about four or five years. To this the Pope replied "at the end of that time you may possibly know something about Rome." The second visitor was an American who said he was staying three days, and the Pope told him "when you leave you will of course know all about Rome." So after a short visit of six weeks, of course I know all about South Africa. Nevertheless if one has ears and eyes even if slightly dimmed by age, it is impossible not to get some impressions. First there is the problem of the two white races, namely the Afrikaans versus the British and other white people. Every Afrikaan I met assured me that the relations between the two were better than ever before, and every Englishman said that they were never worse. Since about 60% of the whites are Afrikaans the prospects for the others are not very bright whilst the present Government is in power, and it is unlikely that there will be a change in the foreseeable future.

in spite of the fact that it may be minority government. The general impression is that there will be a Republic within five years, and that the Universities will be under the Government who will appoint the staff. The Medical Schools will be taken over, and the number of English people on the staff is likely to decline rapidly. A new medical school is to be built in connection with the Stellenbosch Afrikaan University, but in spite of the recommendation of a committee set up by the Government that it should be built at Blomfontein, where everybody agrees it should be, it will be built about four miles from the very liberal minded Cape Town Medical School. The object is obvious, there will be no need for two medical schools so near each other, and the one at Cape Town will be ruled out.

The other great problem is of course the Natives, Asiatics, and Coloured people. There are approximately ten million, three hundred and seventy thousand and one and a half million of these respectively, whilst the whites number less than three million. Everybody realizes the size and difficulty of this problem, but it is doubtful whether the present Government is trying to solve it in the best way. Their plan is simple, namely to keep all other people than the whites as a labour force, and for this purpose they will try to prevent any natives or other non-whites, from being educated above the three 'R's'. There is nothing new in this, but the plan is now coming to fruition. It is difficult to believe that such a scheme will be the best for the country when technical skill, owing to modern machinery, is becoming more and more in demand.

Having read Father Huddleston's book "Naught for your Comfort," I took the opportunity of visiting "Sophiastown" and the new location "Meadowfield." Much as I admire all I have heard about Father Huddleston, it is doubtful whether his book will cut much ice in South Africa, although some people think that it has aroused peoples' consciences concerning the natives. His main point is that "non-whites" should be allowed to own their own house or land, but he is an easy prey to his opponent Alexander Steward in "You are wrong Father Huddleston" who rightly points out that Sophiastown had to be cleared away. It is a terrible insanitary site. The new "location" is good, with bungalows and plots of gar-

dens, proper sanitation and water, but the natives are not allowed to own any property. The "coloured" and natives are in separate locations.

Many terrible incidents are described in "Naught for your Comfort," and there is evidence of the prevention of higher education among the natives. Princeton, U.S.A., offered to take a native and educate him, if recommended by Huddleston, but the Government refused to let him leave the country. Most Whites agree to a certain amount of Apartheid, and there is little against the majority of native labourers, mostly illiterate, living in a location but Apartheid among the intelligent and well educated natives is terrible. It is true that the Government is doing its best to prevent such people existing in the future, but whether it is possible to put back the clock remains to be seen. I saw an example of Apartheid among doctors, when I met a native doctor in the house of a very liberal minded couple. This doctor, a very intelligent man, well qualified in Johannesburg, a member of the South African Medical Association, was not allowed to attend my lectures to the profession or my public lectures because of his colour. His practice is restricted to the native "Location," but he is not allowed to work in the "clinic" which was built for his location, because it is run by a "white doctor."

Another well written book published some years ago is "Cry the beloved Country" but this deals with the natives working in the mines and is a different problem. Surely the only solution to these problems is an "Intelligence Bar" not a "Colour Bar."

During Easter weekend my hosts sent me to the Kruger Park animal Reserve, where I saw most species of animal except lions and leopards. The animals are extraordinarily tame and an enormous giraffe came to the side of the road, posed to have his photo taken by the cameras in the many motor cars drawn up, and then sauntered across the road and disappeared.

Finally I want to express my thanks to the South African National Cancer Association for such an extremely interesting — if somewhat strenuous — visit. Everywhere I went I received nothing but kindness and hospitality, and can only hope that in return my work was of some help to the fine effort being made by the N.C.A.

HOUSE APPOINTMENTS

1st July—31st December, 1957

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Dr. A. W. Spence Dr. Neville Oswald	E. G. Wooster J. C. Graham (until 30.9.57) C. B. S. Wood (from 1.10.57)	GYNÆ. & OBS. DEPT. Mr. John Beattie D. H. Elliott } interns Mr. Donald Frazer P. J. Bekenn } Mr. J. Howkins S. R. Costley Junior H/S
Dr. R. Bodley Scott Dr. W. E. Gibb	F. J. C. Millard J. A. Galbraith (until 30.9.57) J. J. Misiewicz (from 1.10.57)	ANAESTHESIA Mr. C. Langton Hewer J. A. Stainton Ellis Mr. Frankis Evans E. F. Brooks Mr. Bowen Mr. Ellis Mr. Ballantine Mr. Jackson
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Mr. J. B. Hume Mr. A. H. Hunt	H. V. Blake Miss S. Thomas (until 30.9.57) B. P. Harrold (from 1.10.57)	ORTHOPEAEDIC DEPARTMENT (Fractures) G. D. Stainsby
Mr. R. S. Corbett Mr. A. W. Badenoch	D. W. Downham J. J. Misiewicz (until 30.9.57) J. A. Galbraith (from 1.10.57)	CASUALTY HOUSE SURGEON D. R. Dunkerly
Mr. J. P. Hosford Mr. E. G. Tuckwell	H. J. O. White Miss R. E. Troughton (until 30.9.57) D. Rosborough (from 1.10.57)	HILL END HOSPITAL
Prof. Sir J. P. Ross Mr. G. W. Taylor	R. P. Doherty K. C. Mackenzie (until 30.9.57) A. J. Edwards (from 1.10.57)	E.N.T. DEPARTMENT Mr. Capps Mr. Jory D. Winstock (until 30.9.57) Mr. Hogg Mr. Cope Miss S. E. Newton (from 1.10.57)
Mr. C. Naunton Morgan Mr. D. F. Ellison Nash	J. A. McKinna C. B. S. Wood (until 30.9.57) J. C. Garnham (from 1.10.57)	ORTHOPAEDIC DEPARTMENT Mr. Higgs L. Pringle Mr. Jackson Birtows R. C. G. Hughes Mr. Coltart
CASUALTY H.P. CHILDREN'S DEPARTMENT Dr. C. F. Harris Dr. A. W. Franklin E.N.T. DEPARTMENT Mr. Capps Mr. Jory Mr. Hogg Mr. Cope	M. S. Whitehouse P. D. Mulcahy Miss N. E. C. Coltart D. Winstock (from 1.10.57) Miss S. E. Newton (until 30.9.57)	THORACIC DEPARTMENT Mr. Tubbs R. L. Hewer Mr. Hill A. M. Hall-Smith DEPARTMENT OF NEUROLOGICAL SURGERY Mr. O'Connell J. H. W. Shaw
		ANAESTHESIA Mr. C. Langton Hewer J. A. Stainton Ellis Mr. Frankis Evans E. F. Brooks Mr. Bowen Mr. Ellis Mr. Ballantine Mr. Jackson

SPORTS NEWS

VIEWPOINT

AUGUST must surely be one of the most lethargic of months for hospital sport. This is not solely due to its being in the no-man's land between the end of summer and the beginning of winter activities—it is also one of the months bridging the beginning and end of the academic year. Consequently, during August and September the available sporting population of the hospital is at its lowest. This makes itself manifest in a number of ways but is felt probably most painfully by the Cricket Club. Their fixture list after a triumphant beginning fades slowly away until organized matches end early in August. For this the Club is often criticized by outside sources who would like return fixtures, but it is usually impossible to field a representative side after the results of Finals and 2nd M.B. have been published. It would seem that this situation is experienced by secretaries in other hospitals, and thus the result of the Hospital Cricket Cup final which is played at the end of July or in August becomes not so much a question of a win on merit, as a triumph for whichever secretary succeeds in dragging more of his previous stars back from house jobs in remote parts than the other. This is perhaps rather nearer the heart this year than in others, for the Hospital has succeeded in reaching the Cricket final by defeating the Royal Dental and Charing Cross Hospital, a final which they last won in 1948. For this they must be congratulated. The hope is expressed that the team will be as fully representative as possible when the final is played.

CRICKET

INTER HOSPITALS CUP SEMI-FINAL

1st XI v. Royal Dental and Charing Cross Hospitals. Played at Chislehurst on 20th June 1957, and won by 3 wickets.

Charing Cross won the toss and decided to bat, but were soon in trouble against some fine seam bowling notably by McKenzie who was at his most aggressive. Having taken the first five wickets for 26 runs, Bart's allowed their grip on the game to relax, as has been so often the case in Cup

matches. The Charing Cross tail then waggled with such enthusiasm that they were all out for 162, leaving Bart's three and a half hours for the runs. There was thus no worry about the time factor, and the game was still in the balance at tea when Bart's were 100 for six wickets. Harvey however proceeded to bat very sensibly, sharing in partnerships with Marks and Abell, and was 40 not out when the necessary runs were scored.

Bart's are thus in the Cricket Cup final for the first time since 1948, when they also won the Cup. Provided that they can drive home any advantages they gain, there seems no reason why they should not now repeat the performance.

Royal Dental and Charing Cross Hospital 162 (McKenzie 5-75).

St. Bartholomew's Hospital 164 for 7 wickets (J. Harvey 40 not out, I. Stark 35).

1st XI v. Jesters. Played at Chislehurst on 29th June 1957. Match drawn.

Owing to a breakdown in transport arrangements, Bart's were only able to field five men, and thus had no option but to bat. However they made an excellent start and by the time the remaining members arrived had put the hospital into a strong position. Pagan hit an excellent 80 which enabled the hospital to declare at 213 for 8 wickets. The Jesters started disastrously losing their first four wickets for 36 runs, and it soon became clear that their only course was to bat out time. This they succeeded in doing only with their last pair at the wicket, and thus the honours of a drawn game went to the Hospital.

St. Bartholomew's Hospital 213 for 8 wickets declared (Pagan 80, Stark 38).

Jesters 111 for 9 wickets (Garrod 3-23, Mitchell 3-29).

1st XI v. Old Roans. Played at Chislehurst on 30th June 1957, and resulting in a win for the Hospital by 4 wickets.

This was an excellent day's cricket in which over 500 runs were scored in perfect weather. On an ideal pitch the Old Roans batted first and scored consistently to declare at 252 for five wickets, helped mainly by an aggressive century by Chambers. Bart's were given two and a half hours to make the runs, and though they fell behind the clock after the tea interval, a final stand between Whitworth and Mitchell running innumerable short singles brought victory in the last over. Pagan added to his successes of the previous day with a fine 72, and shared in stands with Marks and Whitworth whose 52 not out was a fine piece of aggressive batsmanship.

Old Roans 252 for 5 wickets declared. Chambers 123.

St. Bartholomew's Hospital 253 for 6 wickets. W. Pagan 72, A. Whitworth 52 not out, A. P. Marks 44, R. Mitchell 32 not out.

1st XI v. Horlicks. Played at Slough on 16th June 1957, and lost by 84 runs.

Horlicks batted first, and the Hospital did well to take their first six wickets for only 47 runs. However the lower order batsmen struck about them to such good advantage that Horlicks were finally all out for 148. In reply the Hospital, who were fielding a weakened batting side, started favourably enough, but collapsed after having been 49 for 3 wickets to 64 all out. Although defeated the Hospital were by no means disgraced, as Horlicks were able to call on a strong side including several Minor Counties players.

Horlicks 148 (Whitworth 3-44).

St. Bartholomew's Hospital 64 (Isherwood 6-27, Jordan 4-9).

1st XI v. U.C.S. Old Boys. Played at Chislehurst on 6th June 1957. Match drawn.

The Hospital, fielding a weakened side, were fortunate to escape with a draw. After having limited the scoring of U.C.S. to only 145 for eight wickets, there was a collapse against some accurate but by no means deadly spin bowling. Whitworth alone showed any confidence in using his feet to get to the pitch of the ball. And it is hoped that the remaining batsmen will profit from his example. As it was, stumps were drawn with the hospital 51 runs behind with three wickets in hand.

U.C.S. Old Boys 145 for 8 wickets declared. (Whitworth 3-31, Mitchell 3-31).

St. Bartholomew's Hospital 96 for 7 wickets. (A. Whitworth 32 not out, J. Stark 26).

Past XI v. Present XI. Played at Chislehurst on 7th July 1957, and resulting in a win for the Present XI by 6 wickets.

For this, the social event of the year, we were fortunate in having a fine day with a stiff breeze which was cooling enough to prevent the fieldsmen from becoming fried.

The Past XI batted first, and were soon in difficulties against the seam bowling of McKenzie, Garrod and Whitworth. However with the help of a fine innings of 54 from J. Tomlinson and some academic blows by the tail, they reached 128 an hour before tea. Bart's opened their innings confidently, and scored the necessary runs for the loss of four wickets. Having disposed of the formalities of the day, the way was open for a most enjoyable social evening, and we are most indebted to the President, Mr. O'Connell for organising such a delightful day, and for his generous hospitality.

Past XI 128 (McKenzie 5-37, Whitworth 3-13, Tomlinson 54).

Present XI 132 for 4 wickets. (A. Anderson 36).

SAILING

R. M. Ridsdill Smith helmed for the Hospital in the Sherrin Cup on June 8th. In the first heat we came in second in light winds. In the final after a good start, Bart's in Amber were caught in the wind shadow of the fleet and after forcing Westminster to retire on a luffing protest, the boat was 50 yards behind the fleet. The course was mainly reaching, and so was not very responsive to manoeuvres; however, we passed St. Mary's on the reach to Redward, and St. George's between Roach and Branklet.

Due to underestimation of a hard ebb tide in the anchorage, we failed to beat Guy's and came in third.

Crew: D. M. Welch, Miss I. Angel James.

In the inter-hospital Race on June 15th, A. J. Ellison helmed the Bart's boat to a second place in fresh winds.

Crew: Mrs. A. Ellison, L. J. Farrow.

SHOOTING

The 1956/57 shooting season ended officially after the N.R.A. United Hospitals' competition at Bisley on July 12th. In this match the Rifle Club entered two teams of four. Bart's 'A' was placed second to Guy's 'A' and the 'B' team came 5th. The match was of 2ss and 7 to count over 200*, 500* and 600*.

Scores were:—

A Team

	200	500	600	Aggte.
G. R. Hobday	31	32	29	92
R. P. Ellis	33	31	28	92
J. D. Hobday	34	30	32	96
G. F. Abercrombie	31	32	27	90

Total 129 125 116 370

Max. Poss.—105
(Guy's 'A' 380)

B Team

K. W. Gabriel	31	27	24	82
G. B. Jackson	33	27	23	83
R. B. Church	28	28	27	83
Miss A. M. Holloway	23	29	14	66

Total 115 111 88 314

Weather conditions for the shoot were not the best although the rain held off until the teams moved back to 500*. Over 200* and 500* Guy's were well held and before firing commenced at 600* had the slender lead of 3 points. After the first detail had fired, this lead was reduced to nil

but unfortunately a series of bad scores from the remaining three firers in the Bart's team resulted in the loss of the match. Much of this may be attributed to the weather as by this time both weapons and firers were far from dry.

The 'B' Team was entered primarily to give match experience to novices and for this purpose the inclement weather was extremely useful. It is to be hoped that further practice will demonstrate that the target at 600* need not be too elusive! It is, indeed, unfortunate that a stronger 'B' team could not be raised to support the 'A' team. The timing of the match, in relation to the M.B. examinations is, however, unfortunate and both these and the pre-clinical vacation tend to exclude some promising shots from the practice in the preceding weeks which is so vital.

Individually J. D. Hobday should be congratulated for his good score through the ranges and G. B. Jackson for his 33 at 200*.

At the club Prize Meeting at Bisley on June 30th the pewter tankard for the highest score of the day was won by R. P. Ellis with a score of 62/70 over 200 and 600 yards. The Benetfink Handicap Cup was fired for on a 'drop point' basis and was won by G. B. Jackson with 2 dropped points after a count-out from Miss A. M. Holloway, who also dropped only two.

The results of this season's performance promise well for next year. Club colours are awarded to G. R. Hobday, R. P. Ellis, J. D. Hobday, G. F. Abercrombie and R. W. Gabriel.

Club Ties. The club tie is now available to all who have fired with the club for more than one term since October 1956 and to any previous officers of the club who wish to wear it. The tie is a Black and Silver Bart's stripe bearing a crimson crossed rifle in the black stripe. It is available on application to the Secretary, c/o The Abernethian Room, at 16/-.

ERRATUM

United Hospitals Bumping Races

A lapse in page-proof reading allowed the regrettable mistake to be included in our last edition of what must have appeared a ludicrous compilation of the final standing of crews in the United Hospitals Bumping Races. The correct order was: St. Thomas's, Guy's, St. Bartholomew's, Westminster, Middlesex, London, St. Thomas's II, St. Bartholomew's II, St. Mary's, St. George's, St. Bartholomew's III, St. Thomas's III, Guy's II, London II, U.C.H., L.S.E., St. Mary's II, St. Bartholomew's IV, Guy's III, Westminster II, Middlesex II, St. Bartholomew's V.

Apologies from the *Journal* to the stalwarts of the Boat Club.

BOOK REVIEWS

SURGERY OF THE ANUS, ANAL CANAL AND RECTUM by E. S. R. Hughes. Foreword by C. Naunton Morgan. E. & S. Livingstone pp. 295, 50/-

This book is a welcome addition to the small number of books which deal adequately with this subject. It is welcome in that it has come to us from Australia although the author concedes that it was largely conceived as a result of his experience gained at St. Mark's Hospital, London. Furthermore, it presents us with the theory and practice current at the present time.

As its title suggests, this book covers a limited or specialist field in surgery. It must be appreciated, however, that monographs of this nature are the inevitable, and even desirable, sequel to the present trend towards increasing specialisation in the profession. Ideally suited as this book is for the post-graduate seeking a more detailed knowledge, it is almost equally valuable to students and practitioners reading generally because it has, too, all the characteristics of a good reference book.

In the first place, the subjects of the chapters are well chosen. In the main, each deals with a separate pathological entity. At first sight, Mr. Hughes appears to have limited unduly the scope of his book, but this criticism is disarmed in the light of the knowledge that he has dealt only with those subjects in which he feels he has had the experience necessary to write with authority. From this point of view, the book is all the more valuable.

In the second place, each chapter is clearly paragraphed, making for rapid, easy reading and assimilation of the subject matter. Furthermore, at the end of each chapter there are good bibliographical references, and at the end of the book there is a separate index of the authorities quoted in the text.

Lastly, the index itself is comprehensive and helpful.

There are numerous photographs to supplement the text. In general, these are of good photographic quality, but a few are lacking in adequacy of definition. The line drawings are similarly numerous and achieve an exceptional clarity of illustrative detail by virtue of their simplicity. They are a real feature of the book.

In short, Mr. Hughes has produced for us an essentially practical, up-to-date and authoritative account of this branch of surgery, which deserves to gain a wide acceptance as a standard work and reference book.

N. BLACKLOCK.

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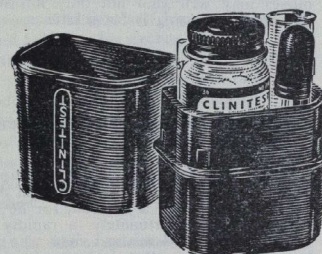
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OUTLINE OF FRACTURES by J. C. Adams.
E. & S. Livingstone pp. 248, 27s. 6d.

This reasonably sized book provides a complete and very readable account of the essentials of fracture treatment. It is laid out in two main parts. Pp. 1-62 deal with principles of management in fractures and joint injuries. The individual injuries are dealt with in pp. 63-240.

The first section is praiseworthy. The reading matter is concise and clear, and excellent diagrams illustrate and explain the text. Particularly clear are the paragraphs concerned with damage to major blood vessels and nerves (pp. 22 and 24).

The second section is in three chapters, the first on the trunk, the second on the upper limb, and the third on the lower limb. At the end of each chapter dealing with limb injuries is a simple summary of the common injuries encountered.

It is in this section, however, that some criticisms are made.

In discussing rib fractures (p.82) no mention is made of paradoxical respiration. Should dislocations of the acromio-clavicular joint always be treated by open reduction? (p.89) Is operative repair of the torn musculo-tendinous cuff to be adopted as a routine in all but the "very old"? (p.94) The method of reducing the most important Colles fracture is not clearly described. Not everyone will agree that excision of the proximal fragment alone is the best way to deal with non-union of the scaphoid due to avascular necrosis.

In dealing with knee injuries, no mention is made of rupture of the ligamentum patellae itself (fig. 182, p.190), nor of the importance of a history of 'unlocking' as well as of 'locking' in the diagnosis of torn semiluna cartilages (p.198). In spite of the disadvantage mentioned in the foot note, many surgeons prefer os calcis traction in tibial shaft fractures (p.208). The X-ray illustrated on p.231 (fig. 214) is not typical of most compression fractures of the os calcis.

Nevertheless these criticisms should not be allowed to belittle the all-round excellence of this manual. It should prove helpful to students preparing for examinations, to physiotherapists, and to general practitioners needing a concise account of fracture treatment for easy reference.

SKIN DISEASES FOR BEGINNERS by R. B. Coles and P. D. C. Kinmont. H. K. Lewis & Company. Pp. 43, 7/6.

It is rather difficult to know for whom the authors intended their booklet, but it is said to be for "nurses and others" and is here considered from the standpoint of the nurse.

In a book so short it is impossible to criticise the authors' selection of contents, but most would agree that it is sensible. The diagrams are neat and the layout makes for easy reading. The outline of treatment given is modern. The section on nursing technique mentions the principal fault of the zealous nurse—over-cleaning the inflamed skin.

Student nurses who are working among skin patients before they have received their formal dermatological lectures would find this booklet a useful foundation for subsequent learning.

ENCYCLOPAEDIC GUIDE TO NURSING—
H. F. Hansen. McGraw-Hill. Pp. 406, 35/6.

A book of a scholastic level such as this is a typical product of the higher levels of nursing education in America, and it is unlikely that a British counterpart will be written. The usual comments on differences between British and American spelling and weights systems must of course be made, and in a book of reference of this type are a considerable deterrent to its use by student nurses.

The amount of nursing information contained is very great; it is not merely a book of definitions. The preventive aspects of nursing and medicine are everywhere stressed, and examples of the amount of information given can be estimated by looking up such items as tracheotomy, colostomy, gout, dehydration or crutch walking. The technique of putting on a gown for an infectious case is fully and neatly described in a few lines.

The cross-reference system appears to work well, and there is a useful appendix on the use of common prefixes and suffixes. The coloured illustrations add, as always, to the attractive appearance of this well-produced book. Senior nurses may well gain not only information but new ideas, by using it for reference.

A SURGEON'S JOURNEY by J. Johnston Abraham. Heinemann, 25/-.

'What, another medical autobiography?' you may be tempted to say. Dr. Johnston Abraham is however more than a surgeon, for he belongs to what is now, unfortunately, a rapidly dwindling class, the educated medical man who finds time to combine some other interest with his medical career. Both under his own name and also under the nom de plume of James Harpole, he has achieved world-wide renown as a novelist and as a medical historian and in addition he is managing director of Heinemann's Medical Publishing Company. These interests, together with his medical work, have brought him into contact with many of the leading men of his day, both in the medical world and in a wider sphere. It is disappointing that an author of Dr. Abraham's experience should at times allow his reminiscences of these famous people to become rather rambling, but he does give one interesting sidelights on many of them, whilst his habit of dipping into Medical history in reference to people and places he mentions is most attractive. His story covers Ulster, Dublin, London, the Balkans and the Middle East, so he has plenty of opportunity to show his historical knowledge.

This is an interesting, if at times rambling book covering a revolutionary period in Medical Science, but despite its excellent production one cannot help commenting that 25/- seems rather an excessive price for any book of this type.

C.J.C.



*A Chance
for Child-lovers*

The geneticists, those unfortunate students of heredity, are agitated by the way families in this century have shrunk in size. If any race—whether of men or of animals—is to thrive, and maintain a good stock, they say, there must be plenty of them about, so that the genes have plenty of opportunities for reshuffle. The genes are those mysterious bits of nuclear protoplasm by which hereditary characteristics are handed down from generation to generation; and of course every child gets half his genes from his father and half from his mother.

Well, the geneticists say, there must be plenty of cards in the pack if shuffling and re-dealing is to produce interesting and refreshing combinations. The smaller the pack the smaller the variety of hands you can deal.

But the hereditary pack, confound it, doesn't even remain constant. The genes in every generation show . . .

Would you like to hear more? Unfortunately, space will not permit reproduction of the whole of this entertaining and informative essay, as it appeared originally in The Times. It is one of a collection of delightful medical musings—all from the same wise and witty pen. If you would like a copy of "The Proving of Podalirius" just send us a card at the address below.

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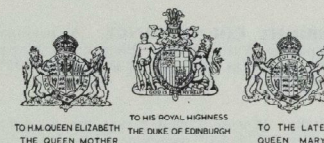
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THE BRIGHT COUNTENANCE. A personal biography of Walter Morley Fletcher by Maisie Fletcher. London. Hodder & Stoughton, 1957. pp. 851, 25s.

Sir Walter Morley Fletcher was the youngest son of Alfred Fletcher, sometime Chief Inspector of Chemistry of the Local Government Board in London and the younger brother of Herbert Morley Fletcher, who was for many years a notable figure in this hospital as a Physician. Walter came to the hospital just after he had been elected to a Fellowship at Trinity College, Cambridge. He then led a very strenuous life having to lecture at 9 a.m. three mornings a week, catch a train to London, work in the wards and outpatient departments, return to Cambridge too late for dinner in Hall and then prepare his lecture or read medicine or surgery books. He did this for 24 weeks in the year and had only a little more time in the vacations of the University. He passed his finals at Cambridge in two years. A strenuous life indeed but not more so than that which he was to lead throughout his life. When he was Director of Studies for the Natural Science undergraduates at Trinity he used to conduct revision courses in Physiology three evenings a week from 6 to 7 p.m., see his men to advise about their work at other times, lecture to advanced students and fit in his research work at odd times or in the vacations besides taking part in the full social activities in the College and University.

Marriage in 1904 did not diminish his activities as he became at the same time one of the four tutors and finally senior tutor which entailed additional work. His important paper in collaboration with Dr. (later Sir) Gowland Hopkins was written under these conditions. Then in 1914 he began the work by which he will always be remembered. He was made secretary to the newly created Medical Research Committee (later Council), a product of Lloyd George's National Insurance Act. This ended his own research work but his interest in physiological and medical problems enabled him to see what wanted doing and his really great powers of organisation together with his sympathy with the aims and talents of younger men were responsible for the great advances made while he was secretary. An attack of pneumonia in 1920 followed by an empyaema which took some time to heal, caused some diminution in his activities for a while and it was a recurrence of the empyaema together with a cerebral abscess which caused his death thirteen years later. Lady Fletcher has written an intimate and sympathetic account of her husband and the inclusion of many revealing letters adds greatly to the interest of the book. Sir Arthur McNalty has written a good factual account of the setting up of the Medical Research Committee and the part played by Fletcher in its work. This also stresses the active part which he took in its work and organisation and the vast amount of his time which he devoted to it. It is certainly a book to read and meditate about and is a worthy tribute to the man who was always a true son of St. Bartholomew's.

Leonard Graham.

TEXTBOOK OF SURGICAL PATHOLOGY
7th ed. by C. F. W. Illingworth and B. M. Dick. J. A. Churchill. Pp. 730. 63s.

A new edition of this excellent textbook is to be welcomed by all those preparing for their final examination or higher surgical qualification. The full list of references is a valuable aid to the specialist.

Several changes from the last edition have been made including a new chapter on the constitutional effects of injury. In this there is a discussion of electrotype balances in relation to surgical pathology.

The text has been fully revised to incorporate more recent work. For instance in the chapter on breast pathology the modern concepts of fibro-sarcoma and the hormonal basis of carcinoma are considered.

With many new illustrations, which reproduce well on the glossy paper, this edition lives up to the high reputation of its predecessors.

BOOKS RECEIVED

Inclusion in this column does not preclude review at a later date.

THE BREASTS AND BREAST FEEDING by Harold Walker. Heinemann, Pp.56. 7/6.

A THERAPEUTIC INDEX, 2nd edition by C. M. Miller and B. K. Ellenbogen, Baillière, Tindall & Cox. Pp.156. 12/6.

NERVES EXPLAINED by Richard Asher. Faber & Faber. Pp.155. 10/6.

SYNOPSIS OF SURGICAL ANATOMY, 8th ed., by A. McGregor. John Wright & Sons. Pp.808. 32/6.

INTRODUCTION TO BACTERIAL PHYSIOLOGY by C. E. Clifton. McGraw Hill Book Co. Pp.414. 58.50.

PATIENTS AND DOCTORS by Kenneth Walker. Pelican. Pp.182. 3/6.

DE MOTU CORDIS, William Harvey, Translation from the original Latin by Kenneth J. Franklin. Blackwell. Pp.209. 17/6.

MEDICAL ETHICS edited by Maurice Davidson. Lloyd-Luke. Pp.165. 20/-.

INTRODUCTION TO CLINICAL ENDOCRINOLOGY by A. Stuart Mason. Blackwell. Pp.193. 22/6.

FLUID BALANCE IN SURGICAL PRACTICE by L. P. Le Quessne. Lloyd Luke. Pp. 140. 20/-.

LEFT HANDED DOCTOR by Peter Quince. J. M. Dent. Pp.194. 16/-.

PRINCIPLES AND ART OF PLASTIC SURGERY by Sir Harold Gillies and D. Ralph Millard, Jr. In two volumes. Butterworths, London, 2472 illustrations. £12 10s. 0d. per set plus carriage and packing.

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EDITORIAL

*You write with ease, to show your breeding,
But easy writing's vile hard reading.*

Clio's Protest in Moore's Life of Sheridan.

SUCH AN OUTCRY made as latterly as 1825 epitomises only too well the dissatisfaction on the part of readers of most forms of writing of a contemporaneous nature. It is not our avowed aim in these lines to enunciate all the possible causes for the decline of the art of literal expression: the task is one of such gargantuan proportions that even the combined talents and knowledge of the better qualified could provide at best only a barely plausible explanation. That many factors must play a part is evident. The price paid for our 'highly modern and civilised' existence with its push-buttons, 'gadgets', 21-inch television screens and what-have-you-Scope, is unduly high. The art of reading and writing have been pushed further into abeyance. In *The Bishop Orders His Tomb*, Browning stated that 'the rough and ready man that write apace, read somewhat seldomer, think perhaps even less'—one wonders whether he could have foretold that these words of wisdom passed on his fellow men would one day assume such formidable dimensions of reality.

To be able to write with ease in the times of Thomas Moore was to be in keeping with a person's station or breeding. The illiterate masses had no form of compulsory education for their edification. To be able to write at all in present times is unfortunately not quite always in keeping with a person's station or breeding. This, in spite of compulsory education and state grants, would seem a consequence devoid of any logical sense. Apart from some of the reasons given before,

what are other causes for this state of insufficiency?

Critics who fancy themselves as purists expostulate upon the slightest pretext at the use of certain words alien to them but which convey more than adequately apparent and purposeful meaning. Styles of writing are also prone to onslaught. Such a hubbear as fear of criticism of context and style from quarters professing to unqualified learnedness is unfortunate, particularly when the criticism is unwarranted or when the budding writer has not the self-respect to defend himself. The essence of Clio's protest in Thomas Moore's *Life of Sheridan* was that easy writing provided 'vile hard reading.' We would point out that hard writing provides even more vile and difficult reading. 'Style is the man himself' (de Buffon) and 'Style is the dress of thought, a modest dress: neat, but not gaudy, will true critics please' (Samuel Wesley)—two testimonials to the futility of argument over correctness of style in writing. Each man is entitled to his own favourite coat and his favourite louse. One should heed Coleridge's words—'Until you understand a writer's ignorance, presume yourself ignorant of his understanding.'

Practice should make for perfection, but the import of the axiom is allowed to slip too often because of lethargy or because of a sense of defeatism illustrated best by Dogberry's averment to Seacoal in *Much Ado About Nothing*—'... to be a well-favoured man is the gift of fortune: but to write and read comes by nature.' Nothing can be further from the truth.

The rewards harvested from writing are