JANUARY, 1938

THE ULSTER MEDICAL JOURNAL

PUBLISHED BY
THE ULSTER MEDICAL SOCIETY

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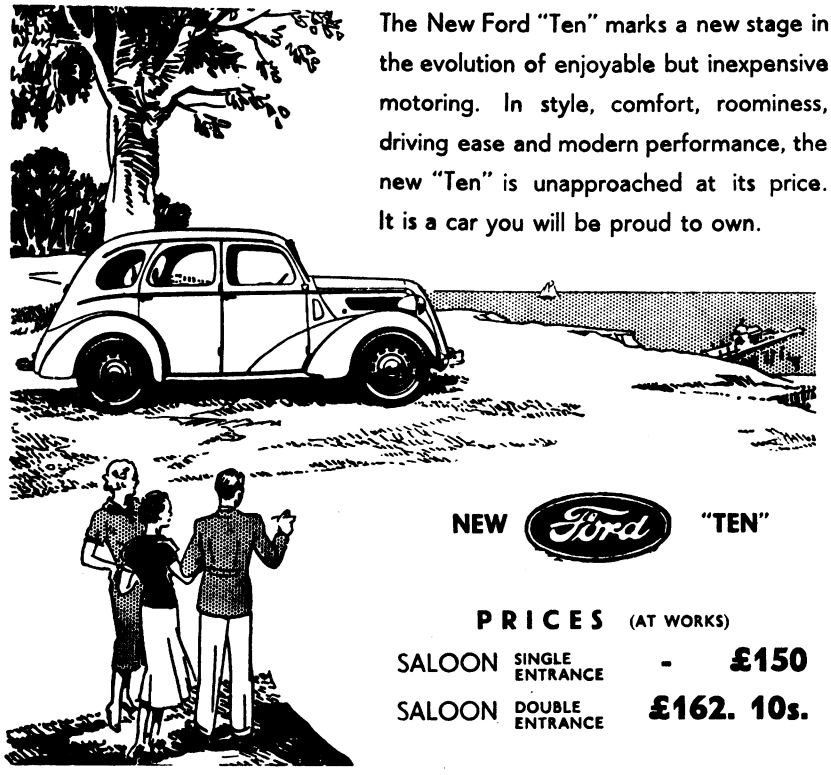

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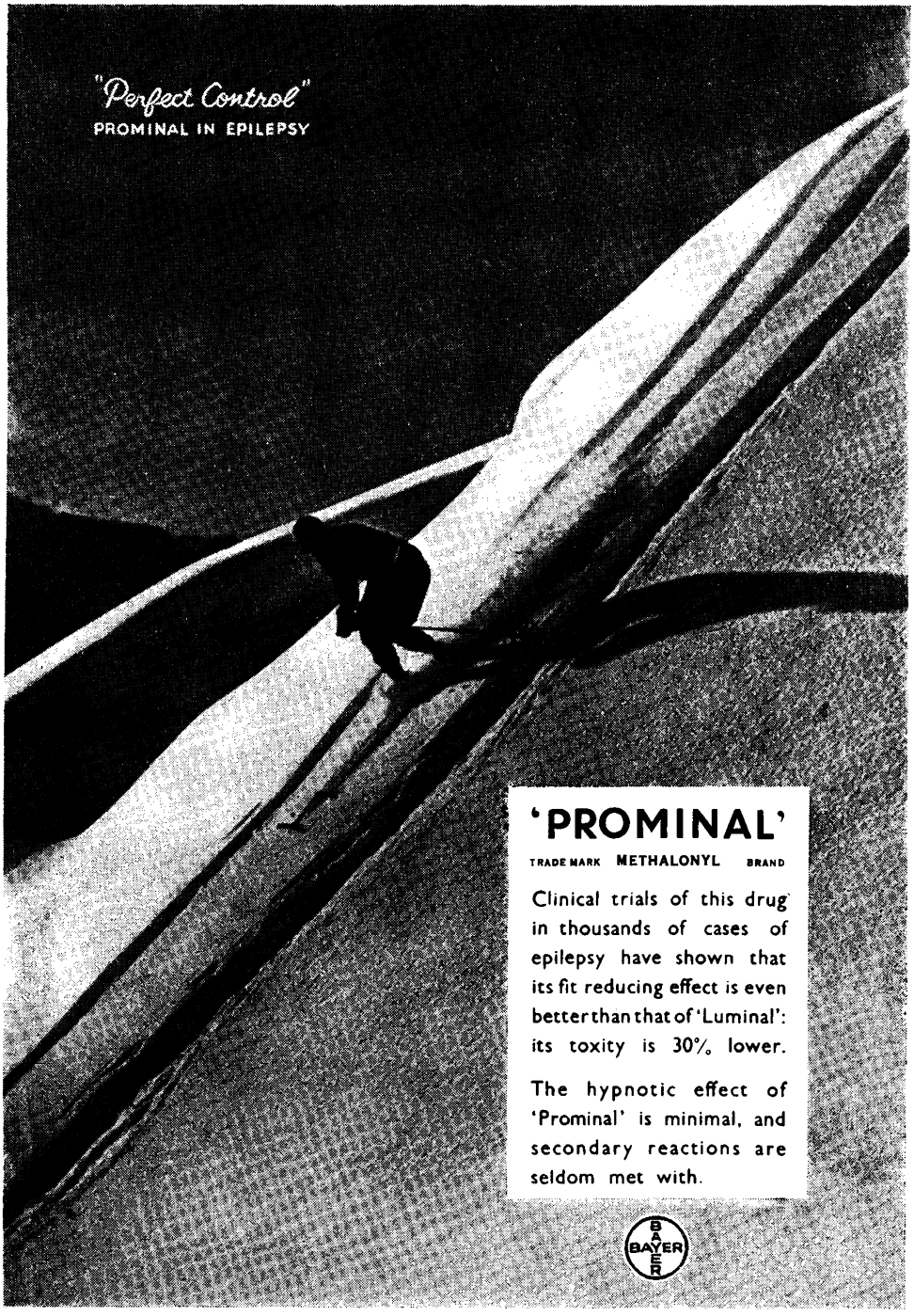

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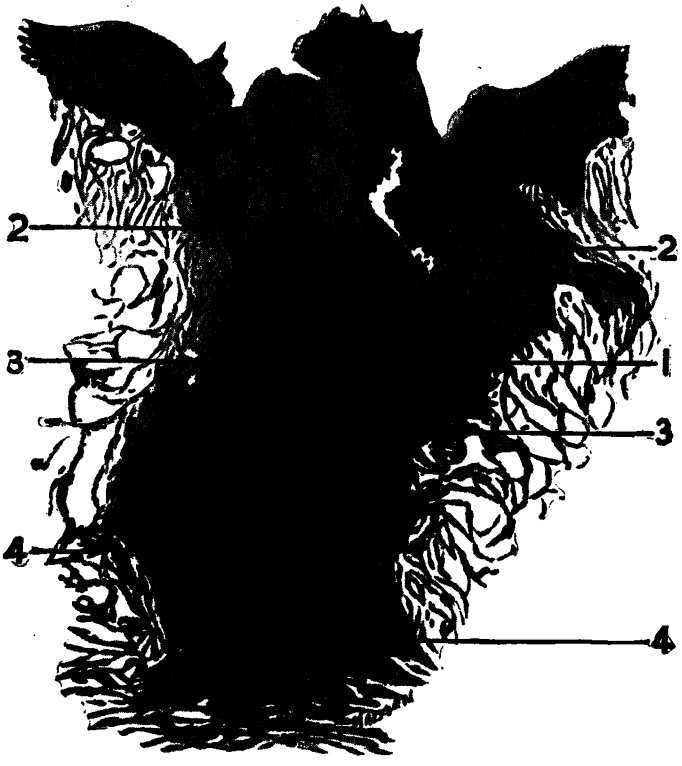

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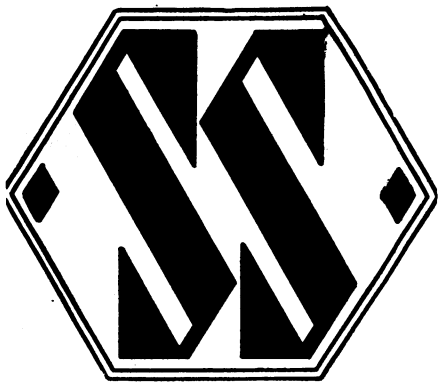

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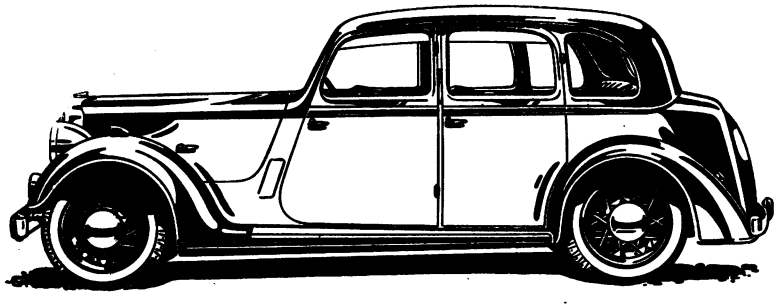

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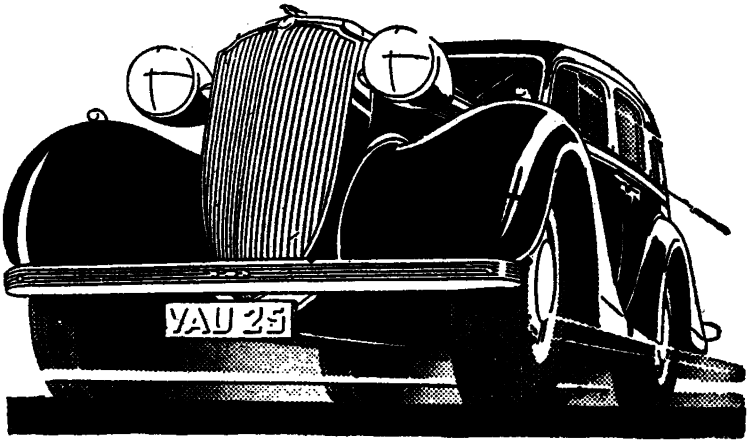

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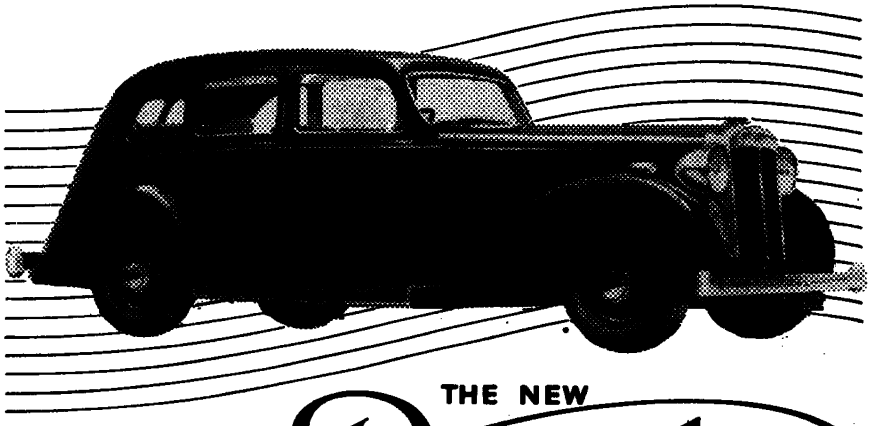

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The scales of emoluments shown above are those applicable to officers serving at home. Officers serving at stations abroad (other than India) receive the same rates of pay as those serving at home, and their allowances are fixed with reference to the cost of commodities at the station at which they are serving. In most cases they are granted, in addition to their ordinary pay and allowances, a Colonial allowance to meet the extra cost of certain items at their station. Officers serving in India receive special rates of pay and allowances which are higher than the above-mentioned rates.

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Much importance is attached to the holding of house appointments in civil hospitals, and an officer who has already held a whole-time appointment in an approved civil hospital before entry into the service may be given an antedate not exceeding twelve months in respect of that employment. Similarly, suitable candidates, if already holding or about to hold such an appointment, may be granted commissions and then seconded for such period as will enable them to complete up to a maximum of twelve months in a house appointment. On promotion to the rank of captain, the period so spent in a house appointment, whether before or after entry into the service, up to a maximum of twelve months in all, may be allowed to reckon for seniority, increases of pay, and promotion to major.

Full information can be obtained on application to the Assistant Director-General, Army Medical Services (A.M.D.1), The War Office, Whitehall, S.W.1, or, if desired, a personal interview will be given.

Entrances take place at the end of April and end of October in each year. The next entry will be about the 22nd April, 1938.

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Flesh-Meat Days shall be Sunday, Tuesday and Thursday.

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DINNER.—Eight ounces of Beef or Mutton or Pork, or Veal; weighed when raw for each patient; either of these to be boiled and broth made of it, thickened with Cutlings or Grotts; a pint of which to be served to each. Roots are to be used when to be procured, as Potatoes, Turnips, or Parsnips. When there are Roots, six ounces of bread, and eight ounces when otherwise. A pint of small beer, when to be had conveniently.

SUPPER.—Water Pottage a pint, or a pint of Flummery or Potatoes, with either of these a pint of milk occasionally, a pint of Milk Pottage, or six ounces of bread and pint of milk.

Meager Days shall be Monday, Wednesday, Friday and Saturday.
Breakfast and Supper the same as on Sunday, Tuesday and Thursday

DINNER

(1) Ten ounces of bread and pint of milk;

(2) *or* Twelve ounces of plain pudding; one ounce of butter and pint of small beer;

(3) *or* A sufficiency of potatoes and one pint of milk;

(4) *or* Ten ounces of bread, two ounces of butter, and pint of small beer;

(5) *or* Three ounces of skimmed milk cheese, eight ounces of bread, and a pint of small beer;

(6) *or* One quart of broth, made the day before, and four ounces of bread;

(7) *or* A quart of grott gruel, or barley seasoned with salt and butter and four ounces of bread.

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The Ulster Medical Journal

VOL. VII

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1938

CONTENTS

No. 1. January, 1938

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No. 3. July, 1938

No. 4. October, 1938

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Fellows and Members of the Ulster Medical Society receive the Journal free. Subscription to non-members, five shillings annually.

THE ULSTER MEDICAL JOURNAL

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4. The legend describing an illustration must be inserted in the appropriate place in the text, and should not be placed on or appended to the drawing.
5. Orders for reprints must be given when the author returns the printer's proof. The cost of these may be obtained from the printers in advance.
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DATES OF PUBLICATION

1st January, 1st April, 1st July, 1st October.

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STERNE, LAURENCE, *Tristram Shandy.*
YEARSLEY, MACLEOD, *Doctors in Elizabethan Drama,* 1933.

THE MATER INFIRMORUM HOSPITAL, BELFAST

THE Medical School of the Mater Infirmorum Hospital, Belfast, was opened for the winter session, 1937-8, on Wednesday, 20th October, 1937. Mr. Brien J. Moore, F.R.C.S.I., occupied the chair. Dr. Douglas Boyd, hon. radiologist to the hospital, delivered the inaugural lecture, which we hope to publish in the next issue of the Journal. There was a large attendance of the honorary medical staff, with the nursing staffs and students.

THE ULSTER MEDICAL SOCIETY

THE MEDICAL INSTITUTE,
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Dear Sir (or Madam),

If you are not a member of the Ulster Medical Society, we would appeal to you to give the question of joining your consideration. The Society has been in existence since 1862, and has always been active in keeping its members interested in the advances in medical science as well as in current professional affairs. The Medical Institute, situated in College Square North, belongs to the Society (through the generosity of Sir William Whitla), and is ideally adapted for meetings, committee meetings, and recreation. There is a library with current medical periodicals, and facilities for reference to medical literature are available in conjunction with the library at the Queen's University. There is also a billiards-room available to members, and lighter periodicals are also provided. An annual dinner is held each year in December, and a golf competition in June. Meetings are held at intervals of a fortnight during the winter months, and papers are contributed by members. Distinguished visitors are occasionally asked to contribute papers on subjects upon which they are specially qualified to speak. THE ULSTER MEDICAL JOURNAL, the official organ of the Society, is issued to all Fellows and Members free of charge.

The subscription to the Society is one guinea for Fellows and Members living in the country; two guineas for Fellows living in Belfast; and one guinea for Members living in Belfast who are not qualified more than seven years. The payment of a sum of twenty guineas entitles one to election to Life Membership.

May we, therefore, appeal to you to join the Ulster Medical Society, and so enable us to widen its influence and sphere of usefulness still further? Please make application to the Honorary Secretary, which will ensure your name being put forward for election to membership of the Society.

If you do not wish to become a member of the Society, will you consider entering your name as a subscriber to THE ULSTER MEDICAL JOURNAL? The subscription is five shillings per annum, payable in advance to the Honorary Treasurer.

We remain,

Yours faithfully,

W. W. D. THOMSON, *President.*
F. P. MONTGOMERY, *Hon. Secretary.*
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.....19.....

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To The Editor of The Ulster Medical Journal.

Sir,

I very much appreciate the opportunities you so kindly give me from time to time to place before your readers the claims of the Royal Medical Benevolent Fund Society of Ireland. It is largely because of your kindness in this that one feels that there is a deeper interest in the "Medical Benevolent" throughout Northern Ireland. This is reflected in the increase in subscriptions; but the increase, though welcome, is still insufficient, and does not reflect the generous heart of the Ulster doctor. For example, in Belfast and County Antrim the increase is from £156 to £170. Of this £170, only about £16 was subscribed by the whole of the medical practitioners in the County of Antrim outside Belfast.

The Belfast and County Antrim Branch has had an unexpected windfall this year: the President and Committee of the B.M.A. 1937 Annual Meeting allotted the whole of the collection at the Protestant religious service, and very generously defrayed the expenses of the service, so that I had the pleasure of forwarding £55 to Headquarters. Since then I have also received from the hon. treasurer a cheque for £100, allotted to our charity from the surplus funds of the 1937 Meeting.

But there will not be another B.M.A. Meeting in Belfast for at least a quarter of a century, and the backbone of any charity is the regular annual subscriber. May I again appeal to those who do not subscribe to strengthen the backbone of this our own charity? If only everyone in Ulster who is earning his living in medicine would give even one guinea annually, what a difference it would make. We should no longer have to dole out sums like £12 or £20 as grants to the widows and families of those who were our friends, our colleagues, or our fellow-students. We could give sums that would relieve these poor ladies of actual hunger and the endless, pitiless ache of penury.

And a guinea a year isn't so much really. Has any subscriber even told you, sir, that he *missed* this guinea? To give a guinea means, for example, that one allots the fee of one life assurance examination. . . . In your advertising columns you have allowed me to remind your readers that two cigarettes a day cost more than a guinea a year. Who amongst us will refuse to give three farthings a day to help these poor ladies?

Do doctors make New Year resolutions? I hope they do, and I suggest that there could be no better one to make, and keep, than to resolve to subscribe annually to the Medical Benevolent.

If Belfast and County Antrim readers will fill up and return to me the banker's order, which I shall send on request, and which is printed in this issue, it will lighten secretarial labours.

The honorary secretaries in the other five Northern Ireland Branches are—Dr. W. J. Dawson, Newtownhamilton, and Dr. Dougan, Portadown; Dr. J. C. Robb, Downpatrick, and Dr. N. E. Williams, Newry; Dr. Leonard Kidd, Enniskillen; Dr. J. W. Killen, Londonderry; and Dr. R. H. C. Lyons, Dungannon.

Yours faithfully,

Robert Marshall.

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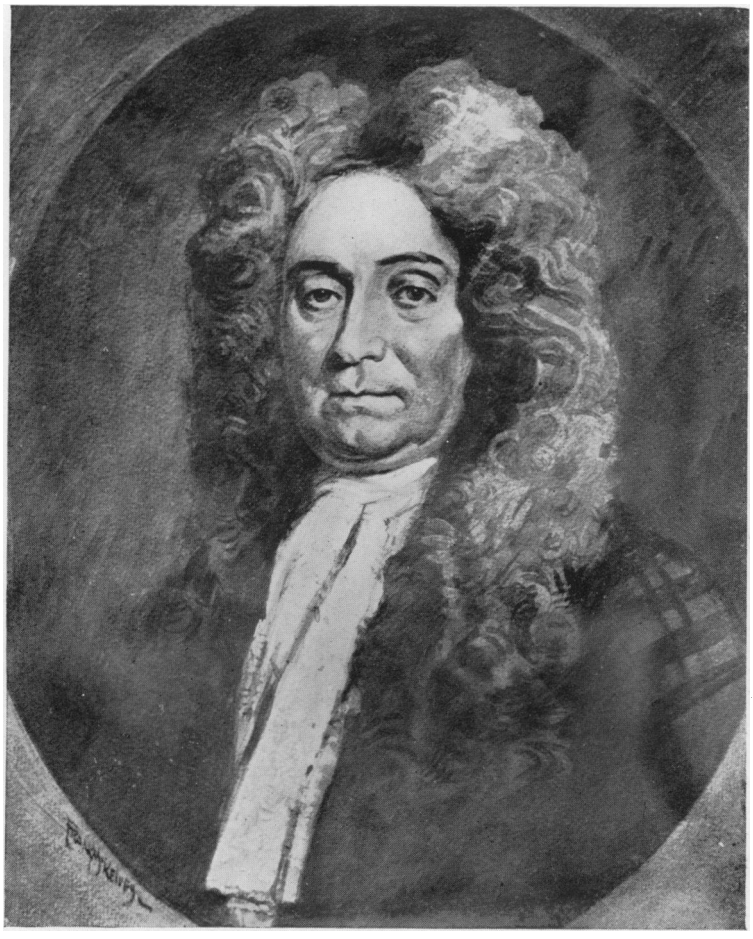

SIR HANS SLOANE, M.D., F.R.S.
Born Killyleagh, Co. Down, 1660. Died Chelsea 1753
(From a drawing in the Belfast Art Gallery)

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Some Aspects of the Life and Times of Sir Hans Sloane

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Presidential Address, Ulster Medical Society, Session 1937-8

AMONG the many Scotsmen who settled in County Down at the time of the plantation of James I was one Alexander Sloane. He lived almost under the shadow of the walls of the great castle of Killyleagh, which, at the time our story opens, was the home of James Hamilton, second Viscount Claneboye, first Earl of Clanbrassil, and of his wife, the Countess Anne. This gracious lady, the eldest of the eight beautiful daughters of the Earl of Monmouth, was greatly beloved by the tenants of the Claneboye estate. As her companion she had brought with her to Ireland Miss Sarah Hickes, whose father was a distinguished English divine, Prebendary of the Cathedral Church of Winchester, and at one time chaplain to no less a personage than the great Archbishop Laud. At Killyleagh Sarah Hickes met and finally married Alexander Sloane, now Receiver-General of Taxes for the County of Down and a man of considerable importance in the neighbourhood.

During the Civil War Lord Claneboye judged it his duty to join himself and his forces with the Royalist troops in Ireland. Disaster followed, and to save his life and estates he was forced to pay a huge fine to the Commonwealth. His health gradually declined, and he died, "corpulent, scorbutic, and dropsical," in the summer of 1659. A few days before his death he drew up a will nominating a few of his most trusted relatives and friends, among them Alexander Sloane, to assist the Countess Anne in the better management and improvement of the estate.

The year after the Earl's death saw the Restoration of Charles II, and the hope of brighter days dawned for those who had been faithful to his cause. Alexander Sloane was appointed a Commissioner of Military Array, which afforded a welcome addition to the income of the Sloane family, for the little house under the grim keep of the castle was now filled by six boys who had followed each other in rapid succession. On 16th April, 1660, a seventh son was born. He was named Hans, which was a family name in the Claneboye connection.

The village of Killyleagh, when Hans Sloane was born, was dominated, as it is to-day, by the great castle which stood at the head of the main street, at the lower end of which was a little inlet of Strangford Lough where ships lay sheltered from all winds. Off the main street, their backs facing the rolling hills of Down, were a few houses, in one of which, close to the castle walls, Hans was born. An ugly street of mean houses now occupies the site, one of which is pointed out as the birthplace of Sir Hans Sloane; but nothing remains of the original house save the ancient fire-irons of the open kitchen hearth, which have been preserved. Above the door has been placed a stone bearing the date 1637, possibly the year when Alexander Sloane built his Irish home. On an eminence above the harbour stood the new church, built in the shape of a cross. Here probably Hans was baptized by the Rev. Wm. Richardson, who was afterwards deposed from his charge for non-conformity by Jeremy Taylor, then Bishop of Down. Mr. Richardson was an accomplished scholar, from whom it is possible Hans received the foundations of that classical knowledge so valuable to him in the future.

Alexander Sloane died when Hans was six years of age. The boy, naturally of a delicate constitution, found his amusements in the study of nature. "I had from my youth been very much pleased with the study of plants and other parts of nature." Strangford Lough must have been a veritable paradise for little Hans, as it afforded a great variety of wild fowl for observation and study—wild geese, great flights of barnacles, duck, gold-heads, widgeon, teal, and different kinds of divers. He visited the Copeland Islands, and marvelled "how the sea-mews laid their eggs on the ground, so thick that he had difficulty in passing along without treading on them, while the birds screamed over his head." With interest he noted the gathering of dulse. This seaweed was destined to form the subject of one of his earliest communications to the Royal Society, in which he mentioned that the Irish, when afflicted with scurvy, were in the habit of chewing this substance, and found it very delightful to their palates. In the bogs near by he watched the turf-diggers at work, and noted with surprise "large pieces of underground wood so soft as to be cut through with the workers' spades, and no harder than cheese, if so hard."

Like most Ulster boys, Hans was brought up in the fear and admonition of the Lord. The influence of his early religious training can be traced all through his life. He continually insisted in his writings on "how the power, wisdom, and providence of God appears nowhere more than in the works of His creation." All through his life he made it his rule "to do to others as I thought I should desire to be done to me in like circumstances." It was his "daily habit to beseech God to direct his belief according to His will, and to conform his actions to it."

The first Viscount Claneboye had in the early stages of his career been a fellow of Trinity College, Dublin, and a distinguished classical scholar. The Castle of Killyleagh contained a good library, and into this, through the friendship of the Countess Anne, Hans had the entry. He early determined to follow the medical profession, and directed his reading along those lines, but at the age of sixteen his studies were interrupted by a spitting of blood, which recurred at intervals during the next three years, and during this period he was practically confined to his room.

He knew enough medicine to realize the significance of his hæmorrhage, and that a malady of this nature was not to be quickly removed, and so, all through his life, he adopted a rigid course of temperance, often quoting his favourite maxim—that sobriety, temperance, and moderation were the best preservatives that nature has vouchsafed to mankind. On his recovery, Hans, now in his nineteenth year, made his way to London, where for the next four years he applied himself with assiduity to his medical studies.

It is doubtful if any country or any age can show such a galaxy of talent as the band of scientific workers then in England—Ray in botany, Boyle in chemistry, Newton in mathematics, Sydenham in medicine, Wren in architecture, and Locke in philosophy. With Boyle and Ray, Sloane came into close contact soon after his arrival in London. With the others he was destined to be associated later in terms of great intimacy and friendship.

Sloane lived in a house in Water Lane, adjoining the laboratory of the Apothecaries' Hall, with Mr. Stapherst, a chemist, under whose instructions he acquired a knowledge of the preparation and uses of most of the chemical substances employed as medicines. But his chemical horizon was widened by his friendship with Robert Boyle, the father of modern chemistry, who taught him that chemistry was the science of the composition of substances, not merely an adjunct to the art of the physician. Boyle was an Irishman, the seventh son of the great Earl of Cork. He was unmarried, having remained faithful to a romantic attachment to a younger sister of Anne, Countess of Clanbrassil. Had the Countess remembered this old romance, and introduced the young student from Killyleagh to the great chemist?

Hans haunted the new Physic Garden lately established by the Company of Apothecaries at Chelsea, for botany, his favourite study, was considered almost the most important subject of the medical curriculum, and an intimate knowledge of the numerous herbs used as drugs was required. His passion for botany brought him under the notice of John Ray, the greatest botanist of his day, and who had just published his classification of plants into mono- and dicotyledons. Ray's correspondence shows that he was not only a great naturalist, but also a fine classical scholar and a man of the noblest character. Between these two a great affection arose which was only terminated by Ray's death twenty-five years later.

Ray and Boyle encouraged Sloane in his hobby of searching for and collecting new plants and other curiosities. Already he had gathered together such a number of rare plans that Ray urged him to publish his discoveries and observations, but the cost entailed in producing the necessary illustrations prevented Sloane from following Ray's advice at this time. He was anxious rather to spend his slender resources in pursuing his medical studies at some of the famous medical schools on the Continent.

In 1683 he and two friends made their way to Paris. Among the Sloane MSS. can be found an account of the day's work in Paris. He entered at six in the morning the Royal Garden of Plants with Tournefort, the youthful Professor of Botany, who demonstrated the plants till eight, after which their virtues were explained till ten, and at two in the afternoon the famous du Verney read upon

anatomy till four, and was succeeded by the chemical professor, who discoursed in French on the experiments to be performed that day. As he also attended the wards of La Charité, Hans must have had a busy day.

He found anatomy represented, not by the stereotyped lectures of the Hall of the Barber-Surgeons, but by du Verney's recent researches, which had laid bare the hidden secrets of the temporal bone and had demonstrated to the students' gaze the mysteries of the organ of hearing. Instead of the infant Garden of Physic by the Thames, before his delighted gaze were spread the gardens of the kings of France, where he could expatiate to his heart's content. Here Tournefort, only four years his senior, in his Provençal accent, told Sloane of the medical fame of Montpelier, of its library filled with unique and priceless manuscripts, of the natural treasures of the south, and the alpine flora of the Pyrénées.

His desire to visit the South of France received an added impetus from Dr. Hotton, a friend of Ray's and Professor of Botany at Leyden, by whom he was advised that, although a Protestant, he could take his degree as Doctor of Physic at the University of Orange. He accordingly went there, and having maintained a thesis with great applause, was admitted in July, 1683, to the M.D. Aurantii.

This university was subject to William, Prince of Orange, afterwards William III of England. Its graduates were recruited from Huguenot families, who were debarred from taking degrees at Paris and Montpelier. It seems to have been merely an examining body, without a *studium generale*. An old document states that it conferred degrees in all faculties upon "vagabond, ribald, unprofitable, and ignorant scholars who had been refused degrees elsewhere." Notwithstanding remonstrances from the neighbouring University of Montpelier and various papal bulls from Rome, the university managed to prolong its "ignoble existence" into the eighteenth century.

Bearing letters of introduction to the learned professors of Montpelier, he was welcomed there, and spent the next year attending lectures and accompanying Magnol—whose name has been immortalized in those lovely shrubs, the magnolia—in his botanizing excursions through Languedoc. At last, slowly he turned his steps homewards *via* Toulouse and Bordeaux, ever collecting natural curiosities and in every place making new and lasting friendships. On his arrival in London, Sloane got in touch with Boyle, and reported to him the most recent advances in chemistry in France, and to Ray he gave a great number of rare plants and seeds which he had collected on his tour.

A marvellous opportunity for commencing practice in London awaited the young physician, rich in enthusiasm and learning, but poor in pocket. Thomas Sydenham was incapacitated from active duty by gout, on which had been superimposed the tortures of a renal calculus. Boyle, his intimate friend, probably knew that he required a pupil to assist him in his practice. Sloane waited upon Sydenham with a letter of recommendation, which stated that the bearer was "a ripe scholar, a good botanist, a skilful anatomist." After Sydenham had perused this eulogy and had eyed the applicant very attentively, he said: "All this is mighty fine, but it won't do. Anatomy, botany—nonsense! No, sir, you must go to the bedside; it is there

you can alone learn disease." Nevertheless, "he was admitted by that judicious physician into the greatest intimacy and friendship, and desired by him to settle in his neighbourhood, that he might introduce him into practice, recommending him in the strongest terms to his patients when he was disabled by the gout from attending them himself, and carrying him to them when he was well."

This period of intimate contact between the receptive brain of the younger man and the mature mind of the father of modern medicine came at a critical period in Sloane's intellectual career. Sydenham taught him to note with the utmost exactness the signs and symptoms seen in each patient, just as he was accustomed to describe minutely the leaves, flower, and fruit of a new plant. As plants presenting similar features were grouped into species, so could cases of illness whose signs and symptoms were similar be grouped into specific diseases. By this process Sydenham had already separated measles and scarlatina. To Sloane this new idea, that diseased processes were but a part of natural history, made a strong appeal, and prevented him from being carried away by the various metaphysical hypotheses then in vogue in the world of medicine.

In the intervals of practice Sloane continued his botanical interests. He was a frequent visitor to the Physic Garden at Chelsea, and watched with interest the installation of a new contrivance "of putting under the floor of the greenhouse a great fireplace which conveys the warmth through the whole house by tunnels, and so making an artificial summer." These artifices were so effectual that in the severe winter of 1684, when the Thames was frozen and used as a high road, scarce any of the fine plants were lost.

He discovered that the bark sold as Peruvian bark was largely the "bark of the black cherry dipped in a tincture of aloes to make it bitter." He pointed out that the adulteration could easily be detected, as "this bitterness wears off with the first touch of the tongue, whereas the true bark is a pretty while in the mouth before it is tasted."

Sloane's prospects in London were now of the rosiest, but he was still possessed of the wanderlust. "I was young," he writes, "and could not be so easy if I had not the pleasure to see what I had heard so much of. . . . These inclinations remained with me some time after I had settled myself to practise physic in London, and had had the honour to be admitted a Fellow of the College of Physicians as well as of the Royal Society. These unmerited favours did not at all alter my mind, but rather incited me to do what I could, to be no useless member, but to cast my mite towards the advancement of Natural Knowledge, and by that means endeavour to deserve a place amongst so many great and worthy persons."

About this time the Duke of Albemarle was appointed governor of the island of Jamaica, and asked Dr. Peter Barwick, his physician, to look out for some one who would take care of him and his family in case of sickness. Dr. Barwick spoke to Dr. Sloane of the matter. "This seemed to me to be such an opportunity as I myself wanted, . . . and after due consideration I resolved to go, provided some preliminaries and conditions were agreed to, which were all granted."

Like the good Ulster Scot that he was, Hans made good terms for himself. He

was to receive £300 down for the necessary preparations and to be paid a salary of £600 a year. When abroad, Sloane showed a fine business instinct by spending practically all his salary in purchasing large quantities of Peruvian bark, an investment which was to yield him a handsome profit.

The death of the Duke some months after his arrival in Jamaica caused the expedition to be cut short, and Sloane accompanied the Duchess back to England. He had been away for twenty months, and the account of this period is contained in the two volumes of his work, "A Voyage to Jamaica," wherein is narrated the story of his voyages and adventures, the life and habits of the settlers in the West Indies, the medical cases he saw and treated, his exploration of the island, and a full description, "with copper plates as large as life," of the eight hundred plants which he collected there.

Sloane was the first man with a scientific training to explore the natural history of the West, and the rich harvest he carried home from this unexplored field excited great surprise and brought him much fame. Others were stimulated "to go to and fro, and knowledge was increased." Among those whose imaginations were stirred was Sir Arthur Rawdon, whose gardens at Moyrah, County Down, were famous. "When Sir Arthur observed the great variety of plants I had brought with me, he sent over to the West Indies Mr. James Harlow, a gardener, to bring the plants themselves alive to him for his garden at Moyrah in Ireland. This Mr. Harlow performed, bringing back with him a ship almost laden with cases of trees and herbs, planted and growing in earth. These were planted in the demesne at Moyrah, and there they grew and came many of them to great perfection." In an old work on County Down written fifty years later, Harris states that some of these trees and plants still remain, and he mentions among them the *calamus aromaticus,* or sweet flag. Gone to-day is the castle of the Rawdons, gone the gardens and parterres, gone the exotics of the West, but the sweet flag, now something of a nuisance, remains, as with its creeping underground roots it grows along the banks of the canal between Lisburn and Moira.

The Duchess of Albemarle, having learnt to appreciate Sloane's skill, appointed him her domestic physician, and introduced him to fashionable practice. He was soon chosen physician to Christ's Hospital, which provided home and education to four hundred orphans. The system of voluntary attendance on charitable institutions was not yet in vogue. Sloane received the salary in order to assert his own right and that of his successors to it, but he never used a penny of it for his personal use, employing the money for the advancement of deserving boys who were receiving their education there. "I shall never have it said of me that I enriched myself by giving health to the poor."

He took a house in Great Russell Street, near Bloomsbury Square. Here he brought as his bride Elizabeth Langley, heiress of a wealthy alderman of the city of London, and widow of a sugar-planter in Jamaica. With her came a large fortune, so that from this time onwards Sloane was freed from any pecuniary worries. The great house soon heard the voices of children, of whom there were four, a boy Hans and three girls. Of these, only two girls, Sarah and Elizabeth,

survived, who married later into the aristocratic families of Stanley and Cadogan.

Hans Sloane was in the habit of rising early, and "from his first getting up was constantly dressed fit to have gone abroad." Until ten every morning he gave the poor of the neighbourhood advice free in his own house, and then sent them to the dispensary of the College of Physicians in Warwick Lane for their physic. The story of this dispensary, in which Sloane played a leading part, is a historic one. In 1687 the College of Physicians had resolved, but not unanimously, that their Fellows should give advice gratuitously to the sick poor. But to give prescriptions to the poor unaccompanied by the means of getting them dispensed was of little use. When the poor brought their prescriptions to the apothecary's shop, they found the charge for dispensing them beyond their means. The physicians asserted, not without reason, that the demands of the drug vendors were extortionate; on the other hand, the apothecaries regarded the poorer classes as their peculiar field for medical practice. To solve the difficulty, some fifty Fellows pledged themselves to subscribe for the preparation of medicine to the poor at cost price, and a dispensary was established for this purpose in the College of Physicians. Many of the leading physicians refused to take part, probably fearing to offend the apothecaries, who were in the habit of calling them in consultation. The college was split into dispensarians and anti-dispensarians. Sir Samuel Garth's mock heroic poem, "The Dispensary," covered the apothecaries and anti-dispensarians with ridicule. In spite of popular opinion and the support of men of letters, the physicians were in the end beaten by the apothecaries. A test case in 1703 against an apothecary for attending and prescribing for a sick man was at first decided in the physicians' favour, but subsequently this decision was reversed by the House of Lords, when it was decided that the duty of the apothecary consisted not only in dispensing medicine, but also in directing and ordering the remedies to be employed. The dispensary at the College was closed in 1724.

Living near by, in Bloomsbury Square, was a Dr. Luke Rugeley, a very eminent and famous physician. Sloane had noticed the marvellous results obtained by his neighbour in the treatment of sore eyes. He was intensely curious to obtain some knowledge of the medicine, but Rugeley jealously guarded the secret which had brought him his great reputation. An application to a very understanding apothecary, who was a particular friend of both the doctors, was without effect. Rugeley died soon after, and Sloane purchased his books and manuscripts. But no trace of the prescription could be found among them. At length a person came to him, and for a pecuniary reward, joined to a promise of not divulging the secret, delivered up the genuine recipe in the doctor's own handwriting. Many years later, "in turning over some manuscripts of Sir Theodore Mayerne's, I found he had known the same ointment and had entered it in his Pharmacopœia under his own name; though I afterwards discovered that it was not originally his, but had been communicated to him by Sir Martin Lister, who had performed a cure with it on Lady Saville which Sir Theodore thought a very extraordinary one. And 'tis very probable that he afterwards communicated it to Dr. Thomas Rugeley, father of Dr. Luke Rugeley, as I find they were contemporaries and friends."

Sloane soon acquired a great reputation for the treatment of eye affections. In his correspondence we find frequent requests for "phials of his eye-water." There did not exist in Sloane's time the same strict code of ethics with regard to the disclosure of beneficial remedies. He did not reveal the nature of this liniment till he was eighty-four and had retired from practice for several years. "I had formerly promised secrecy with regard to this medicine, which I have religiously kept till now, that I think myself for many reasons abundantly absolved." He wants to make it quite clear that this was an exceptional case. "I cannot charge myself with making the least mystery of my practice, for in consultations I have always been very free and open—far from following the example of some physicians of good morals and great reputation who have on many occasions thought it proper to conceal part of their own acquired knowledge, alleging the maxim, *"Artis est celare artem."*

By the beginning of the eighteenth century Sloane's reputation as a physician was firmly established. The Universities of Oxford and Dublin conferred upon him the degree of Doctor of Medicine, while the Academies of Science of Paris, Berlin, St. Petersburg, and Madrid elected him among their foreign members. Of his extensive practice, his correspondence and the literature of the period afford ample evidence. "I have been very near Bath. I went in twenty-four hours and came back very near as quickly on occasion of the sickness of Her Grace the Duchess of Beaufort." He found time, however, on this flying visit to Badminton to inspect her Grace's gardens and wonderful new hothouses, and adds: "I never saw West India plants in such perfection out of their own climate as there." Samuel Pepys, writing to his friend Captain Hatton, says: "You give me hopes of recovery from the care and knowledge of my friend Dr. Sloane." Pepys had been president of the Royal Society in 1685 when Sloane was elected a Fellow. Sloane attended Pepys in his final illness, the cause of death as revealed at autopsy being a pyonephrosis following renal calculus. The gentry of County Down were proud to claim acquaintance with such a distinguished physician, and many of those who were able to visit London made him their medical adviser. The Hamilton family kept in touch with him, and the letters of Lady Jane Hamilton of Tollymore to him are still extant. In these letters, extending over a period of nearly twenty years, we can trace the medical history of this lady, starting with an attack of gallstones, passing through the troubles of the menopause, to end in cardiac defeat. He was consulted frequently by Queen Anne. For the last time he was summoned to Kensington Palace on the 29th July, 1714. Dr. Arbuthnot was there, no quip or jest on his lips, for he had been Anne's beloved physician and he had returned her affection. Mead, the promising young physician, had come in place of Radcliffe, for Radcliffe had taken physic the night before, and lest it might work, he could not come. Four other learned physicians were there in their periwigs and lace ruffles, Sir Richard Blackmore, the would-be poet, Sir David Hamilton, the man-midwife, Dr. Shadwell, and Dr. Laurence. In "England Under Queen Anne," Trevelyan states how two days previously the Council had sat till two in the morning, and regardless of the presence of their royal mistress, who sat drooping with bodily pain and

weakness in the chair, Oxford and Bolingbroke had denounced each other with unseemly violence across the Council chamber. The Queen retired, never to rise again, for an attack of apoplexy attended with convulsions ensued. Did the grave and learned physicians, as they examined the gross, unwieldy body of the dying Queen, remember the numerous dead babies she had borne? If they did, the conventions sealed their lips, and the bulletin was issued that the gout which had long been torturing her Majesty's legs had translated itself upon the brain. Mead, with the dogmatism of youth, declared she could live only a few minutes. Sloane urged that she should be bled. This was done, and after a few hours' suspense the Queen recovered her senses. The doctors attended the Privy Council and stated, "Her Majesty was in a condition to be spoken to." The Queen placed the Lord Treasurer's staff in the hands of the Whig Duke of Shrewsbury, and the succession of the Elector of Hanover was assured.

With the accession of George I, Sloane was created a baronet, the second physician ever to receive a hereditary title, and three years later he was elected president of the College of Physicians. This chair he occupied with dignity for sixteen years (1719-1735), a period exceeded in length only by Sir Henry Halford (1820-44). He found the finances of the College in low water, and with his astute business brain tackled the subject, taking over the debt and accepting a low rate of interest on his loan, in addition to giving a generous subscription to the College funds. He quickly won the confidence of the Princess of Wales, afterward Queen Caroline. Her Royal Highness, having learnt of the practice in vogue in Turkey of engrafting with the smallpox as a preventive against the natural disease, was all the more interested in the subject, because an attack of this disease had somewhat dimmed her beauty, and her eldest daughter, the Princess Anne, had fallen so dangerously ill of the disease that Sir Hans feared greatly for her life. The Princess spoke to Sir Hans on the matter, and he devised a series of experiments to test the efficacy of the new treatment, which were published in the Philosophical Transactions (1755) after his death. He arranged that the princess should beg for the lives of six of the condemned criminals in Newgate, and on these the operation was successfully performed. In order to obviate the objection made by the enemies of this practice that the distemper so produced was only the chicken-pox or swine-pox, and did not secure persons against the true small-pox, Dr. Steigertahl, the German physician to King George I, and Sir Hans joined their purses to pay one of those who had been inoculated in Newgate, and who was then sent to Hertford, where the small-pox was epidemic and very mortal. Here this person nursed, and lay in bed with, one who had it, without himself receiving any new infection. To make a further trial, the princess procured half a dozen of the charity children belonging to St. James' parish, and these were inoculated, and all of them except one (who had had the small-pox before, though she pretended not for the sake of the reward) went through it with the symptoms of a favourable kind of that distemper. After these trials and several others in private families (including Sir Hans's own grandchild), Her Royal Highness asked him his opinion of the inoculation of Princesses Caroline and Amelia. Note how skilfully Sir Hans throws the

onus of decision on the princess. "I answered that it seemed a method of securing people from the great dangers of the natural distemper, and that its practice was very desirable, but I was unwilling to persuade or advise the making trials upon patients of such importance to the public. The princess then asked me, 'Would I dissuade her from it?' To which I made answer that I would not in a matter so likely to be of such advantage. King George having given his permission, the matter was concluded upon, and succeeded as usual without any danger during the operation or the least ill symptom or disorder since."

Sir Hans was always active in promoting the social welfare of the people, and as president he probably inspired the petition sent by the College of Physicians to Parliament submitting to their consideration the great and growing evils resulting from the use of spirituous liquors among persons of all ranks and both sexes, rendering them and their children diseased, unfit for business, a burden to themselves and a charge on their country.

During his presidency the fourth London Pharmacopœia appeared. First published over a hundred years before, little change had been made in its contents. It still contained such disgusting remedies as human perspiration, the excreta of animals, spiders' webs, and such a relic of witchcraft and superstition as the wormian bone from the skull of an executed criminal. Simplicity of prescribing was lost, and a belief was prevalent that what was wanting in efficiency in individual ingredients might be compensated for by the combination of many. In the antidote of Matthiolus against poison and pestilence were massed together all substances imagined to be imbued with alexi-pharmic powers, in all some two hundred and fifty ingredients. Of this medicine Nicholas Culpeper had remarked that if it were stretched out and cut in thongs it would reach round the world!

Already Sydenham had preached the gospel of simpler therapeutics; it was left for his disciple Sir Hans Sloane to attempt to give this doctrine expression in the new Pharmacopœia, which was a great advance on its predecessors, though the compilers acknowledged that the work was but a compromise and a transition from the polypharmacy of previous generations to the simpler methods of prescription then becoming popular. Medicines which had been found of little use were rejected, formulæ which were absurd and incompatible were altered, preparations savouring of superstition were removed, and in general an attempt was made to make the work more consistent with reason and experience. Sir Hans's tidy and scientific mind can be traced in the catalogue of official herbs, which were for the first time clearly defined and means for their identification given.

Let us now retrace our steps to take up the story of Sloane's activities in the Royal Society, of which he had been appointed secretary in 1693. With characteristic energy and enthusiasm he threw himself into the work. The publication of the Transactions, which had for some time been discontinued owing to the unsettled state of public affairs, was now resumed. The letter-books of the time contain copies of numerous letters which he addressed to persons at home and abroad requesting communications on various subjects. It is interesting to trace in some of these the germ of discoveries which in a more perfect state have revolutionized

the condition of mankind. "Mr. Savery entertained the Society with showing his engine to raise water by the force of fire. He was thanked for showing the experiment, which succeeded according to expectation and was approved of." Did any of those present dream that in the hands of Watt and Stephenson this engine was destined to transform the transport of the world? And a communication from Antony Van Leeuwenhoeck, the draper of Delft, was read (Paul de Kruif tells the fascinating story in "Microbe Hunters"): "I was talking to an old man, and my eye chanced to fall on his teeth, which were badly grown over, and that made me ask him when he had last cleaned his mouth. I got for answer that he had never cleaned his teeth in his whole life"; so Leeuwenhoeck examined scrapings from the old man's teeth under his lenses, and he found "a new kind of creature, that slid along bending its body in graceful bows like a snake." The world had to wait until the imagination of Pasteur connected Leeuwenhoeck's animalcules with the causation of disease.

Sloane was blamed for giving too great prominence to medical subjects in the programmes. His special critic was John Woodward, a well-known geologist of the period. Woodward was of a jealous, quarrelsome disposition; and Ralph Thoresby, whose diary gives us much information about this period, calls him "that ill-natured piece of formality." At a Council meeting (in 1710) the quarrel between Sloane and Woodward reached its culmination. Sloane was reading to the Council a communication he had received concerning a *bezoar*, which was the name given to a concretion found in the intestines of goats from Persia and India. *Bezoars* were considered the chief antidote against poisons and, being difficult to procure, were literally worth their weight in gold. By way of explanation to members of Council, Sloane said, "The *bezoar* is a kind of gallstone." Woodward immediately broke in, "No man who understands anatomy would make such an assertion." Later on Woodward again interrupted, "Speak sense or English, and we shall understand you." It was more than even the equanimity of Sloane could stand. He complained that this was not the only occasion on which Dr. Woodward's conduct towards himself had been offensive, and that Woodward had often affronted him by making grimaces at him. Among those present was the witty Dr. Arbuthnot, who begged to be informed "what distortion of a man's face constituted a grimace." But the Council was in no humour for raillery, and demanded that Woodward should apologize, which he refused to do, and after solemn deliberation he was expelled from the Council. Sir Isaac Newton was in the chair, and when it was pleaded in Woodward's favour that he was a good natural philosopher, Sir Isaac remarked "that in order to belong to that Council a man ought to be a good moral philosopher as well as a good natural one."

In 1727 Sir Isaac Newton died. The greatest philosopher of all time, he had presided over the Royal Society for a quarter of a century. To find a successor worthy to fill the chair after the man "who had drawn the veil from Nature's face" was impossible. It was never an easy task, says the author of "The Gold-Headed Cane," to select one able to perform all the duties of that distinguished station. He should be a man of literary and scientific attainments, and so well acquainted

with the history and progress of natural knowledge as to be capable of judging of the value of the contributions of others. He must be a man of discrimination and tact, of good fortune, and of strength of character. He must have a knowledge of foreign languages to do the honours of science to distinguished strangers. It is gratifying to the medical profession and to Ulstermen that in the person of Sir Hans Sloane the Society found all these desiderata fulfilled, and he was chosen to fill the difficult post. He brought to the chair a commanding presence. He was tall and well built, blue-eyed, and of a ruddy complexion, with firm mouth and chin, his natural hair usually covered with an auburn periwig. In all his paintings his long, tapering fingers, with their beautifully-shaped and carefully-tended nails, attract attention. He rightly regarded the presidency of the Royal Society as the crowning and greatest honour of his career. To a great friend he wrote : "I am, though unworthy of that honour, chosen president of the Royal Society, and therefore must cry out to such as you for help." His first act as president was typical of the man. Finding many Fellows in arrear with their subscriptions, he caused immediate steps to be taken to apprise the defaulters of the intention of the Council to enforce payment. With the resulting augmentation of funds he persuaded the Council to depart from the usual custom of purchasing Government securities and to seek a more profitable investment by buying some fifty acres at Acton, then in the country. Later this area became of immense value for building ground.

Sloane is the only man who has ever been president of both the Royal Society and of the Royal College of Physicians.

Sir Hans kept an open table for his learned friends, and the dinner-parties and conversaziones held in his house in Great Russell Street were famous. Dinner was served about five in the afternoon, and was generally a bachelor one, for Lady Sloane was dead and both his daughters were married. He was a sprightly conversationalist with a dry sense of humour. He knew everybody, had read everything published on his own subjects, had travelled extensively, so that the talk never flagged. Sir Hans, owing to his tendency to repeated attacks of hæmoptysis, ate moderately and restricted himself to one glass of wine. After dinner the guests were wont to repair to his museum, where the latest additions to his huge collection were shown and discussed. Then a general tour was made and special treasures were pointed out. Thanks to the researches of Miss Jessie M. Sweet, one can picture the scene. "This beautiful little penknife," Sir Hans used to say, "with a white agate handle and the end of the blade made of gold, once belonged to an alchemist. This imposter had two little knives made alike, except that one had a gold point, the other plain. The pretended elixir was produced, and with a conjuring trick the alchemist changed the plain knife after its dipping, deceiving the eyes of the onlookers by his nimble motion, and brought forth the other with the gold blade; then the grand elixir was spilt on the ground and could never be made again." He showed them wonderful *objets d'art,* and from his pharmaceutical cabinet he would draw out a drawer and show them his *bezoars,* charms, and amulets. "This is the *lapis variolosus,* having marks on it like the small-pox, and therefore said to hinder that distemper from injuring the face if kept about the person diseased."

Pausing before a magnificent pair of horns of the Indian buffalo, fourteen feet from tip to tip, Sir Hans told how he found these in a cellar at Wapping where he had gone to see a barber, who proffered them to him in lieu of a fee.

He exhibited a very heavy blackstone with golden streaks. It had come from his friend John Winthrop of New London. Long after Sloane's death Charles Hatchett was rearranging part of the British Museum collection and came across this specimen. He examined it more closely, and from it isolated the new element columbium.

To his house came many distinguished foreigners. Voltaire presented him with autographed copies of the English Essays and the Essay upon Epic Poetry of the European Nations. With Sloane, Voltaire had many common interests. In France he had strongly advocated inoculation against small-pox. Both were interested in the history and ravages of syphilis, and probably Voltaire discussed with him his idea of stamping out syphilis by a league of nations.

The visit of Handel, the composer, was marred by an unfortunate incident. Some light refreshment was served, and Handel laid his hot, buttered muffin down on one of Sir Hans's most treasured and precious manuscripts. From Handel's description of the scene it is evident that Sir Hans expressed his feelings with some heat!

Pope referred to Sloane in his moral epistles when he says, "And books for Mead and butterflies for Sloane," and in his satires mischievously associated him with Woodward—"Or Sloane's and Woodward's wondrous shelves contain." The following letter from Pope to Sir Hans is of special interest to those who live in Ulster :—

> Sir,
>
> I have many true thanks to pay you for the two joints of the Giant's Causeway (that surprising natural curiosity) which I found yesterday at my return to Twickenham, perfectly safe and entire, and which indeed I have ardently sought for some time. They will be a great ornament to my grotto, which consists wholly of natural productions, owing nothing to the chisel or polish, and which it would be much my ambition to entice you one day to look upon. I will first wait on you at Chelsea and embrace with great pleasure the satisfaction you can, better than any man, afford me of so extensive a view of nature in her most curious works.
>
> I am, with all respect, Sir,
>
> Your most obliged and most humble servant,
>
> A. Pope.

When Sloane was seventy-six he met Linnæus, then twenty-nine, for the first time. Linnæus carried to London a flattering letter from Boerhaave, introducing to the doyen of English botany the young Swede who had just published a work entitled "Fundamenta Botanica," which exhibited the basis of his botanical system. But Sloane was now too old to welcome with enthusiasm revolutionary ideas in his favourite study, and remained loyal to the classifications of his friends, Ray and Tournefort. Linnæus received at Great Russell Street but a chilly reception.

A few years later (1741) we find him writing: "My condition has rendered me unable to follow the practice of my profession," and he removed to the Manor House at Chelsea, which he had purchased some twenty years before. Chelsea was then but a small village by the Thames in the heart of the country. Near by was the Physic Garden of the Apothecaries, the freehold of which Sir Hans presented to the Company on the condition that fifty new plants should be exhibited to the Royal Society every year until the number amounted to two thousand. In token of gratitude to their benefactor, the Company of Apothecaries erected a statue by Rysbrach representing Sir Hans in a full-bottomed wig and doctor's gown, which still keeps guard over this old garden on the Chelsea Embankment, a restful oasis amid the roar of modern London.

For eleven years he enjoyed his well-merited leisure in his beloved Chelsea. He possessed to the end of his life all his rational faculties, except his hearing, which became impaired. His decay was very gradual, and he used to say that some day he would drop like a fruit, fully ripe. He developed none of the peevishness of old age, but always remained considerate and thoughtful of the feelings of others. Here he still received the visits of his learned friends, and among those who rarely missed drinking coffee with him on a Saturday was the librarian of the College of Physicians, George Edwards, a gifted naturalist, whose book on the Natural History of Birds, illustrated by perfectly coloured illustrations, is one of the most beautiful books published in the eighteenth century. Edwards relates how he diverted Sir Hans for an hour or two with the common news of the town and with anything of interest that had happened among his acquaintances. He generally found Sir Hans in the house, but occasionally in his garden in a wheeled chair. During his visits the old man frequently consulted him about the merits of the many petitions he received for charity, especially from decayed branches of families of eminent men late of his acquaintance. All these petitions were considered with attention, and, provided they were found genuine, were always answered by charitable donations.

Some of these lonely hours must have been cheered by the reading of a small book on "The Ancient and Present State of the County of Down," published in 1744, and dedicated to the Honourable Sir Hans Sloane, because of "the relation it bears him as a Native of the County here described." He who had been untiring after the search for the curious, and who had himself reported many rare pathological conditions, must have read with interest the story of the remarkable birth of James Walker, in the parish of Hillsborough, an account of which is given by Dr. John Sedgwick, who officiated at the labour of the mother when Walker was born. "In the year 1718 I being called (says he) to assist the wife of James Walker, who had been in hard labour for three or four days, and given over by the midwife, I found by the bad posture of the pelvis that the fœtus had presented its arms to the birth, which, not being prevented in due time, part of both arms for two days remained born, and part in the birth, which were so swollen by the contractive force of the neck of the uterus that it was impracticable to replace them in their natural situation. In this extremity I ordered their teacher, Mr. Charles Seaton, a dissenting minister of the parish of Anahilt, to which they belonged, to be sent for,

and laid the danger before the husband and him, who agreed with me that it was more humane and Christian to save the mother (if possible), we doubting also that the child was dead. The woman's great importunities to preserve her life at length prevailed; in the presence, therefore, of the husband, Mr. Seaton, the midwife, and others, I dislocated the humeri of the child from the scapulæ, divided the muscular parts with a proper instrument, made a total separation of them from the body, and thereby found means easily to extract the child by the feet, and then with speed and safety brought off the placenta, etc., and safely laid the woman abed. Believing the child was dead, I committed him to the midwife, who laid him aside. Some time after the child shrieked, which surprised us. However, I stitched the wounds crossways, and drew the muscular parts over the scapulas, and then dressed them with dry cotton; and this method not only filled the cavities, but formed little protuberances that appear as stumps."

"The person thus saved is twenty-five years of age, six feet high, slender and narrow-shouldered, active and nimble. He fits a saddle upright and firm, will ride forty miles to a fair, and deals much in buying and selling horses, which he dresses and curries as well as any groom can do, holding the curry-comb between his chin and shoulder. The same way he holds the goad in driving the plough, and the spade when he digs; which actions, however, are uneasy and irksome to him, and he does not practise them much. He throws a stone from the top of his foot with more exactness and greater force than most men can do with their hands, and seldom fails hitting any mark he aims at. He mounts a horse without any assistance and shuffling the bridle over his head till he gets it on his shoulders, he guides the horse with as much skill and as little fear, even a-hunting, as any man can do."

When Sir Hans was eighty-eight years of age he was honoured by a visit from the Prince and Princess of Wales. This is how Dr. Mortimer, secretary of the Royal Society, tells the story in the "Gentleman's Magazine" of 1748 :

"I conducted their Royal Highnesses into the room where Sir Hans was seated, being ancient and infirm. The prince took a chair and sat down by the good old gentleman, expressing the great esteem and value he had for him personally and how much the learned world was obliged to him for his having collected such a vast variety of curiosities. Sir Hans' house formed a square of about one hundred feet on each side, enclosing a court. Three front rooms had tables set along the middle, which were spread over with cases filled with all sorts of precious stones in their natural states—the verdant emerald, the purple amethyst, the golden topaz, the crimson garnet, the azure sapphire, the scarlet ruby, the brilliant diamond, and the glowing opal; other cases delighted the eye with the most magnificent vessels of carnelian, agate, jade, and mocha-stone; another contained stones formed in animals, which are so many diseases of the creature that bears them, as the most beautiful pearls, which are but warts in the shell-fish, the *bezoar,* and stones generated in the kidney and bladder of which man woefully knows the effects.

"When their Royal Highnesses had viewed one room and entered another, the scene was shifted; for when they returned the same tables were covered for a second

course with all sorts of jewels, polished and set after the modern fashion. For the third course the tables were spread with gold and silver ore, with the most precious and remarkable ornaments used in the habits of men from Siberia to the Cape of Good Hope, from Japan to Peru, with ancient and modern coins and medals in gold and silver, the lasting monuments of historical facts. The gallery presented a most surprising prospect filled with beautiful corals, brilliant butterflies, painted shells and gorgeous birds.

"Then a noble vista showed itself through several rooms filled with books, volumes of dried plants, and choice and valuable manuscripts. Below stairs were rooms filled with the curious remains of ancient Egypt, Greece, Etruria, Rome, Britain, and the Indies, with large animals preserved in their skins, and," so the tale goes on, "fifty volumes in folio scarce sufficing to contain the catalogue of this immense museum consisting of above 200,000 articles."

Sir Hans reckoned that this museum had cost him £50,000, and that its real and intrinsic worth was at this period over £80,000. Day by day, night after night, the old man pondered the disposal of his treasures. He hated the thought that the work of his life should after his death be broken up and dispersed far and wide. "I desire very much," he writes in his will, "that these things, tending many ways to the manifestation of the glory of God, to the confutation of atheism, to the use and improvement of physic and other arts and sciences, and to the benefit of mankind, may remain together and not be separated."

The collection was too valuable to be given away without wronging his family, and too valuable to be purchased at their true value by any individual; and so he bequeathed them to his country in terms neither hurtful to the nation nor to his family. His executors were instructed to offer them to his most excellent Majesty, King George II, for the sum of £20,000. A few years later he died on the 11th January, 1753, "without the least pain of body and with a conscious serenity of mind he ended a virtuous and beneficent life."

A greater concourse than ever before seen at Chelsea attended his funeral. The sermon was preached by Dr. Zachary Pearce, Lord Bishop of Bangor, who took as his text the very approprite words, "So teach us to number our days, that we may apply our hearts unto wisdom," his discourse being upon the uncertainty of life and the advantages of a good one and devoid of all "encomiastic flattery," for so Sir Hans had expressed his wishes twenty years previously.

In the same year an Act of Parliament was passed, entitled "An Act for the Purchase of the Museum or Collection of Sir Hans Sloane, Bart." By this Act £100,000 was ordered to be raised by lottery, and this amount being obtained, the mansion of the Duke of Montague was purchased, and the new British Museum was opened for study and public inspection on 15th January, 1759, just six years after Sir Hans's death.

Many years after his death, when the fields of the Manor of Chelsea were covered with streets and squares and crescents, some of these were called by his name. "It was an inspiration," writes Dr. Dawtrey Drewitt in his delightful "Romance of the Apothecaries' Garden," "for Sloane Street well represents the life of Sir

Hans Sloane. Those who walk all the way down it know that it is very *long*, obviously *prosperous*, and perfectly *straight.*"

To the man in the street the wisdom of Hans Sloane was as foolishness. Edward Young, the author of "Night Thoughts," wrote of him as "Sloane, the foremost toyman of his time." Horace Walpole, one of his trustees, styled himself "the guardian of embryos and cockle-shells." But fortunate the nation whose "young men shall see visions and whose old men shall dream dreams." The vision of a young Ulsterman and the dreams of his old age gave England the British Museum.

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REVIEW

HYGIENE FOR NURSES. By John Guy, M.D., D.P.H.Camb., F.R.F.P. & S. Glas., F.R.C.P.Edin., and G. J. Linklater, O.B.E., M.D., D.T.M. & H., M.R.C.P.Edin. Fourth edition. Edinburgh: E. & S. Livingstone, 1937. pp. 219; figs. 22. Price 4s. 6d.

This little book, as its title implies, is intended for those preparing for the Preliminary Examination of the General Nursing Council. Both authors are examiners in hygiene to the Council, and their experience is that "too much stress has hitherto been laid on the communal aspect of hygiene, namely, sewage systems, water supplies, etc." They have endeavoured to counteract this by cutting down the space devoted to these subjcts and by concentrating on the personal aspect of hygiene, such as dress, personal habits, care of children, and dietetics.

With this attitude we are in entire agreement. It seems in the highest degree unlikely that even the district nurse—who is expected to be able to turn her hand to most things—will ever be responsible for the sewerage and water supplies of her area. She may, however, have to give advice in rural districts where flourish the shallow well, and the pail closet, now often dismissed, perhaps too hastily, from the pages of hygiene textbooks.

It is, however, in her contact with single individuals that the nurse's most important work is done, and this book provides enough up-to-date and clearly expressed information to enable her to practise and preach the chief principles of healthy living and preventive medicine. The chapters on Dietetics, with their examples of adequate and inadequate or unbalanced diets, are especially good. They should enable the nurse to give real help to harassed mothers trying to bring up healthy families on a limited income.

We feel sure that the present edition, thoroughly revised, especially as regards Infancy, Food Poisoning, and Milk Grading, will have the same welcome as the previous editions.

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OPENING ADDRESS OF THE MEDICAL SCHOOL, ROYAL VICTORIA HOSPITAL, SESSION 1937-8.

Some Aspects of Medicine and Literature.

By F. P. MONTGOMERY, M.C., M.B., D.M.R.E.CANTAB.

Mr. Chairman, Ladies, and Gentlemen,

I have decided to address you this morning on some aspects of the relationship of medicine and literature, a vast subject on which I can only touch very superficially in the time at my disposal.

Throughout the ages we find medicine and literature in close association, and even the early Egyptian papyri and the tablets of the Assyrio-Babylonian epoch have extensive reference to the medical science of the dawn of civilization.

The early medicine of Greece was largely the cult of Aesculapius, and his followers were an organized guild of physicians, the Asclepiads; the most famous of their temples were founded at Côs, Epidaurus, Cnidus, and Pergamus. These temples, skilfully constructed and laid out on wooded hills near mineral springs, became popular sanatoria, managed by trained priests. Their administration corresponded fairly closely to that of a modern health resort; the patient, after the sacrifice of a cock or a ram, was inducted in the rite of incubation or temple-sleep. This consisted of lying down in the sanctuary, where, during the night, the priest, in the guise of a god, presented himself before the patient to administer medical advice, if the patient happened to be awake. If he slept, as was usually the case, the advice came in the form of a dream, afterwards interpreted by the priest. The whole rite has been humorously described in the Plutus of Aristophanes, and in a more dignified way by Walter Pater in "Marius the Epicurean." Many auxiliary aids such as baths, massage, and graduated exercises were also employed.

It was from this cult that Hippocrates, the father of medicine, was descended. He was born on the island of Côs about 460 B.C., and received his medical education from his father. He dissociated medicine from philosophy and theurgy, and crystallized the knowledge of his predecessors into a systematic science. He likewise gave medicine the greatest moral inspiration it possesses. All that a man of genius could do for medicine, with no other instrument of precision than his own open mind, his keen senses, and his honesty, he accomplished, and his descriptions of disease are still models of their kind even to-day.

Hippocrates was not acquainted with experiment as an active science, and his central doctrine, the humoral pathology, has long since been discarded, but no one ever profited more fully from experience. Of a series of forty-two clinical cases in the writings of Hippocrates—the only record of its kind for the next seventeen hundred years—sixty per cent. are reported as fatal with typical sincerity.

Unlike Galen, the author has no remarks to make on his own cleverness at diagnosis or of the mistakes of his fellow-physicians. "I have written this deliberately," he says, "believing it is valuable to learn of unsuccessful experiments, and to know the cause of failure."

In literary style Hippocrates resembles the great classical writers of the period—

clear, simple, precise. The oaths, the law, and the discourse on the sacred disease, epilepsy, are the finest utterances of Greek medicine, and are informed with the spirit of the father of medicine, whether written by him or not.

The medicine of the Jewish people is found mainly in the Bible and the Talmud. In the Old Testament, disease is an expression of the wrath of God, to be remedied only by prayers, sacrifice, and moral reform. And it is God Who confers health and disease: "I will put none of these diseases upon thee, which I have brought upon the Egyptians; for I am the Lord that healeth thee" (Exodus 15: 26). The priests acted mainly as officers of health, but never as physicians, in relation to contagious disease. The physicians were in a class apart, of whom we read that Joseph "commanded the physicians to embalm his father." We also read that "Asa the king was diseased in his feet; yet in his disease he sought not to the Lord, but to the physicians," and for his pains "he slept with his fathers" (II Chron. 16: 12, 13). There were professional pharmacists (Exodus 30: 25; Nehemiah 3:8) and professional midwives, who are mentioned in the cases of Rachel and Tamar, and particularly in the striking reference to the ancient Oriental usage of the obstetric chair in labour (Exodus 1: 16), where Pharaoh commanded the midwives to slay all Jewish infants of the male sex.

Amongst many medical references in the Old Testament are left-handedness (Judges 20: 16), acromegaly with supernumerary digits in the case of the son of Goliath (II Samuel 21: 20; I Chron. 20: 6), cardiac shock in precipitate labour (I Samuel 4: 19), epilepsy (Numbers 24: 4), fatal apoplexy after drunkenness (I Samuel 25: 36), and fatal heatstroke (II Kings 4: 18-20), while in the last chapter of Ecclesiastes there is to be found the most beautiful description of old age in English literature.

The principal interest in Biblical diseases lies in the extraordinary efforts made to prevent them. The ancient Hebrew was the founder of prophyllaxis. There was also a definite code of ritual hygiene, gradually enlarged from contact with other civilizations. As Neuberger rightly says, the chief glory of Biblical medicine lies in the institution of social hygiene as a science.

Let me conclude the Biblical references by quoting the well-known verses in St. Mark's Gospel (Mark 5: 25, 26), which should help to keep us humble:

"And a certain woman which had an issue of blood twelve years, and had suffered many things of many physicians, and had spent all that she had, and was nothing bettered, but rather grew worse."

After the destruction of Corinth in 146 B.C., Greek medicine may be said to have migrated to Rome. Before this migration, "the Romans," as the elder Pliny tells us, "got on for six hundred years without physicians." The proud Roman citizen, who had a household god for every disease, as well as for every known physiological function, despised the Greek physician as a mercenary for accepting compensation for his services.

Of the many Latin writers, Horace has something to say of the doctors and medicine of his day. An author of the Augustan age, Horace was a great wit and lyric poet, a satirist of Roman manners and morals, and the boon companion of

Augustus and his prime minister. It is a remarkable fact that nowhere in his extant writings is there a word of unkindness or ridicule of the profession of medicine. Like Virgil, he was a martyr to poor digestion, and must therefore have been frequently in contact with the physicians of his day. He was accustomed to spend his winters at Baiæ, the fashionable winter resort of the wealthy Romans. In the Epistles he sings:

"Should winter swathe the Alban fields in snow,
Down to the sea your poet means to go
To nurse his ailments, and in cosy nooks
Close huddled up, to loiter o'er his books."

When Antonius Musa achieved great honour by curing the Emperor Augustus of a severe illness by means of cold baths, poor Horace is ordered to give up his visits to Baiæ and proceed to take cold baths at Salernum in mid-winter. He shivers at the thought, but he utters no word of reproach, and goes. Like other people, Horace hates to be out of fashion. Here is his ideal of happiness:

"Let your digestion be but sound,
Your side unwrung by spasm or stitch.
Your foot unconscious of a twitch,
And could you be more fully blessed
Tho' of the wealth of kings possessed?"

Juvenal, who lived from A.D. 20-100, a distinguished lawyer, strict in life and morals, and intolerant of the vices of others, approaches the customs and manners of the Romans from the standpoint of a prosecuting counsel (E. F. Cordell). Bearing upon the daily experiences of medical men in Rome as they went about visiting their patients in the first century A.D., may be quoted a description by Juvenal of the conditions of the streets and houses and the insecurity of life in Rome.

"A thousand perils environ the citizens of this fell city. How unsafe is the condition of the dark houses, many of them supported by props, which do not prevent their frequent collapse. Owing to the great noise in the streets, none but the rich can sleep, and many an invalid dies from want of rest. For a stream of carriages is continually passing in the narrow, crowded thoroughfares, and the drivers are perpetually engaged in noisy disputes and foul abuse of one another. If you are in haste, your passage is obstructed by the crowd. A rich man's litter borne aloft on stout shoulders jostles you aside. Your legs are bespattered with mud; on all sides you are trodden on. The cooks scatter burning coals as they hurry by with a patron's meal, and your clothing is torn to shreds. One wagon loaded with a fir-tree, another with a huge pine, shake the streets as they advance, the ends waving to and fro, threatening the passer-by. Then there are the dangers of the night, when broken crockery thrown from lofty windows makes dents in the pavement and threaten's to break one's skull. Rash will he be thought who goes out to supper without having made his will."

Recently Dr. J. D. Rolleston has drawn attention to the medical allusions in the Greek Anthology. It is a remarkable fact that a work described by John Addington

Symonds as "from some points of view the most valuable relic of ancient literature we possess," should have received so little attention from medical writers.

The poems of medical interest extend over a period of nearly fifteen centuries, beginning with Empedocles and Simonides in the fifth century B.C., and ending in the tenth century A.D. Altogether over four hundred of the whole four thousand deal more or less directly with medical subjects.

The lines of Nicharchus recall the equally cruel attacks of Martial:

"If you have an enemy, Dionysius, don't call upon him the wrath of Isis, nor of any god that makes men blind, but invoke Simon, and you will learn what a god can do, and what Simon."

Some epigrams are directed against surgeons. In the following two by Nicharchus, allusion is made to orthopædic operations:

"Socles, having promised to straighten the humpback Diodorus, placed three heavy square stones on his spine. The humpback was crushed and died, but he became as straight as a rule."

Again, "Agelaus killed Akestorides while operating upon him." "The poor wretch," said he, "was bound to limp if he had lived."

There is grim humour in the following epigram: "A young man hung a garland on the column of his stepmother's tomb, thinking that in death her character had changed. But the column fell and killed the young man. Children of a former marriage, beware your stepmother's grave!" An epigram of Erycius is of special interest, as it mentions amputation for gangrene and the employment of an artificial leg in the second century A.D.: "While cutting down a dry old tree, unhappy Mindon, a hidden spider bit you in the left foot, springing up from below, and black gangrene devoured down to the bone the livid flesh. Your strong leg was cut off, and now one of your limbs is the branch of a tall olive."

Martial's epigrams mirror, as a whole, the everyday life of Imperial Rome in the second half of the first century A.D. Allusions to medicine are not numerous, according to Raymond Crawfurd, but they afford just those living touches which reanimate the dry bones of medical history. In those days there was no compulsory curriculum, no diploma, no General Medical Council, no healthy public sentiment, to restrain professional obliquity. Some sort of clinical teaching was evidently attempted, but if it was of advantage to the student, it brought little comfort to the patient, according to Martial:

"I lay ill, but soon Symmachus sought me
With a class of a hundred young men,
Whose hundred cold paws have brought me
The fever I lacked till then."—(*Crawfurd*).

Oculists again come in for the full measure of Martial's satire. Here is a skit on the oculist's skill:

"Blear-eyed Hylas yesterday
To pay your fee was willing;
Now one eye is gone he may
Halve the previous shilling.

Quintus, take it greedily,
Profit by the occasion,
When he's blind, he'll certainly
Try complete evasion."—(*Crawfurd*).

According to Martial, false teeth were frequently worn to improve the appearance rather than to aid mastication. Thus :

"You, Fidentinus, court a poet's crown
By passing off my verses as your own.
So Aegle counterfeits reality
With teeth of bone and Indian ivory."—(*Crawfurd*).

In several epigrams Martial holds up the malingerer to ridicule. Disease is very apt to be simulated for the sympathy it excites and the service it exacts. In Rome there was the added attraction of congratulatory presents on recovery to increase its prevalence. Thus :

"You're sick ten times or oftener every year.
Tho' yours the sickness, we the suffering bear.
At each recovery for gifts you call.
Fie, Polycharmus, sicken once for all"—(*Crawfurd*).

Many passages in Lucian illustrate the prestige in which the medical profession was held in the second century A.D., according to J. D. Rolleston. Several references are made to oculists, but they are not of a satirical character, as in the case of Martial and the Greek Anthology. Lucian frequently refers to alcoholism and its prevalence. Other passages testify to the unpopularity of the water-drinker. One reason for the dislike of the cynics was that they drank water "just like animals." Once the philosopher Demetrius was accused before Ptolemy of drinking water during the Bacchanalia. He only saved his life by being drunk from an early hour the following morning.

Lucian has also many satirical things to say of cosmetics. The following will serve as an example in which the toilet of a lady of fashion is portrayed :

"Countless different drugs are used to doctor their wretched faces, for it is not a stream of pure water into which they plunge their faces to wash off their deep sleep, nor do they set about any useful occupation. They mix together numerous pastes to give a lustre to their disagreeable skin. As in a public procession, each servant has some special duty to perform, one carrying a silver basin, another a jug, and a third a mirror. The room is filled like a chemist's shop with boxes containing numerous deceitful compounds, some to clean the teeth, others to darken the eyebrows. Some dye their hair like wool, others with colours as bright as the sun at noonday. Those who think dark hair becomes them best spend their husband's money in scenting themselves with Arabian perfumes. They shamelessly paint their cheeks so as to animate, by bright colours, the excessive pallor of their skin."—(*Amores,* 39-41.)

The Western Roman Empire lasted five hundred years; the Eastern, centred at Byzantium, over one thousand years until 1453. With the growth of luxury and vice, in that state of society "where wealth accumulates and men decay," the

Roman could not hold his own with the wily Greek and the subtle Oriental, while the vigorous Northern tribes were knocking at the outposts of the empire. Like those English colonists in Ireland who became proverbially *"Hibernis ipsis Hiberniores"* (more Irish than the Irish), the Roman fell under that strange law by which the conqueror is assimilated by the conquered.

The general state of Europe up till the ninth century was one of priest-ridden terror, of abandonment of intelligence to gross superstition, of abysmal ignorance. There was a paralysis of thought, something like insanity, in the world.

Into the darkness there gradually penetrated the faint but steady light of Salerno, which remained for nearly two hundred years, finally expiring in the fog of the early Middle Ages. Salerno, a town in Southern Italy, famous for its climate and utilized by the Romans as a health resort, became the nucleus of medical education; and the romance of it lies in the harmony of medicine and literature which it cultivated. Salerno raised the healing art from the decrepitude and decay of half a millenium, infused new life and thought into Europe, and guarded the best traditions of ancient practice. Very little is actually known of the school, except that it was an isolated institution, and its medical teaching came upon the world like a refreshing and invigorating breeze from the sea. Salerno was eminently sane, preferring experience to conjecture, and centring a healthy interest in the body, not in vague research into the nature of the soul. The Greek spirit and, indeed, probably something of the Greek language, lingered on at Salerno, when it was choked by the weeds of barbarism everywhere else (Gosse).

With the Reformation the intellectual world was in labour, in the throes of delivery from the domination of the Church, from the blind acceptance of the authority of ancient writers, and from the restrictions imposed by the universal use of the classical languages. Six years after Luther had burned the papal bull at Wittenburg, Paracelsus, the great iconoclast, burned the works of Galen and of the Arabian doctors Averröes and Avicenna in a brazier at Basle before beginning his lectures.

France produced the foremost surgeon of this epoch in Ambrose Paré (1510-90). As Paget his biographer says, a man like Paré is welcome whenever he comes. Poorly educated, he began his surgical career as an apprentice barber at the *Hôtel Dieu* in Paris. He rose to great eminence as surgeon to four French kings. At the massacre of St. Bartholomew he was one of the few Protestants spared by Charles IX, who exclaimed, as he shot with his arquebus at his less distinguished subjects: "This man could be of service to a small world."

Paré's published works passed through many editions, and they include an account of his travels as a military surgeon, one of the most lively and entertaining descriptions of military operations to be found in medical literature. Paré almost ostentatiously wrote in French, and his fellow-physicians tried to suppress his works on the ground that they were in the vulgar tongue and in very intelligible language. The great man replied in words which we recall with pride and satisfaction:

"The more our good science of medicine is known, the more it will be loved and will deserve to be loved."

In England the labours of the Reformation were incomplete. The Church still had the power of licensing to practise midwifery, and the London College of Physicians from time to time punished those who dared to doubt the authority of Galen. The literary style of the writings of the sixteenth century is the high-pitched, garrulous manner found in Paracelsus, Bacon, and other writers of the Renaissance. The prose of the Elizabethan physicians is described by Matthew Arnold as Corinthian, the prose of "those whose reason has not cleared itself." Even in Bacon's major works the prose is frequently bewildering, and is far inferior to his essays in medical interest and in literary merit. Two of his essays are medical in content, and in one of them he anticipates the inferiority complex of Adler. It has been satirically said of Bacon's prose that "it was like the peace of God, . . ."

Over the mantelpiece in Sir Wm. Osler's library in Baltimore there stood a panel of portraits of Linacre, Harvey, and Sydenham, bearing the legend: "Literature, Science, Practice."

Linacre, the first man of letters in English medicine, was primarily a grammarian. He founded the Royal College of Physicians in 1508, and was physician to Henry VIII, Wolsey, Thomas More, and Erasmus, but he gave up a rich practice and took Orders, to devote himself entirely to the revival of learning in England. The influence of Linacre on English medicine was decisive, and with him English medicine became a going concern.

In Chaucer, the physician, or doctor of physic, appears for the first time as an individual character, of whom it is said that "he was grounded in astronomye," "a very parfait practisour," who "knew all the medical writings of his day," but "whose studie was but littel on the Bible." The last line, "Therefore he loved gold in special," refers to the proverbial avarice of the mediæval physician.

The English prose of the Elizabethan era was definitely inferior in quality, but the blank verse of the great dramatists of the period has proved to be a highly efficient medium for the expression of scientific thought and medical teaching. All the Elizabethan and Jacobean dramatists are saturated with the medical thought of the time. Shakespeare refers to doctors and physicians forty-six times, according to Macleod Yearsley. Thus:

> "Now put it, God, in the physician's mind,
> To help him to his grave immediately."
>
> —Richard II, i, 4.

> "He and his physicians
> Are of a mind. He, that they cannot help him.
> They, that they cannot help."
>
> —All's Well, i, 3.

In Timon of Athens, iv, 3, occurs the passage:

> "Trust not the physician;
> His antidotes are poison, and he slays
> More than you rob."

It is an amazing fact that while disparagement and even gross abuse of the practice of physic and physicians is prominent in all the dramatists of the Eliza-

bethan period, Shakespeare has only one hostile criticism, quoted above, which is put into the mouth of the railing, crazy misanthrope, Timon. It would therefore appear that Shakespeare regarded the physicians in a different light. It may be that his connection with Dr. Hall, his son-in-law, influenced his judgment, but one would rather believe that it was due to the marvellous discernment and estimation of mankind which characterizes his genius.

Ben Jonson is a notable sinner against the profession. He says :

"Most of your doctors are the greater danger
And worse disease to escape."

—Volpone, i, 1.

And in the Poetaster (v, 1) :

"You make no more haste now than a beggar upon pattens; or a physician to a patient that has no money."

One exception may be quoted in Massengers' Virgin Martyr, where the distracted father welcomes the physician to the bedside of his son, and exclaims :

"O you that are half gods that lengthen life,
Their deities lend us. Turn o'er all the volumes
Of your mysterious Aesculapian science
To increase the number of this young man's days."

Haywood in his English Traveller (iii, 3) foreshadows the cocktail habit in—

"I vow we'll drink a cup of sack together.
Physicians say it doth prepare the appetite
And stomach against supper."

Beaumont and Fletcher (Thierry and Theodoret) suggest a common medical inconsistency in the following :

"As physicians,
When they are sick of fevers, eat themselves
Such viands as by their directions are
Forbid to others, though alike diseased."

The Hippocratic aphorism about simultaneous pains in different parts of the body is very simply expressed by Shakespeare :

"One pain is lessened by another's anguish"—Romeo and Juliet, i, 2;

and :

"But where the greater malady is fixed
The less is scarcely felt."

—King Lear, iii, 4.

In Macbeth, two unnamed doctors, English and Scottish, are introduced, the latter being the more important character. At his first entrance in the sleep-walking scene he watches his patient closely, observes her every action, and narrowly questions the gentlewomen-in-waiting. He does not scruple to confess his ignorance in such cases :

"This disease is beyond my practice; yet I have known those which have walked in their sleep who have died holily in their beds."

Again :

"Foul whisperings are abroad; unnatural deeds
Do breed unnatural troubles; infected minds
To their deaf pillows will discharge their secrets.
More needs she the divine than the physician."

When asked whether he cannot "minister to a mind diseased," the physician replies with true Scottish caution:

"Therein the patient
Must minister to himself."

On Macbeth's exit, he soliloquises upon the inadequacy of fees in such difficult and dangerous cases:

"Were I from Dunsinane away and clear,
Profit again should hardly draw me here."

Like the physicians, the surgeons came under the scourge of Elizabethan dramatists. Thus in Kyd's Arden:

"No sooner came the surgeon in at doors
But my master took to his purse and gave him money";

and Middleton in The Witch (ii, 1):

"Pray heaven the surgeon and the apothecary
Keep out! and then 'tis well";

or:

"You cannot torture me worse than the surgeon does."—The Witch, v, 1.

One outstanding passage is found in Green's Notable Discovery of Cozenage, expressing a truth which still holds good to-day:

"Three properties that a good surgeon should have: an eagle's eye, a lady's hand, and a lion's heart:"

It may truly be said that Elizabethan blank verse justifies the dictum of Alfred Noyes that "there is no precision like the precision of great poetry."

One may perhaps quote here the opinion of an Elizabethan, one Timothy Kendall, compiler of "The Flowers of Epigrammes in 1577" (Parkes Weber), on the physicians of his time:

"Three faces the Phisition hath.
First as an angel he
When he is sought; next when he helps
A god he seems to be;
And last of all, when he has made
The sick, diseased well,
And asks his guerdon, then he seems
An oughly fiend of Hell."

It is interesting to consider for a moment what manner of men were the physicians of the Elizabethan era. Physicians were men of good education who usually took degrees at foreign universities, such as Basle, Leyden, Montpellier, or Padua. The physician's fee appears to have been one angel (about ten shillings) a visit; and hence Culpeper said: "Physicians of the present day are like Balaam's ass. They will not speak until they see an angel."

For ordinary diseases the physicians had a sufficiency of drugs, which they administered in large doses. De Mayerne had a pill with thirty-six ingredients, and Montaigne complains of a pill with one hundred-odd ingredients, and asks, "What rock could withstand so great a battery? And yet," says he, "I hear from those who have tried it that not the least atom of gravel will stir for it."

De Mayerne was one of the best-known physicians of the period, and on one occasion he attended a great friend, who had tentatively placed two broad gold pieces on the table, but did not expect the doctor to take them. De Mayerne promptly pocketed the money, and to his protesting friend he said : "This morning I made my will, and if it should be found that I refused to take a fee, they would say I was *non compos.*"

In the seventeenth century there is an end of the redundant quality of Elizabethan medical prose, which abounds in quaint imagery and ornate circumlocution. This type is perhaps best illustrated in the works of Sir Thomas Browne, one of the outstanding personalities in pure literature, who practised medicine as a profession and wrote books as a recreation. The storms of the Civil War raged about him, but he remained undisturbed at his country seat. A king lost his throne and his head, while Sir Thomas seized the opportunity to write of ancient things. His best-known work, "Religio Medici," was written to defend himself and his professional brethren from the age-long imputation of irreligion. We remember him as a serene, happy old gentleman, who in spirit never passed from the shadows of Oxford's dreaming spires. He is so modest that he is quite willing to bring up the rear in heaven, so charitable that he can sympathize with all humanity. He can endure all theological systems—*mirabile dictu* in that or any other age—and can picture in the hereafter a life of toleration where one limbo would be reserved for the virtuous heathen.

His style is majestic, with its old-world Latinisms, its stately and noble rhythm. To Sir Wm. Osler "Religio Medici" was next to his Bible, and went with him all the way, *comes viæ vitæque,* and when finally he was laid to rest, he was robed in the scarlet gown of Oxford with this book clasped in his hand.

In contrast, the writings of Harvey and Sydenham have acquired something of Puritan sobriety and economy. In their hands English prose was already becoming an effective means of expressing scientific thought. This simple, plain, direct mode of expression is perhaps best exemplified in the beautiful prose of the King James's Bible of 1611.

Sir Thomas Browne wrote in English, but the profession were slow to accept the vulgarization of medicine.

There was long a suspicion of all attempts to bring literature and the medical profession together, which culminated in the case of Sir Richard Blackmore. Blackmore was a painstaking and diligent physician who in 1695 produced an epic poem which fell like thunder on literary society. The poem, "Prince Arthur," is entirely vapid and futile, but it was widely read and savagely attacked. And it was attacked because a physician wrote it. Two years later he published another epic on King Arthur, and stated in his preface that it was composed in the midst of his medical

work. This confession did not escape the wits, and King William III's epic physician was immortalized in the couplet :

"At leisure hours in epic song he deals,
Writes to the rumbling of his coach's wheels."

This was the last occasion on which the question of a doctor writing verses is seriously raised in England, and the final barrier was broken down by the publication two years later, in 1699, of "The Dispensary," by Sir Samuel Garth, a typical physician and poet. He had a fashionable practice in St. James's, and in his leisure hours he took part on a footing of perfect equality with the most eminent wits of the coffee-houses. This was a new thing. He was a poet amongst poets, and a physician among physicians (Gosse).

Pre-eminent among the literary physicians was Dr. John Arbuthnot, whose name will always live at least in the famous outburst of Pope's gratitude :

"Friend of my life, which did you not prolong,
The world had wanted many an idle song."

Arbuthnot succeeded Garth among the wits as "our best-natured man." He was a recognized leader of the medical profession, but it was in the company of authors that he was most at home, and we find among his intimates Gay, Steele, Parnell, Atterbury, and Congreve. Arbuthnot was an Aberdonian in practice at Epsom, and he owed his success to an accident. Prince George was taken ill suddenly, and no court physician being at hand, Arbuthnot was called in and cured the royal patient. Queen Anne made him Physician-in-Ordinary, and for twenty-five years he held a high place in the circle of the writers and wits. He is still remembered by the irony of "The History of John Bull," immortalized in "Punch," and by "The Art of Historical Lying."

Seventeenth-century medicine has been widely abused and caricatured in literature, but it was left to two Frenchmen, Lesage and Molière, to give us the most scathing commentaries on the doctors of the period. In "Gil Blas," Lesage has created an immortal character in Dr. Sangrado, whom he describes as "a tall, withered, wan executioner." After removing six good porringers of blood from the old licentiate Pedrillo, he says to Gil Blas : "It is a mere vulgar error that the blood is of any use in the system; the faster you draw it off, the better." Later, as the old man is dying, Gil Blas is sent to the notary, who asked what physician attended the licentiate. On hearing Dr. Sangrado's name he cried : "Let us make haste, by heavens, for that doctor is so expeditious he does not give his patients time to call members of my fraternity. He has done me out of many wills."

No one has ever been so sarcastic as Molière, and he ridiculed the pomposity, presumption, pedantry, and cupidity of contemporary medical men in a considerable number of his thirty comedies. Molière perhaps had some excuse, as he suffered from pulmonary tuberculosis, and he died from a severe hæmoptysis just after leaving the theatre where he was playing in the "Malade Imaginaire," the most scathing of his comedies in condemnation of doctors.

One might also mention here Sterne's famous but unjust satire of Dr. John Burton in the character of Dr. Slop in "Tristram Shandy." A political feud between

the Tory Burton and the Whig Jacques Sterne and his nephew Laurence was the cause of the satire. Burton, who founded York Hospital, and invented a pair of midwifery forceps, wrote a "Treatise on the Non-Naturals," the old medical term for the six things necessary to health but liable to become the cause of illness by abuse or accident. This excited the ridicule of Sterne, who could not understand why the most natural actions of a man's life should be called his non-naturals. Rolleston relates that the resurrectionists unconsciously avenged this attack on a distinguished obstetrician by exhuming Laurence Sterne's body and selling it to Cambridge for dissection by future doctors. A crude form of poetic justice!

In the reigns of William III, Queen Anne, and George I, men such as Addison or Congreve could not have lived on the money made by the sale of their writings. Yet there was never a time when the rewards of literary merit were so high, or when authors found such easy admittance into distinguished society and to the greatest honours of the State. Congreve had scarcely attained his majority when he was rewarded for his first comedy with places which made him independent for life.

Locke was a Commissioner of Appeals and of the Board of Trade.

Swift, but for his unconquerable dislike of the Queen, would have been a bishop. Steele was a Commissioner of Stamps, and Addison was a Secretary of State.

Soon after the accession of the House of Hanover, a change took place. The supreme power passed to Sir Robert Walpole, who cared nothing for poetry or eloquence. He paid little attention to books and less to authors.

This was the condition of affairs when Oliver Goldsmith, the greatest literary doctor of the eighteenth century, made his appearance in London. The season of rich harvests was over and famine had begun. All that is miserable and squalid could be summed up in the word 'author.' He lived up four flights of stairs, dined with footmen out of a place, and was chased by bailiffs from one haunt of beggary to another. Such was Goldsmith's experience, and here is what he says to his friends in Ireland of his own lodgings :

> "The window, patched with paper, lent a ray
> That feebly showed the state in which he lay.
> The sanded floor, that grits beneath the tread,
> The humid walls with paltry pictures spread.
> The seasons, framed with lasting, found a place,
> And Prussia's monarch showed a lamp-black face.
> The morn was cold; he views with keen desire
> A rusty grate unconscious of a fire.
> An unpaid reckoning on the frieze is scored
> And five cracked teacups dressed the chimney board."

Goldsmith, disfigured by smallpox, a blockhead at school, "a plant that flowered late," as Johnson says, was said to have been refused by medicine, by the teaching profession, by law, and by the Church. The story goes that the bishop before whom he appeared for ordination bluntly stated that a candidate clad in scarlet breeches must be constitutionally unadapted to holy orders. Recent research, as reported by Sir Ernest Clarke, has shown that Goldsmith did qualify M.B. in Dublin, and there

is an extract in the "Oxford Journal" of 18th February, 1769, unearthed by Osler, which reads : "Yesterday Oliver Goldsmith, Esq., Bachelor of Physic in the University of Dublin, was admitted in congregation to the same degree in this university." If he failed in medicine, how well he succeeded in literature ! His essays approach those of Charles Lamb in simplicity and charm. His play, "She Stoops to Conquer," is still acted before delighted audiences. "The Traveller" and "The Deserted Village" have given him a definite place among English poets, while his novel, "The Vicar of Wakefield," contains the portrait of one of the best-loved characters in English fiction. But he was no more beloved than the generous, simple, kind, improvident man who created him, one of the great names in English literature, if not in English medicine, and the friend of Samuel Johnson, Burke, Sir Joshua Reynolds, Boswell, Garrick, and Churchill. You remember Johnson's well-known kindness to Goldsmith in his need. "One morning," he says, "I received a message from Goldsmith that he was in great distress. I sent him a guinea, and said I would come directly. I accordingly went as soon as I was dressed, and found that his landlady had arrested him for arrears of rent, and he was in a violent passion. I perceived that he had already changed my guinea, and had got a bottle of Madeira and a glass before him. I put the cork in the bottle, desired he would be calm, and began to talk to him of the means by which he might be extricated. He told me he had a novel ready for the press, which he produced to me. I looked at it and saw its merit, told the landlady I should return, and having gone to a bookseller, sold it for £60. I brought Goldsmith the money, and he discharged his rent, not without rating the landlady soundly for having used him so ill." The novel was "The Vicar of Wakefield."

Garrick on one occasion wrote his epitaph :

"Here lies Poet Goldsmith, for shortness call Noll,
Who wrote like an angel, but talked like poor Poll."

This was true, but however poor with his tongue, Goldsmith was a master with his pen, and he got his own back in the little poem called "Retaliation" :

"Here lies David Garrick, describe him who can,
An abridgement of all that was pleasant in man.
As an actor, confessed without rival to shine,
As a wit, if not first, in the very first line.
Yet with talents like these, and an excellent heart,
The man had his failings, a dupe to his art.
Like an ill-judging beauty, his colours he spread
And beplastered with rouge his own natural red.
On the stage he was natural, simple, affecting,
'Twas only that, when he was off, he was acting."

You will remember Dr. John Browne of Edinburgh, pupil of the famous Syme and author of "Rab and His Friends," that delightful book of sketches. The memoir of his father is as fine as any in the English language. He is author, too, of that classic of childhood, "Marjorie Fleming," the wee wifie who was the devoted friend of Sir Walter Scott. She is revealed in her letters and journals, this little girl

with her quaint philosophy and her bad spelling, her confession of sins, and personal views of the devil, who made her behave so badly in church and who must have something to do with the multiplication tables she finds so difficult. She says that seven times seven is devilish, but eight times eight more than human nature can endure. Perhaps I may be permitted to quote the child's observation on the comparative psychology of turkeys, which is as fresh to-day as when she wrote it before her death at the age of eight :

"Three turkeys fair their last have breathed,
And now the world for ever leaved,
Their father and their mother too,
They sigh and weep the same as you.
Indeed the rats their bones have crunched,
Into Eternity they're launched.
A direful death indeed they had
As wad put any parent mad;
But she was more than usual calm,
She did not give a single dam."

"We fear 'she' is the abandoned mother," is Dr. Browne's comment.

Of the great English physicians and surgeons of the later eighteenth century and early nineteenth century, Jenner had a dull literary style, while John Hunter, one of the three great surgeons of all time, was almost inarticulate in the expression of his thought. He could, however, write to the point when occasion demanded, as the following letter to his brother William shows :

"Dear Brother,—The bearer is very anxious of having your opinion. I do not know his case. He has no money, and you don't want any, so that you are well met."

Rolleston mentions a quaint literary doctor, R. G. Latham, who brought out a textbook on the English language a year before he qualified. He also edited Johnson's Dictionary. He was a peculiar character, logical mentally, but quite illogical in action, and he was always in financial difficulties. He is reputed to have frequently approached his friends, and, laying a hand on the victim's shoulder, he would say : "Will you kindly lend me a sovereign that you will never see again?"

One of the leading literary figures of the nineteenth century was Oliver Wendell Holmes. He began general practice in Boston with the motto that the smallest fever would be thankfully received, and for thirty-five years he was Professor of Anatomy and Physiology at Harvard. He occupied, as he said, not a chair, but a whole settee. As a lecturer he was so successful that he was given the last hour of the day, because no one else in the faculty could keep the students awake. In the "Breakfast Table" series we see the author himself as a kindly old humorist regarding the world and its people from every angle, but always with sympathy and understanding.

His sympathy is well expressed in the following quotation : "There is nothing men will not do, there is nothing they have not done, to recover their health and save their lives. They have submitted to be half drowned in water and half choked

in gases, to be buried up to their chins in earth, to be seared with hot irons like galley-slaves, to be crimped with knives like codfish, to have needles thrust into their flesh and bonfires kindled on their skin, to swallow all sorts of abominations, and to pay for all this, as if to be singed and scalded were a costly privilege, as if blisters were a blessing and leeches a luxury. What more can be asked to prove their honesty and sincerity?"

In the novels of Dickens we find a great deal of medical interest, and we are amazed at his knowledge of the professional medical life of his day. Most of the characters in Dickens have been examined by Sir Squire Sprigg, who remarks on their deformity and twisted nature, both in body and mind, and Dickens was instinctively right to make them act in defiance of all recognized standards of reason. The one outstanding characteristic of the genius of Dickens is his power of observation of physical and mental phenomena, and his psychology was far in advance of his time. He is an unconscious pathologist in the streets of London, storing up memories of quaint features, crooked anatomies, and disordered gaits with amazing accuracy (Sprigg). He is not in the least flattering to medicine, and no doctor plays more than a subsidiary part in any of his larger works. He draws them in a spirit of amiable if extensive caricature. On the other hand, his medical students and nurses—Bob Sawyer and Benjamin Allen, Sairey Gamp and Betsy Prig, are as well known as Micawber or Mr. Pickwick himself. Regarding nurses, he helped to rescue society from the ministrations of the hopeless class into whose hands the calling of nursing was committed. As Sprigg says, society owes Dickens a debt of gratitude for having buried the nurse-hag under inextinguishable laughter.

George Eliot, in "Middlemarch," puts in the mouth of one of her characters an opinion now fortunately out of fashion : "I like a medical man more on a footing with the servants. They are often all the cleverer. I assure you I found poor Hicks' judgment unfailing. I never knew him wrong. He was coarse and butcher-like, but he knew my constitution." It is interesting to note that the character of Tertius Lydgate in this story is a full-length portrait of Sir Clifford Allbutt, whom George Eliot met in 1868 when he was thirty-two years old.

The literary tradition in English medicine may be said to have culminated in the two regius professors of medicine at Oxford and Cambridge, Osler and Allbutt, whom Osler facetiously dubbed "the brothers regii." Their literary efforts were largely devoted to the history of medicine. In this field Allbutt was the profounder scholar of the two, and his "Greek Medicine in Rome," written when he was over 80, is a masterpiece of erudition and clear thinking. In his book on the composition of scientific papers, he enlarges on Sheridan's witticism that "Easy writing is damned hard reading," and says : "It must not be supposed that mere literary form is but a toilette, a skin-deep quality. The student is apt to think that an easy style comes of letting himself go. He is unaware that an easy, limpid, consecutive style is the result of consummate craftsmanship. No quality was won by more labour than the ease of Montaigne." As Pope puts it :

"True ease in writing comes from art, not chance,
As those move easiest who have learned to dance."

Gilbert Murray, the great classicist, said of Osler that he represents in a peculiar way the learned physician who was one of the marked characters of the seventeenth and eighteenth centuries, and he stands for that type of culture which we do not wish to see die out in the world. The culture of a man who, while devoting himself to his special science, keeps nevertheless a broad basis of interest in letters of all kinds. In his presidential address at Oxford on the "Old Humanities and the New Science," Osler apologized for his small Latin and less Greek. To us he seems well versed in both, for he had absorbed their culture and bathed himself in their spirit. He far surpassed the *sine qua non* of Bagehot, that any writer of English, if he knew not Latin and Greek, must at least have a strong suspicion that both languages existed. In this address Osler reveals himself as a true humanist, and pleads for that civilization which Hippocrates pictured, in which love of humanity, philanthropia, shall be joined with love of craft, philotechnia, and so wisdom, philosophia, shall be justified of her children. Equanimity, he taught, is the way of life, and work is his master-word. With these as guards, one may bear success with humility, affection of friends without pride, and be ready when the day of sorrow and grief comes to meet it with the courage befitting a man.

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THE MATER INFIRMORUM HOSPITAL, BELFAST

THE Medical School of the Mater Infirmorum Hospital, Belfast, was opened for the winter session, 1937-8, on Wednesday, 20th October, 1937. Mr. Brien J. Moore, F.R.C.S.I., occupied the chair. Dr. Douglas Boyd, hon. radiologist to the hospital, delivered the inaugural lecture, which we hope to publish in the next issue of the Journal. There was a large attendance of the honorary medical staff, with the nursing staffs and students.

The Medical Student in Germany

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CONSIDERABLE attention is being given at the present time to the medical curriculum and the question as to how the medical student can to best advantage occupy his undergraduate years. In this connection it is of interest to compare our own system of medical education with that used in other countries, and I propose, therefore, to give some account of the training of the medical student in Germany, where I have had an opportunity of seeing and taking part in the work of the medical school in the University of Göttingen. This university, which this year celebrated its two-hundredth anniversary, has acquired its reputation more in the domains of pure science and mathematics rather than in medicine, but can, nevertheless, claim among its former members such great contributors to medical science as Wöhler, the synthetiser of urea, and Robert Koch, the discoverer of the *bacillus tuberculosus*. It has a medical school, therefore, of some tradition, and with more than five hundred students in the medical faculty it presents a good opportunity for observing the general system of medical education in Germany. I shall describe first some general aspects of university education and of the activities of the students in that country, and then in more detail refer to the subjects forming the medical course.

The German universities are State institutions, but are to a large extent self-governing. Appointments to the professorial staff are made by the State, after recommendation by the university authorities. The dependence of the universities on the State is to some extent due to loss of endowments and funds during the inflation period of 1931. The administration of the university is carried out by a rector and senate elected by the university. The teaching staff consists of professors, associate professors, instructors, and assistants. There are five faculties—theology, law, medicine, philosophy, and science. In the year 1936, out of a total of 79,154 matriculated students in all faculties in the German universities, the medical faculties contained 20,204 medical students and 3,136 dental students, so that about one-quarter of the students are medical. Of these students, 3,918 are women students. These twenty-thousand medical students are divided over twenty-four centres. The largest medical schools are those of Berlin and Munich, which have each about 1,700 students. Of the smaller universities, the largest medical school is in Heidelberg, with about half this number of students.

One of the great differences between the German university system and our own is that the German student is accustomed to change his university once or twice during his studies, so that his education is carried out in two or more—usually three, different universities. The choice of university for the various periods of study depends largely on the fame acquired by each particular university in the different subjects of study, but also to a great extent on the reputation of the various teachers at the time, so that in a school where there are several men of unattractive teaching habits there will rapidly be a falling off in the number of students in a

particular department of a faculty. Other factors, of course, influence the distribution of students, such as traditions and geographical reasons, and attractively situated centres such as Bonn and Freiburg are always sure of a certain number of students.

In addition to freedom in changing his university, the student has also considerable latitude in choosing the subjects of study and in directing his academic course. This does not apply, of course, so much in the case of medicine, where the course must be more or less standardized; but here also one frequently comes across students whose interests are somewhat wider than the medical curriculum. Apart from certain practical classes, there is no compulsory attendance at lectures, and so the number of students in any course of lectures is more or less an index of the popularity or attractiveness of the lecturer. It can be imagined that a professor must have a certain reputation when he can get a crowded audience at 7 a.m., which is frequently the case. Early lectures are usual, and eight o'clock is considered a normal time to begin, while a nine o'clock lecture is considered to be reasonably late. On the other hand, neither student nor teacher is so industrious in the early afternoon as we are accustomed to be here, and there is an almost complete lull in activity from lunch-hour till three, three-thirty, or even four o'clock. The professor who thinks nothing of lecturing at seven in the morning would be just as horrified at having to lecture from two till three in the afternoon as the student would be at the prospect of attending it. The hour following the midday meal is not considered one suitable for extreme mental activity. After the afternoon pause, lectures go on till seven or even eight o'clock in some subjects.

There is no matriculation examination held by the universities for entrance, but the student must pass a leaving examination at the end of the secondary school period. If a suitable standard is reached he can be admitted to full matriculation, and is entitled to take out a course of studies and sit for a university degree. In other cases where a lower standard is reached, the student can qualify for partial matriculation, and may take out a shorter course of study, but is not entitled to sit for the degree examinations, unless in the meantime he can attain the higher standard admitting him to full matriculation. There is a further class of students which consists of those who wish to hear certain lectures without aiming at a degree. These students are admitted on payment of a small fee, without having to pass any examination. The audience at lectures includes, therefore, a number of people who do not wish to qualify in any course, but who hear the lectures from interest apart from their own business or profession, and one sees perhaps more elderly folk in the classes than is the case in this country.

The courses of study are divided into "semesters," there being two semesters in each year. The summer semester lasts from April to August, but classes finish as a rule in July. The winter semester is from October to March, with an interruption of about two weeks for the Christmas vacation. All courses are given not by years, but by semesters, and students can begin their studies at the beginning of either summer or winter semester. Consequently, one does not speak of students as being in their second or third year, but in their fourth or fifth semester, as the case may

be. The fees are also charged by semesters. There is a charge of one hundred marks as a general tuition fee, a fee of ten to twenty marks for medical service, and additional fees depending on the number of courses studied. In addition, there are extra fees in practical classes, for apparatus and materials. This amounts altogether to about 250 marks per semester to medical students for the first part of their studies, and about 350 marks for the later semesters. (These amounts are equivalent to about £20 and £30 respectively.) The fee for medical service is worthy of notice. Students of all faculties must pay this small fee for medical insurance, and this entitles them to free medical treatment, including hospital charges.

In order to assist students, a number of scholarships are allotted at the entrance to the university, and also during the course. These scholarships are, however, not awarded by open competition to the cleverest or most industrious, but application is made by those whose financial condition would otherwise not enable them to enjoy a university education. The applicants must, of course, produce evidence of having attained a certain academic standard, and where a scholarship is maintained over a longer period they must show each semester that their work has been satisfactory. The amounts given vary with the candidates' requirements, and range from free study to moderate reductions in the fees. The names of candidates in receipt of this assistance are not made public, but probably up to twenty per cent. of students receive some financial help. Considerable assistance is also afforded to students by the reduced prices on railways and in theatres and concerts. Each matriculated student carries an identification card with a photograph, and production of this card procures a considerable reduction for almost all forms of entertainment and for travelling. For example, on the German air lines matriculated students may travel at third-class railway fare, provided the accommodation is not required by passengers paying ordinary fare.

Popular fancy has often pictured the German university professors as elderly bearded men discussing in minute detail the niceties of this or that science, and so lost in abstruse argument as to be unconscious of the lighter aspects of life. Curiously enough, the same popular fancy has pictured the German student as spending most of his time drinking beer, singing songs, and fighting duels. These are not, however, the common types one meets, although the formidable-looking "Herr Professor" may be seen occasionally. In general, the professors do not appear so much more serious than professors elsewhere, and if they do not enjoy an occasional eighteen holes (for golf is almost unknown in most parts of the country), they are frequently to be found on ski-ing expeditions or engaged in other forms of sport. On the other hand, one is often impressed with the seriousness with which many students take their responsibilities, and while there is a lighter side to student life, there is also a very real interest and earnestness displayed in work. Older people in Germany who have passed through the universities in pre-war days often assert that the modern student is too quiet and unimaginative, and that the glory of student life is departed. But it is well to remember that memory is notoriously unreliable when people are engaged in comparing the glamour of their younger

days with the activities of the generation growing up around them. It does, nevertheless, seem possible that the recent period of economic difficulty which Germany has been undergoing since the end of the war, and also the setting up of a totalitarian State, with the idea of certain common duties and responsibilities for all members of the State, has produced a type of student with at least a more serious outward aspect. This is also reflected in the sober "brown shirt" uniforms which one often sees, and which have replaced the brightly coloured caps and dresses of a former age.

The social life of the students is in some respects different from that in this country. There are no residential universities, and there is even no Students' Union as we know it, although there is a *Studenthaus* where cheap meals can be obtained and where a reading-room is available. Consequently the university does not act as a centre for social activity. The students live in lodgings in the neighbourhood, and at night the centre of social life is to be found in the *Ratskellar* or some other favourite café. Here among the less seriously minded, or along with those whose day's work is completed, there may be witnessed a scene of lively animation, with the drinking of beer and the singing of student songs and that general organized merriment in which the German delights. But in other quieter cafés one finds that the beer mug provides a centre for serious discussion of work and various problems. After a scientific meeting in the evening, one may find the discussions continued late into the night by the speakers and others around a small table in the less formal atmosphere of some small *Gasthaus*.

Up till 1935 the student corporations played a large part in the social life of the university, but these have all been abolished for the past two years. The corporations had houses which acted as clubrooms for the members, and in each corporation there were certain traditional standards of conduct which had to be lived up to. It was, perhaps, from meetings of the corporations that the old idea of German student life arose, and certainly these acted as centres of good fellowship, and were also responsible for many of the duelling contests. Since the abolition of the corporations duelling has been largely given up, although it is still permitted under certain circumstances, but only to decide matters of honour and not as a trial of skill.

In general behaviour the German student does not appear to differ much from his corresponding number in Belfast. The similarity even extends to the shuffling of feet in lectures as a sign of appreciation of conscious or unconscious humour on the part of the lecturer. The German student also likes occasionally a little boisterousness, either inside or outside the university, which may even lead to more or less good-natured interference by the officers of the law. In the market-place in Göttingen there is a fountain which takes the form of a bronze figure of a goose-girl. It is an old tradition of the university, and a point of honour among new students, to climb on to the fountain and kiss the figure, a procedure strictly forbidden by the police. Formerly a condition of admission to membership to any of the university corporations was to produce a receipt from the police to show that one had been fined for this outrage!

There is a new factor in post-war student life which is only now beginning to exert an influence, and as yet it is too early to estimate its effect. To-day, on leaving school the German student must do two and a half years' service before he can enter the university. The first six months is occupied with *Arbeitsdienst* (work service). This service consists of camps where boys of all social classes must live together and complete a period of six months in manual labour. The work includes draining swamps, working in the forests, or helping with agriculture. The benefits claimed for this service are the breaking down of social barriers, the opportunity for the future professional classes to learn to appreciate the meaning of manual work, and also the undertaking of work which otherwise could not be economically carried out. There is a corresponding service for girls, but the work is mostly housework, looking after children, and also light agricultural work. After this six months there comes for boys two years' military servire before they can begin their studies. This long period of service seems to us a very long interval of academic inactivity between school and university. It results in a higher average age of student, and it also makes a young man dependent on his family for a long period. Whether the general result will be to increase the responsibility of the student, and increase his keenness to make up for the period of service, or whether it will have the reverse effect, will be shown by the next few years.

Sufficient has perhaps been said of the general university system, and we now turn in more detail to the medical curriculum. The training of the medical student occupies six and a half to seven years. This includes one practice year after the completion of academic studies. The university period is spread over eleven semesters, i.e., five and a half years. Of these, either five or six semesters are devoted to the preclinical subjects—physics, chemistry, botany, zoology, anatomy, and physiology, and the remaining period to the clinical subjects, including pathology and pharmacology. There are two examinations—a preclinical corresponding to our first and second medical examinations, and a clinical corresponding to the final medical. A general survey of the medical course and the division of the work is best given by the following programme, which is that actually in use in Göttingen University.

FIRST SEMESTER. — Physics, part 1; zoology; inorganic chemistry; botany; anatomy of bones, ligaments, and muscles.

SECOND SEMESTER.—Physics, part 2; organic chemistry; practical chemistry; general anatomy; dissection.

THIRD SEMESTER. — Anatomy (nervous system, sense organs, and vascular system); embryology; histology; physiology, part 1; biochemistry, part 1.

FOURTH SEMESTER. — Dissection; comparative anatomy; physiology, part 2; biochemistry, part 2; practical physiology.

FIFTH SEMESTER.—Embryology; practical physiology.

SIXTH SEMESTER.—General pathology, part 1; post-mortem studies and morbid anatomy; pathological physiology; auscultation and percussion for beginners; introduction to medicine; general surgery; ante-natal course; pregnancy and labour; gymnastics; introduction to pharmacology.

SEVENTH SEMESTER.—General pathology, part 2; morbid anatomy and post-mortem studies; special pathology; medical clinical work; auscultation and percussion for beginners; auscultation and percussion for advanced students; surgical clinical work; gynæcological clinical work; ante-natal course; gynæcological lectures; psychiatry lectures; hygiene, part 1; pharmacology, part 1; physical therapeutic methods.

EIGHTH SEMESTER.—Medical clinical work; surgical clinical work; auscultation and percussion for advanced students; course in fractures, sprains, and dislocations; gynæcological clinical work; obstetrical operations on the phantom; ophthalmoscope for beginners; introduction to neurology; pathological histology; hygiene, part 2; pharmacology, part 2.

NINTH SEMESTER.—Medical clinical work; studies in tuberculosis; surgical clinical work; gymnastics; ophthalmology clinical work; ophthalmology lectures; ophthalmoscope for advanced students; testing of vision; gynæcological clinical work; obstetrical operations with the phantom; care of infants; nervous and psychiatrical clinical work; clinical work in diseases of skin and venereal disease; bacteriology.

TENTH SEMESTER. — Ophthalmology clinical work; clinical work in children's diseases; lectures on diseases of children; practical midwifery; skin diseases and venereal diseases; otology, lectures and clinical work; tuberculosis; special surgical lectures; orthopædics; sports injuries; röntgenology; nervous and psychiatrical clinical work; nervousness, cause and treatment; medical jurisprudence; sociology; topographical anatomy.

ELEVENTH SEMESTER.—Otology; clinical work in diseases of children; clinical work in skin diseases; medical clinical work; surgical clinical work; surgical operations; special lectures in surgery; orthopædics; röntgenology; practical midwifery; pharmacy and dispensing; pathological anatomy demonstration course; accidents and insurance; vaccination; psychotherapy; alcohol, nicotin and effects of smoking.

It is seen that, just as here, the first year is occupied with physics, chemistry, botany, zoology, and anatomy. At the end of this time the first part of the preclinical examination is taken in the first four of these subjects. The regulations for this examination state that the student must have attended the university at least two semesters, and also have reached a certain standard in Latin in the school-leaving examination. If the required standard in Latin is not obtained at the school examination, an examination can be taken later, but this must be done before the part one of the preclinical examination can be taken.

After passing the part one examination, the student passes on to the study of anatomy and physiology, and this normally occupies three semesters, or one and a half years. The anatomy course includes lectures and dissection. Included also in the anatomy department is histology, which in the British universities is often taught with physiology, and also embryology. In addition, there is a course on the history of anatomy, and a course dealing with physical exercises, personal hygiene, etc. It is held that while the student is learning the structure of the body he should

also be interested in the development of a healthy body and the general improvement of the race. The physiology course includes lectures in human physiology and biochemistry, and also practical classes in these subjects. The range covered corresponds very closely with that taught in our own school. A point of some interest however, is the special course of lectures given on the subject of *Luftfahrtmedizin* (medicine in relation to air travel). This deals with the physiology and pathology of high altitudes and the associated disturbances of normal function. This subject was formerly only of interest for mountaineers and scientific expeditions, but with the development of air travel it has come to concern every year larger numbers of the people. Indeed, a special journal is issued dealing only with problems of this nature, e.g., effects of anoxæmia on the respiration or circulation, but work of the same type would be found in our ordinary journals of physiology, pathology, and clinical medicine.

At the end of this period the second part of the preclinical examination is taken, the subjects being anatomy and physiology. This examination cannot be taken until after five semesters of university study, and at least two semesters must follow after obtaining the part one examination. The student must pass in both anatomy and physiology together, unless in certain cases where, if he fails in one subject, he may keep the other, provided a sufficiently high standard has been obtained. While this examination corresponds with our second medical as regards subjects, it by no means corresponds as regards severity and in the terrors it holds for the student. It consists only of an oral examination in each subject, with no written papers and no practicals. In the oral examination the students are questioned in groups of four to six together by their own professor for about half an hour. There is no external examiner, and the majority of entrants are successful. The German medical student in the early years of his course must surely be an object of envy for some of his companions here, who have in front of them the dreaded "second," with its tales of papers with no choice of questions, of impossible "spots," and of wily external examiners waiting to trip them up. One is tempted to doubt if the standard set is as high as our own, but I was told that a large number of students fail in the part one examination, so that the "weeding out" is done at an earlier stage. Nevertheless, the contrast with our second medical examination is very marked, and makes one wonder on the one hand if our system is unnecessarily complicated, or on the other hand if we do achieve something extra at this stage.

The preclinical examination is followed by the study of the clinical subjects proper, including pathology and pharmacology. The time devoted to these subjects must be at least five semesters, but is usually three years or longer. The division of the work has already been indicated, but attention may be drawn to a few further points. During the whole clinical period the student has less opportunity for examination of patients and for personally carrying out clinical work than is the case here. There is no period of living in at hospital corresponding to our resident pupilships, and the teaching generally appears to be more theoretical. On the other hand, the student spends perhaps more of his vacation time in the hospitals. Even during the preclinical semesters, while anatomy and physiology are being studied,

the students frequently attend hospital in the holidays or in their spare time, and so familiarize themselves from an early time with the clinical applications of the more fundamental sciences. The general scope of the work appears to be similar to our own, but on looking over the syllabus there are a few points which catch the eye. Included in pharmacology are lectures on the various spas and health resorts of the country. In the medicine course considerable attention is given to inherited diseases and their transmission. The same point is emphasized in the course on mental diseases, on hygiene, and on medical jurisprudence. This is, of course, in accordance with the huge experiment which is being carried out on sterilization of all those suffering from certain transmissible diseases of either mind or body, with a view to a general improvement in the race as a whole. In the surgery course, stress is laid on massage, physical exercises, and treatment of sports injuries. There is also a course on war surgery, which presumably deals with surgery under difficult conditions, treatment of extensive lacerations, and the uses of antiseptics. During the midwifery training the student is required to spend only fourteen days resident in a maternity hospital. This seems to us a very short period for training in a subject which is so important to the general practitioner. In gynæcology again attention is given to the sterilization laws in relation to women. Indeed, one notes that throughout the whole medical curriculum, from the biology course through anatomy, physiology, medicine, surgery, and hygiene, there is the tendency to emphasize the principles of heredity, disease inheritance, strong physical development, and the general possibilities of producing a healthier and stronger people. The generations to come will show the result of this enormous experiment in preventive medicine.

The student's period of training finishes with the State examination. This cannot be taken until eleven semesters have been completed, and at least five semesters must be completed after the preclinical examination. There are ten subjects in the final examination, namely, pathology, topographical anatomy, pathological physiology, pharmacology, medicine, surgery, midwifery and gynæcology, ophthalmology, diseases of ear, nose, and throat, diseases of children, skin and venereal disease, hygiene, and medical jurisprudence. The examination is spread over a considerable period. The subjects are taken in turn, and each is completed before the next is begun. The examinations are written, oral, practical, and clinical, depending on the particular subject. The examination in pathology lasts two days, and is mainly practical and oral. The examinations on topographical anatomy, pathological physiology, hygiene, and medical jurisprudence occupy each one day, and are conducted orally. Also to the examinations in ear, nose, and throat diseases, in diseases of children, in mental diseases, and in skin and venereal diseases, one day each is devoted, and the examinations are oral and clinical. There is a written and an oral examination in pharmacology. The examination in medicine lasts four consecutive days. It is mostly of a clinical nature, and includes examination of several cases and discussion of diagnosis and treatment. On one case the candidate must write a complete account of his investigations, and his ideas on the disease and its treatment. He is permitted to carry this out at home and hand his report in

the next day, so that the examination is not purely a memory test, but gives scope to the candidate who has read a little more widely to present a critical survey of the whole case, using any literature he may know. The examination in surgery lasts five days, and, like the medical, is mostly clinical in nature, but also includes carrying out of minor operations on the cadaver. The examination in midwifery and gynæcology occupies four or five days. The candidate is required not only to examine a case of a woman in labour and, if necessary, to assist at the delivery, but he must examine mother and baby for the next three or four days and report on the progress made and recommend any treatment he may think necessary. During this time he also has an examination in ante-natal work and in gynæcology. It will be seen, therefore, that in the final examination the student has got plenty of time and opportunity to display all the knowledge he has acquired.

If the student fails in any subject or in several subjects, he may repeat the examination in these subjects after an interval of several months, as determined by the examiners. He is not required to pass all the subjects together, but all must be passed within a period of two years, otherwise the whole examination must be repeated.

In describing the training in the clinical subjects the impression may have been given that the student, even after passing his final examination, has not had much personal clinical experience and his education has been more academic. But even on passing this examination, he is not allowed to enter at once into general practice, and he must now devote a year to clinical work before he can practise. Of this year, which is known as the "practice year," at least four months must be spent in a hospital, and at least three months as an assistant to a practising doctor. After serving this period, the candidate makes application to the State to be recognized as qualified to practise medicine. For this purpose he must show that he has spent his time during the practice year in such a way as to improve his medical knowledge, that he has had experience of hospital work and of general practice, has performed a certain number of vaccinations, and has personal experience of various aspects of medical insurance. If his application is satisfactory, he is now recognized as a medical practitioner. If the authorities are not satisfied, he may be required to do a further period of practice.

The State examination in medicine is not a university degree, and the large majority of those who pass the examination proceed at once to obtain the doctorate in medicine. This is not the equivalent of the M.D. of the British universities, as the German universities do not have a bachelor degree in any faculties. The "Dr. med.," as this degree is called, is obtained by submission of a short thesis, and by passing an oral examination in three chosen subjects of the faculty. The thesis, which is usually in the nature of case reports, is often written before the candidate has passed the State examination, although it cannot be submitted until this examination has been passed. The acquisition of the Dr. med. is more or less a matter of form, and it is possessed by almost all general practitioners.

Although the new doctor is now legally qualified, and in possession of a university degree, he is even yet not so free as our young M.B. the day after graduation.

He must serve a further three years as assistant before he is permitted to serve as a panel doctor, and this really means before he is free to settle down as an independent general practitioner. It may seem that the period of training for the general practitioner is unnecessarily long, but when one considers that the large majority of our own students serve at least one year as R.M.O. after qualifying, and generally spend a year or two doing "locums," or in assistantships, before launching out on an independent career, there is not so much difference between the two systems. The fact that the procedure is fixed and compulsory in Germany is probably rather an expression of the Teutonic preference for organization.

Such is the career of the general practitioner from the time when he leaves school until he becomes responsible for the health of his fellow-men. For those who wish to specialize in some branch of medicine, or to take up an academic career, there are of course further years of study and training. Here the system is rather different from ours, as there is no voluntary hospital system in Germany. The assistants in the hospitals receive remuneration for their work, but except in particular cases they are not permitted to carry on a private practice. The people occupied in this work are mostly those who wish to do afterwards consultant private practice, or those who aim at becoming director of a hospital and pursuing an academic career. In order to be recognized as a specialist, a period of about four years in hospital work is necessary. In the case of surgery the time is several years longer. In addition to this time, either one or two years is almost always spent in a laboratory, occupied with research in pathology, physiology, or some other branch of medical science. Indeed, the majority of the research workers in the laboratories are those aiming at a career as consultant physicians or surgeons.

For those wishing to pursue academic work there is a special degree known as the "Dr. med. habil." To obtain this degree requires at least three years' work in a hospital or in a laboratory and the submission of a thesis of original work. In addition to this degree, in order to qualify as a teacher or lecturer, the candidate, after obtaining the degree, must give three lectures to the medical faculty, on subjects chosen by the faculty, and also take a special course lasting three weeks. He is then qualified to accept a post as lecturer. After a further period of five years he is qualified to receive an appointment as professor.

I have endeavoured to give some sort of picture of the scheme of medical education in Germany. In some respects it has perhaps advantages over our own, and in others it is possibly inferior. If the first aim of medical education is, as I suppose it is, to produce a good general practitioner, the comparison between systems must rest on figures for death-rates, maternal and infantile mortality, and suchlike, taking into consideration the peculiar conditions existing in each country. This is the domain of the public health expert and statistician, and I leave it to these authorities to draw comparisons and make distinctions. If, on the other hand—and I think this must also be admitted—one aim of a system of medical education is to train research workers in all fields of medical science, the amount of work contributed by the German medical schools in the past is at least some vindication of the organization of medical education in that country.

Diphtheria Immunization*

By GEORGE CHESNEY, M.D., D.P.H.,
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AT the beginning of the twentieth century diphtheria occupied a unique position in contrast to other infectious diseases. Its symptoms and course were well known and accurately described, the causal organism definitely recognized, and a specific remedy was available for its treatment, yet in spite of this wealth of scientific knowledge the control and prevention of the disease had proved a comparative failure.

The preceding century had seen the triumph of preventive medicine in this country over such etiological problems as smallpox and typhus, while diphtheria still flourished actively and unchecked. To the hygienists of the day, deeply impressed by the infective possibilities of every kind of nuisance, drains and smells were suspect; and the epidemiologists seriously debated the influence of the rise and fall of the ground water-level on the incidence of the disease. Meanwhile, laboratory research workers, by patient investigation, made the solution of the problem possible.

Early in the present century the pioneering work of von Behring, Schick, and Park demonstrated that immunity to diphtheria depended on the amount of antitoxin in the blood of the individual, and that complete protection of the human subject could be attained by inoculation with a mixture of diphtheria toxin and antitoxin.

Almost a quarter of a century has passed since it was shown that diphtheria is a preventible disease; it is, therefore, an indication of the indifference or ignorance of the public, and a matter of reproach to the medical profession, that each year in England and Wales alone some three to four thousand children die and a further sixty thousand suffer from a disease against whose attack they could have been rendered safe.

This needless loss of valuable child-life is all the more serious in view of the sharp decline in the birth-rate, and it would seem that there is more concern in encouraging the community to produce children than in urging the safeguarding of the lives of those children already in existence. If the practice of active immunization against diphtheria were still a matter for speculative debate, it would be possible to understand the present national policy of benign approval unsupported by active effort, but diphtheria immunization has long passed the experimental stage, and with modern immunizing agents and methods its practice is recognized as safe, simple, and efficient.

What is artificial active immunization against diphtheria? It is the scientific imita-

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tion of a process practised by nature ever since the disease came into existence. There is no such thing as inherited active immunity to diphtheria, though a passive resistance of the body to the invasion of the bacillus may be present at birth. Active immunity must be acquired, and can be acquired only by contact with the bacillus or its toxin, the body-cells being trained by this contact to produce anti-toxin when stimulated by the exotoxin elaborated by the bacillus. It is unfortunate that nature's methods are haphazard, frequently successful, but often disastrous. In its early contacts with the bacillus, a child may be fortunate. It may receive a succession of small or weakly toxic doses of infection which, while causing no illness clinically recognizable as diphtheria, train the immunizing mechanism of the body, and stimulate the production of sufficient circulating antitoxin to render the child ready to resist any subsequent heavy invasion. On the other hand, the child may be unfortunate enough in its first encounters with the bacillus to receive a heavy or highly virulent dose of infection, and an attack of clinical diphtheria results, with serious illness and possibly death.

I think it will be agreed that it is not justifiable to allow a child, at the risk of its life, to develop active immunity to diphtheria by natural means when there is available a safe and more dependable method of accomplishing this by artificial means. Profiting by the researches of workers in this sphere of preventive medicine, we are now able to imitate scientifically the desirable effects of nature's method of immunization while avoiding its dangers. The discovery some fifteen years ago that diphtheria toxoid was as efficient as either the bacillus itself or its toxin in stimulating the production of the protective antitoxin placed artificial active immunization on a safe and sound basis.

In choosing an immunizing agent, certain essentials should be considered. To be regarded as eminently satisfactory a prophylactic should be—

1. Completely free from toxicity.
2. Free from liability to cause sharp reaction.
3. Capable of consistently producing a high grade of Schick immunity.
4. Capable of rapidly developing this immunity with a minimum of injections.
5. Capable of producing an immunity sufficiently durable to protect from infancy to adolescence.

No prophylactic as yet available fulfils all of these requirements, but of the preparations commonly used in this country — toxoid-antitoxin floccules, formol toxoid, and alum-precipitated toxoid — in my opinion alum-precipitated toxoid approaches most closely to the fulfilment of these conditions.

The first requirement—freedom from toxicity—is met by each of these prophylactics. Being prepared from diphtheria toxoid, there is no danger of any specific toxic sequelæ.

The second requirement—freedom from reaction difficulties—is best fulfilled by

toxoid antitoxin floccules, the injection of which in full dose very rarely gives rise to any appreciable local or general disturbance. Both formol toxoid and alum-precipitated toxoid are liable to cause sharp reactions in adolescents and adults, but in young children the risk of reaction is slight. This reaction hazard can be minimized, if not altogether avoided, by the use of the Moloney test for sensitiveness. Unfortunately, this procedure increases the number of injections, and has all the disadvantages of a skin test, and I am not convinced of the reliability of its indications.

The remaining criteria, briefly summarized, are: the consistent and rapid production of a high-grade and durable immunity with a minimum of injections.

There is little doubt that alum-precipitated toxoid is superior to both toxoid-antitoxin floccules and formol toxoid in meeting these requirements, but there is still some debate as to the requisite dosage and the number of injections necessary. This preparation, being relatively insoluble, forms at the site of inoculation a "depot" from which antigenic stimuli are liberated for a considerable time, probably two or three weeks. Therefore a prolonged and greater stimulus can be produced by a single dose of alum-precipitated toxoid than by several doses of more easily absorbed but more rapidly eliminated preparations. The irritant effect on the tissue of this insoluble precipitate has, however, to be considered: the larger the amount of the injection the greater the risk of sharp reaction in sensitive persons.

The work of Saunders of Cork, one of the pioneers in the use of alum-precipitated toxoid, shows that used in a single dose A.P.T. rapidly produced Schick immunity in almost 99 per cent. of children treated. Of 2,157 children given 1 c.c. of A.P.T., 98.7 per cent. were found to be Schick negative within twelve weeks. These results are highly satisfactory.

I have, however, one criticism to offer. Saunders (1937) records that 14.5 per cent. of these children developed reactions, 4.6 per cent. of the reactions being classified as moderate and 2.8 per cent. as severe. He regarded as moderate a local reaction one to four inches in diameter with or without malaise, and as severe one exceeding four inches with or without constitutional disturbance. I cannot but regard seriously reactions of these dimensions, and I am of the opinion that some modification is desirable in a procedure which gives rise to sharp reactions in one case in every thirteen treated.

For the past two and a half years I have been using A.P.T. in a two-dose method which, while giving a high-grade immunity and a very satisfactory Schick conversion-rate, avoids reaction hazards. Early in 1935, Dr. R. A. O'Brien informed me in a private communication that two doses of 0.1 c.c. A.P.T. at a three-weeks interval had been found in laboratory animals to produce rapidly a higher grade of immunity than that resulting from a single dose of 1 c.c.

In 1933 I had found that a small initial dose of formol toxoid given subcutaneously was a more reliable indicator of hypersensitive persons than the Moloney test

(Chesney, 1934). It seemed probable that a small initial dose of A.P.T. would serve a similar purpose, and that in non-reactors the second dose could be safely increased. In view of the findings of O'Brien and his colleagues, such a procedure should in children rapidly develop a high-grade immunity.

In 1,468 children I have used this method, giving two doses of 0.1 c.c. and 0.4 c.c. at an interval of four weeks (in children under 10 years, 0.2 c.c. was given as the inital dose), and I have not encountered any noteworthy reaction difficulties. In children who showed with the initial "detector" dose evidence of sensitiveness to the prophylactic, the amount of the second dose was reduced in proportion to the degree of the local reaction.

Thirteen hundred of these children have been Schick-tested two months after treatment, and only three have shown a positive result, the Schick conversion-rate being virtually one hundred per cent. The immediate results of this method can therefore be regarded as satisfactory.

That the grade of the immunity was well above that indicated by the Schick test was demonstrated by the use of a test toxin of greater combining power than that of the ordinary Schick test. A "fourfold" Schick toxin was used in testing 768 children after treatment, and all but three proved negative. A child who is negative to the "fourfold" toxin has a higher level of circulating antitoxin than one who is just negative to the standard Schick test, but positive to the "fourfold."

Regarding the durability of the immunity developed, there has been no evidence of any appreciable loss of immunity in a number of children who attended for a retest some months later. One hundred and twelve children who, two months after treatment, had been found to be negative, were again tested after eighteen months or more. All were still negative. This result is the more significant, for in eighty per cent. of these children the "fourfold" Schick toxin was used.

In considering these results, it should be noted that endemic diphtheria is an essential factor in the maintenance of acquired immunity to the disease, and that the area in which this work has been carried out has been comparatively free from diphtheria during recent years, the incidence during the past four years being about one-tenth of the incidence in London. There has therefore been little, if any, assistance from nature in the maintenance of the immunity developed.

I submit that, of the immunizing preparations at present available, alum-precipitated toxoid is the prophylactic of choice for the protection of children against diphtheria. Used in the two-dose method described—it is free from reaction difficulties, the Schick conversion-rate is consistently high, the grade of immunity produced is well above the standard Schick level, and there are indications that the duration of the immunity is satisfactory.

As in any discussion on diphtheria immunization, reference to the Schick test and the Schick level of immunity is unavoidable, a definite conception of the uses and limitations of the test is imperative. May I, therefore, be permitted to quote the

essential points as enunciated so clearly and briefly by Dr. F. V. Scholes in a recent article :—

1. The Schick level of immunity is an arbitrarily chosen one, indefinite quantitatively, but indicating the presence of a fair degree of actual immunity.
2. This state has been brought about by previous repeated or prolonged stimuli.
3. There are all grades of immunity and susceptibility both above and below the Schick level.
4. For the maintenance of the Schick level further stimuli are necessary from time to time.
5. Relapse from a Schick-immune to a Schick-susceptible state may and does occur. The importance of this should not be exaggerated; such a person is in a far better position than one who has never been Schick-immune.
6. Diphtheria, either mild or severe, may occur in persons who have been, or even are, Schick-immune. Reasons for this may be :—(*a*) a border-line degree of immunity, (*b*) large dosage of infection and amount of toxin absorbed, (*c*) unhealthy local conditions of the body tissues, (*d*) high virulence or toxicity of the strain of infecting bacterium.

It is in the light of this concept of Schick immunity that the successes and failures of the practice of diphtheria immunization should be judged.

That active immunization when extensively practised can reduce both the mortality and morbidity of this disease in a convincing manner is shown by the records of those countries where vigorous camapigns have been carried through. Park (1936) records that in the city of New York in 1894, the death-rate from diphtheria was 150 per 100,000; it had dropped gradually by 1914 to 20 per 100,000, and by 1935, due to extensive prophylactic inoculation, it had fallen to 1 per 100,000.

In Hungary, where over 1,000,000 children have been immunized, there has been such a fall in the incidence of the disease as a result of protective inoculation that already eighteen out of thirty-six municipalities have decided that continuous immunization of the child population shall be obligatory, and a law has been passed which enables diphtheria immunization to be made compulsory.

With a general extension of the practice of active immunization to the whole child community, this country could in a generation remove diphtheria from its place among the deadly diseases of childhood. Nearly seventeen hundred years elapsed between the recognition in the second century of diphtheria as a clinical entity, and the completion of the clinical picture of the disease in the early days of the nineteenth century. Another hundred years passed before the early results of active immunization showed the world that the conquest of the disease was in sight. Will another hundred years be allowed to elapse before its elimination by active immunization is an accomplished fact?

Influenzal Meningitis

By F. F. KANE, M.D., M.R.C.P.I , D.P.H.,
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OUR attention recently has been attracted by the occurrence in Purdysburn Fever Hospital of several cases of meningitis in which the causal organism was the *hæmophilus influenzæ*. A study of all admissions to Purdysburn Fever Hospital since its opening in November, 1906, shows that the first case diagnosed as influenzal meningitis was admitted in October, 1929. Another case followed in February, 1930, and then none occurred until August, 1936. A fourth case was diagnosed in November, 1936, and the occurrence of three cases during October, 1937, seems to justify a report upon these cases—seven in all.

CASE 1.

A. H., a female, aged 10 months, a town-dweller, was admitted on 8th October, 1929, on the eighth day of illness. Onset had been gradual, with fretfulness and vomiting. There was no previous history of illness. On admission: fretful and irritable; faint erythema of trunk and limbs, slight *tache cérébrale;* slight rigidity of neck, with Kernig's sign doubtful; no obvious paralysis; heart, lungs, and abdomen—nothing abnormal detected. Temperature 99.4, pulse 136. A lumbar puncture gave 40 c.c. of turbid fluid containing polymorphonuclears +, and h. influenzæ direct and on culture. Twenty c.c. meningococcal serum was given intrathecally on the appearance of the cerebro-spinal fluid. Next day lumbar puncture 50 c.c. similar fluid, polymorphonuclears + +, h. influenzæ + +, and on culture. Fluid was again replaced by 20 c.c. meningococcal serum. Lumbar puncture was repeated on tenth and eleventh days with similar findings.

Course: Remittent temperature up to 103, pulse up to 200; semi-conscious and irritable; drinking well, no vomiting; squint developed; rigidity and retraction marked. Death at seventeenth day of illness.

CASE 2.

M. McL., a female aged 6 months, a town-dweller, was admitted on 15th February, 1930, on the sixth day of illness. Onset was gradual, with fretfulness, stiffness, and irritability, but no vomiting. No previous illness.

On admission: Bad colour, no rash, well nourished; well-marked rigidity and head retraction, no obvious paralysis. Tongue furred; clean, quiet fauces; very purulent nose; heart, lungs, abdomen, and ears—nothing abnormal detected. Temperature 100.4, pulse 138. Lumbar puncture, 70 c.c. slightly turbid fluid under marked pressure contained polymorphonuclears and lymphocytes in equal numbers and h. influenzæ direct and on culture. Twenty c.c. meningococcal serum was given intrathecally on the appearance of the fluid.

Course: Remittent temperature up to 100.4, with pulse up to 196; no vomiting; marked rigidity and head retraction. Death at thirteenth day of illness, after seven days in hospital.

CASE 3.

J. M., a male, aged 20 months, a country-dweller, was admitted on 29th August, 1936, on sixth day of illness. He had been in a local hospital for three days when he was lumbar punctured and diagnosed "probably cerebro-spinal fever" upon the turbid appearance of the fluid. He had a history of a fall two days before the gradual onset of headache, vomiting, and irritability, with rigidity developing. There was no previous history of illness apart from the fall.

On admission : Well nourished, bad colour, no rash; semi-conscious and irritable; moderate *tache;* well-marked rigidity and head retraction, no obvious paralysis. Tongue dry, coated; sordes in the mouth; throat clean and mild; heart, lungs, abdomen, and ears—nothing abnormal detected. Temperature 101.4, pulse 140. Lumbar puncture, 45 c.c. turbid fluid under pressure; cells all polymorphonuclears, no organisms direct, and sterile on culture.

Course : He was expectantly treated as a case of cerebro-spinal fever, and was given meningococcal serum intrathecally and intramuscularly on fifth, sixth, and seventh days, but on the seventh day organisms were seen in the cerebro-spinal fluid for the first time. These on culture proved to be h. influenzæ. Lumbar or cisternal drainage was repeated on ninth, sixteenth, nineteenth, and twenty-fifth days, with the recovery of h. influenzæ from each specimen of fluid—the amount drained off varied from 40 c.c. to 65 c.c. at a time. He ran a remittent temperature between 100 and 103, with pulse-rate between 140 and 160 throughout his stay in hospital. Consciousness returned after three days in hospital; he was easily fed and did not vomit until the terminal stages. Rigidity diminished early for three days without relation to treatment, but returned with marked retraction and warping persisting to the end. Emaciation was progressive and marked. For four days before death he had tremors in his hands and arms, and his sight became doubtful. He remained conscious but irritable until death at thirty-third day of illness.

CASE 4.

A. K., a female aged 25 months, a country-dweller, was admitted on 20th November, 1936, on the tenth day of illness. Onset was gradual; she was out of sorts and fretful; rigidity was noticed after about six days. There was no previous history of illness.

On admission : Well nourished, no rash, moderate *tache;* conscious but irritable; distinct rigidity of neck with little retraction, no obvious paralysis, but a suspicion of internal squint. Tongue moist, furred; clean, quiet fauces. Heart, lungs, abdomen, and ears—nothing abnormal detected. Temperature 100.4, pulse 132. Lumbar puncture, 30 c.c. turbid fluid, cells polymorphonuclears +, h. influenzæ direct and on culture. She was given 20 c.c. meningococcal serum intrathecally on the appearance of the fluid.

Course : She ran a remittent temperature up to 102.4, with a pulse between 120 and 140, throughout her stay in hospital. She was always conscious, but very fretful and irritable; she drank well and never vomited; the squint became marked, and

varied from day to day; emaciation was progressive, and with rigidity and retraction marked, the appearance became that of the chronic meningeal state. Lumbar or cisternal puncture was repeated on fourteenth, seventeenth, twentieth, twenty-fifth, and twenty-sixth days. H. influenzæ were recovered from the fluid until seventeenth day, thereafter the fluid was sterile. Death occurred on twenty-ninth day of illness.

CASE 5.

W. K., a male, aged 36 months, a country-dweller, was admitted on 1st October, 1937, on the third day of illness. Onset was sharp, with headache and stiffness of neck. He did not vomit. There was no previous history of illness.

On admission: Well nourished, good colour, no rash, doubtful *tache;* conscious, but dull and irritable; distinct rigidity of neck, with Kernig's and Brudzinski's signs present; no obvious paralysis; pupils equal, central, and active; knee-jerks sluggish. Tongue moist and coated; fauces clean and quiet; heart, lungs, abdomen, and ears—nothing abnormal detected. Temperature 101.4, pulse 96. Lumbar puncture, 35 c.c. turbid fluid containing polymorphonuclears + +, no organisms direct, and sterile on culture. He was given 20 c.c. meningococcal serum intrathecally on the appearance of the fluid. Lumbar drainage and 20 c.c. serum replacement was repeated next day, when the fluid contained less pus, no organisms, and was again sterile. This was followed by an apparent improvement in the general condition of the child, with a definitely falling temperature. Two days later, with the clinical improvement maintained, lumbar puncture gave 20 c.c. clear fluid containing scanty cells, no organisms, and sterile. On the tenth day of illness, with a return of rigidity and irritability, and temperature 102.4, lumbar puncture gave 30 c.c. turbid fluid containing polymorphonuclears +, no organisms, and sterile. Twenty c.c. meningococcal serum was given intrathecally, and 20 c.c. intramuscularly, this recrudescence being regarded as a relapse in the course of a cerebro-spinal fever. Next day lumbar puncture showed 30 c.c. almost clear fluid, scanty cells with lymphocytes = polymorphonuclears, no organisms, and sterile; 20 c.c. serum was given intramuscularly. On thirteenth day of illness he complained of a return of frontal headache, and was given 20 c.c. Soluseptasine intravenously and six Proseptasine tablets daily. The intravenous Soluseptasine was repeated on fourteenth and sixteenth days of illness. Lumbar puncture on fourteenth and sixteenth days each gave 30 c.c. of slightly turbid fluid containing more polymorphonuclears than lymphocytes, numerous h. influenzæ direct and pure on culture. On his seventeenth day of illness he was taken home to the country on the bad prognosis following upon the diagnosis of influenzal meningitis. Throughout his time in hospital he slept well, drank well, and never vomited, but became progressively more fretful, irritable, and emaciated. He never lost consciousness. His temperature was remittent up to 102.6, pulse-rate 84 to 120. He is now at the thirty-seventh day of his illness, and his doctor reports little change in his condition. He runs a temperature up to 100, and when last examined some days ago his cerebro-spinal fluid was still turbid.

CASE 6.

R. D., a female, aged 16 months, a town-dweller, was admitted on 25th October, 1937, on the fourth day of illness. There had been some days during which the child was definitely "off colour" before the definite onset of vomiting with diarrhœa, then convulsions and meningeal cry. There was no previous history of illness.

On admission: Moderately developed child, very poor colour, flaccid; semi-conscious and irritable upon handling; there was a faint mottling of her trunk, but no definite rash, and a moderate *tache;* her respirations were irregular, with frequent sighing; she had distinct rigidity of the neck with slight retraction; Kernig's and Brudzinski's signs were slight; pupils equal, inactive; knee-jerks brisk; no obvious paralysis. Tongue furred; clean, mild fauces; heart, lungs, abdomen, and ears—nothing abnormal detected. Temperature 102.2, pulse 136. Lumbar puncture, 10 c.c. turbid fluid with polymorphonuclears = lymphocytes; h. influenzæ present direct and on culture. She was given 20 c.c. soluseptasine intramuscularly, and the same quantity intravenously with glucose and calcium gluconate. This medication was repeated next day, and at first there appeared to be some improvement in the condition of the child: she was sleeping and drinking well and not vomiting. The temperature was remittent up to 102.8, pulse up to 200; she developed an internal squint with a purulent conjunctivitis; irregular respirations returned with convulsions, and she died within forty-eight hours of admission to hospital. She was in her sixth day of illness.

CASE 7.

R. R., a female, aged 9 months, a town-dweller, was admitted on 28th October, 1937, on the fifth day of illness. Onset was gradual: feverish and out of sorts, then vomiting and convulsions before admission. There was no previous history of illness.

On admission: Well nourished, colour fair, no rash, moderate *tache;* semi-conscious; slight rigidity of neck, no retraction, doubtful Kernig's sign; no obvious paralysis; pupils equal, reactions doubtful. Tongue furred, clean fauces; heart, lungs, abdomen, and ears—nothing abnormal detected. Temperature 101.2, pulse 160. Lumbar puncture, 45 c.c. turbid fluid containing more polymorphonuclears than lymphocytes, teeming with h. influenzæ direct and pure on culture. She was given 30 c.c. meningococcal serum intrathecally on the appearance of the fluid, and 10 c.c. prontosil intramuscularly. After a restless and convulsive night, with little fluid intake and no vomiting, she died within twenty-one hours of admission to hospital. She was in the sixth day of her illness.

ETIOLOGY.

Cases of influenzal meningitis were reported by Cohen in 1909, Ritchie in 1910, and Henry in 1912. In a recent article by Everley Jones he records the cases of influenzal meningitis diagnosed in St. Thomas's Hospital over a period of fifteen years. These totalled six, and this figure places h. influenzæ fourth as a cause of meningitis in children up to eight years of age. In Purdysburn the figures for the

same age group over the past eight years, i.e., since the first case was definitely diagnosed, show influenzal meningitis fourth also. The actual figures for the period are :—

Cerebro-spinal fever - - -	92 cases.
Tuberculous meningitis - -	28 cases.
Streptococcal meningitis - -	9 cases.
Influenzal meningitis - - -	7 cases.
Pneumococcal meningitis - -	6 cases.
Staphylococcal meningitis - -	1 case.

In the age group up to three years into which these seven cases fall, influenzal meningitis takes third place above streptococcal. Authorities state that the condition is almost limited to children under two years of age. Of these seven cases, two are over this limit; all fall between six and thirty-six months of age. Four of these cases were town-dwellers and three hailed from the country, and it may be more than coincidence that the three country patients were the oldest in the group at twenty, thirty, and thirty-six months respectively. Sex incidence is probably of little importance : five were females and two males.

Previous histories of the patients discovered nothing of importance; the story of the fall in case 3 seemed of no significance. In every case meningitis appeared to be the primary and sole condition present; in no case was there any history of ear symptoms.

Onset : In five cases the onset was gradual—one almost might be credited with a prodromal period; in only two patients the onset was sharp. Fretfulness and irritability were the predominant signs; the children were too young to report headache in every case, and it is noted only in the older patients. Vomiting was not the constant feature to be expected : actually three of the children never vomited throughout their illnesses. Convulsions were present at onset in only two cases. Squint was noticed at some stage of the illness in three patients. Conjunctivitis and rhinitis were each present in one case only. Gastro-intestinal disturbance was slight : one child had a history of diarrhœa and one was constipated. Nothing abnormal was found in the urine of the patients from whom it was obtained. There were no accompanying signs in the heart, lungs, and abdomen of any case.

Although the individuals were all well nourished, in only one was the colour good on admission, the general impression being that of a complete knockout of some origin. Rigidity was present in every case, but always of the "easily overcome" degree, probably an indication of the hopelessness of the struggle. In some cases Kernig's sign was of little assistance, and in these Brudzinski's neck-sign was of most value. There was no definite rash present in any case, and the *tache cérébrale* was of moderate degree only. Temperature and pulse were invariably disturbed, but showed no constant feature. The cerebro-spinal fluid was turbid on first examination in every case. The cellular reaction was mainly polymorphonuclear, with an appreciable lymphocytic content also.

The course of the illness varied markedly; two cases ended on the sixth day of disease and one still survives at the thirty-seventh day now. In the intermediate examples the outstanding and most tantalising feature is the tendency to periods of remission; in one case the fluid had become practically normal only to revert to its former turbidity later.

Treatment in our hands has been manifestly unsuccessful, but one essential feature must emerge from this report. That is the absolute necessity of giving meningococcal serum to every case of meningitis with a turbid fluid of unknown infection, on the chance of the case being one of cerebro-spinal fever, which is by far the commonest variety of meningitis in children. It appears to be quite impossible to differentiate clinically the several acute varieties, so that the diagnosis must depend entirely upon the bacteriologist. Nor is the infecting organism always to be recovered from the first sample of fluid; in one of these cases the h. influenzæ was not found until the fourteenth day of illness.

There is as yet no specific treatment to suggest. Some of the several preparations of the sulphonamide group of drugs have been used without any dramatic results to date.

The prognosis seems to be almost invariably fatal, although one of these seven cases still survives. In the series of six cases from St. Thomas's Hospital one patient made an uneventful recovery, and in this case, as in the survivor of the Purdysburn series, a sulphonamide preparation was used in the treatment.

I have to acknowledge my gratitude to Dr. A. Gardner Robb for his permission to record these cases and advice in the presentation of the material, and to Dr. G. F. W. Tinsdale for the bacteriology of the cases.

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COHEN, *Ann. Inst. P.*, 1909, xxiii, 273.
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Senile Cataract

By W. A. ANDERSON M.A., M.D.,
Surgeon to the Benn Ulster Eye, Ear, and Throat Hospital, Belfast

THE word 'senile' in this connection is, I think, too strong. It implies something more than old age—almost decrepitude, in fact; whereas this type of cataract is found sometimes in people who are only 50. The word, however, has been so long in use that to alter it now, even if one wanted to do so, would be impossible.

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I consider that the real meaning of the word is to indicate a *type* of cataract, and not the age of the patient, and it is in this way that I regard it.

Out of a total of 118 of my cases whose ages have been recorded, I find that the majority lies between 60 and 70, whilst the decades between 50 and 60 and between 70 and 80 supply approximately the same number.

The figures are as follows :—50-60 years, 32; 60-70 years, 45; 70-80 years, 31.

Under 50 years there is a total of seven, a surprising number, in my opinion.

The incidence of sex is not, I think, of great importance, but it is worthy of note that in my experience the female seems definitely more prone. Thus, out of a total of 188, there were only seventy men against 118 women. This does not agree with the observations of others who say that the sexes are equally divided.

Pre-operation Treatment.

Sugar in the Urine.—When this is found to be present, patients are admitted to hospital and kept on a diet until they become sugar-free, and then the operation is performed. Occasionally the sugar-free period cannot be obtained, even with treatment. Nevertheless, operation is proceeded with, and I have never noticed any untoward effect.

High Blood-pressure.—I am not quite satisfied on this point, but my evidence so far shows that it is unfavourable.

Preparation of the Patient.—If there is any suspicion that the conjunctival sac is not clean, a culture is taken, and if found positive, treatment is carried out until subsequent cultures show the sac to be clean. As a rule this is not necessary, as a dirty eye is not common in my experience.

Sedatives are not often required, but should not be withheld, both for the patient's sake and for the peace of mind of the surgeon—a very important point in such a delicate operation.

Anæsthetic.—I use solutions of cocaine, beginning with two per cent., then five per cent., and finally ten per cent., and I instil these into the eye for operation at least twenty minutes before operation, timing it so that the last "round" of ten per cent. solution is instilled just as the patient is placed on the table. I anæsthetize both eyes, but I do not use the stronger solutions except in the eye to be operated on. This is an important point, as anything may by accident touch the unoperated eye, and so set up squeezing, etc.

With this system of anæsthetizing the eye, I have never found it necessary to carry out any other method, and I have had no cause to regret this. Then by carrying on what may appear to be an aimless conversation, much can be done to produce confidence in the patient, and enable the surgeon to determine the nature of the patient on whom he is going to operate.

I believe that during the act of washing up the eye one can ascertain with certainty whether the patient is going to relax or not, and this knowledge is of great importance.

I pay particular attention to the skin of the eyelids, brow, and cheeks, preferring to use ether soap rather than iodine. I have no preference for any lotion, having used perchloride of mercury, boracic acid, and saline, all with equally good results. At one time I always cut the eye-lashes, but I have now given this up.

The use of atropine before operation seems to me to be unnecessary, and may even be harmful by raising intra-ocular tension. Further, I find it more difficult to pass the knife through the anterior chamber when the pupil is dilated than when it is of normal size, because the iris helps me to keep the plane of my knife constant throughout my section. This keeping of the plane of the knife constant throughout the section is of great importance, for by producing a slight twist the counter-puncture may not be in the same plane as the puncture; the knife becomes locked, and more pressure is required to cut out, with corresponding increase of danger to the eye.

The Operation.

The combined operation has been the one of choice in all my cases. With it has been combined lavage of the soft cortex, and at a later and varying date capsulotomy has been performed. Some points of difference in my technique may be mentioned.

1. When making my section I always try to cut out in such a way as to leave as large a conjunctival flap as possible. I am satisfied that the conjunctival flap adheres rapidly, and that a stronger wound is the result. Nor have I found that this type of flap tends later to increase the astigmatism. I consider it dangerous to have only a small fringe of conjunctiva as a flap, as this is prone to fall between the lips of the wound, and so cause a filtering scar, delay in healing, and possible danger to the eye later.

2. After the capsule has been opened and gentle pressure exerted on the lower part of the lens, the upper half is made to project. At this stage I pass the cystitome posterior to the lens, and spear the lens, using the curette, which still maintains the pressure over the lower part of the lens, as a *point d'appui*. By this means I claim that pressure is mainly forward, and that vitreous is never lost.

3. I have ceased to used an iris repositor, as I find that the nozzle on the end of the tube for irrigation does equally well, and thus one instrument less is inserted into the eye. Although for the most part I perform the combined operation, yet in young people I prefer to do a simple operation with a small peripheral iridectomy after the cataract has been extracted.

It is worthy of note that these cases heal quicker, and with less tendency to iritis, than those of the combined operation, and this is due to the greater certainty of leaving the lips of the wound free from soft lens matter or capsule.

After-treatment.

As all my operations are performed early in the forenoon, I dress the eye the same evening. By so doing I liberate any tears that have formed, making sure that no eye-lash has been turned in, and the fresh eye-pad gives a sense of comfort difficult

to analyse except by those who have experienced it. During this and all subsequent dressings I speak to the patients to make sure that they are awake, and explain what I am about to do. This is of great importance, and I feel certain is the means of saving many accidents.

As both eyes are covered, secretion forms along the lashes, and I wipe this away, using equal gentleness to each eye, not forgetting that any pain caused to the unoperated eye, with resulting squeezing, will cause the operated eye also to squeeze.

At each dressing atropine one per cent. is instilled, and dressings are continued twice daily until recovery.

Both eyes are kept covered for at least three days—sometimes even longer, then a single eye-pad and bandage is used until the tenth day, when a flap is substituted.

No hard and fast rule is maintained as regards the position in bed; suffice it that the prone position is required as long as the patient can tolerate it, but not longer than two days, and they are allowed up for bed-making, etc., from the fifth day onward.

The stay in hospital is, on the average, less than three weeks, and patients are allowed to go home wearing dark glasses, and are expected to report within ten days. At this visit the vision is tested; the presence or absence of capsule noted, and the general health of the eye remarked upon.

Glasses are not prescribed for six weeks, and even then these are for distance.

If capsule is present, as it invariably is, I recommend capsulotomy, and this I do as soon as the state of the eye permits. By doing this early, the capsule is divided much more easily, and with almost no pull being exerted, and the stay in hospital is from three to seven days.

In order to diminish this pull on the capsule, I have recently introduced an instrument which I have not seen described elsewhere. This consists of a fork with two prongs; these are 2 mm. apart, and they are shaped like a Bowman's stop-needle. I pass the two prongs of this fork into the anterior chamber, going just deep to the capsule; then from the opposite side I pass a Zeigler needle, and I cut the capsule as it lies supported on the two prongs.

The results of my operations show that twenty-five per cent. obtain 6/6 vision, twenty per cent. obtain 6/9 vision, making a total of forty-five per cent. with vision 6/9 or better.

If 6/18 be taken as the standard, then the percentage of those having this vision or better rises to seventy-three per cent.

One other point of interest. After the operation all patients walk back to bed, and I have never seen any ill-effects from this procedure. In order to facilitate this, I had made a modification of the ordinary operating-table.

This table consists of a greater range of movement than is possible on ordinary tables. It is capable of being lowered so that the patient can sit down on it like a chair, and being raised to any height to suit different surgeons. This arrangement is of great convenience after operation, as the patients can be lowered and assisted to their feet as they would be from a chair.

Early Diagnosis of Intracranial Tumours — The Significance of Mental Symptoms*

By THOMAS TENNENT, M.D. GLAS., M.R.C.P. LOND., D.P.H., D.P.M.

CONSIDERABLE variation is to be found in the reported incidence of mental symptoms in cerebral tumours, dependent, in large measure, on the interpretation of the symptoms presented. That cerebral tumour is not a common cause of any of the recognized forms of mental disorder treated under certificate is apparent from the statistics of mental hospitals. Nevertheless, abnormal mental phenomena may be conspicuous in the symptomatology, may occur at any stage, and in some cases they are the earliest symptoms apparent.

Efforts have been made at different times to formulate syndromes characteristic of tumours of various areas. To investigate such, an analysis was made of seventy-five cases of cerebral tumour admitted to the Maudsley Hospital over a period of thirteen years; some of these formed the basis of a paper by Minski four years ago. In each case the psychological phenomena were predominant, and it was because of such symptoms that they were referred to the Maudsley rather than to a neurological hospital. The localization of the tumour in these patients was :—

		LEFT SIDE	RIGHT SIDE
Frontal	32	27	5
Temporal	17	13	4
Parietal	9	5	4
Post-fossa	8	—	—
Corpus callosum	4	—	—
Basal ganglia	4	—	—
Pineal	1	—	—

These figures suggest that mental symptoms are associated much more frequently with supratentorial rather than with subtentorial tumours, and that they are more frequent in left-sided lesions.

On clinical investigation a most conspicuous feature was the frequent lack of physical signs. A detailed neurological examination showed no physical signs in thirteen, while in thirty others these signs were vague and indefinite.

Among the symptoms presented were difficulties in concentration, memory defects, especially for recent events, varying degrees of irritability, with consequent restlessness amounting at times to acute excitement. Such might alternate with retardation and varying degrees of confusion and stupor. Others showed considerable apprehension, became abnormally preoccupied with their bodily health, and developed varying degrees of depression, with suicidal preoccupations. The degree of insight retained by the patient varied enormously, some realizing fully

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* Read in the Section of Neurology and Psychological Medicine at the Annual Meeting of the British Medical Association, Belfast, 1937.

the seriousness of their condition, others adopting a blind emphoria. Mention might be made of the frequency of aphasia. It was present in twenty-seven patients at the time of admission, and consisted of a combination of both motor and sensory varieties. It varied from the use of a wrong word to an unintelligible jargon. Not infrequently the true nature of these symptoms had been mistaken by the doctor, who had referred them to hospital as suffering from a mental disorder.

It was found possible to classify the patients into three groups, according to the clinical picture presented :—

1. Where the condition simulated a functional psychosis.
2. Those characterized by the presence of individual symptoms.
3. Those in whom organic features were predominant, with varying degrees of confusion.

GROUP 1.

Of those whose conditions simulated a functional psychosis, twenty were depressive in form, eleven were states of excitement, one was schizophrenic, and four were psychoneuroses.

Depressive Group.—The localization in twenty cases was :—Frontal 11, temporal 2, parietal 1, basal 2, post-fossa 1, corpus callosum 3.

One was impressed by the chronicity of symptoms in this group, varying from nine months to twelve years; the average duration was five years. Eight presented a picture indistinguishable from a reactive depression, with psychomotor retardation, self-reproachful delusional ideas, frequently associated with hallucinatory experiences. There was no intellectual deterioration apparent in this group. The condition of the twelve others was less clearly defined. They were anxious, in some cases self-absorbed and apathetic, in others agitated and restless. This condition appeared to be an exaggeration of their normal personality. In each case they were described by their relatives as having been of a quiet nature, pessimistic, introspective, and always given to looking on the black side of everything. This exaggeration of previous personality traits was well illustrated by one of these patients reported by Minski—N. W., aged 49, a schoolmaster who had always shown homosexual proclivities. He preferred the company of men, and interested himself in boys' figures and masturbation. He married late in life; sexual difficulties developed. He became depressed and abnormally preoccupied about the state of his bodily health. He developed a slow-growing astrocytoma of the left frontal lobe, and became more overt in his homosexual practices. He masturbated freely with the boys at school, talking openly of sodomy, and had frequent bouts of drunkenness. He clamoured for homosexual relations, and later in hospital projected these on to his environment, accusing people of practising homosexuality and of keeping boys for that purpose.

States of Excitement.—The localization in eleven cases was :—Frontal 8, temporal 2, basal 1.

Here again the development of symptoms was very insidious. The previous personality was said to have been that of a popular individual who made friends

easily and was a typical extrovert. Following the development of the tumour, these symptoms were exaggerated. They became facetious and were easily amused, had no insight into their condition, and maintained that they never felt better. This clinical form has been frequently described as characteristic of lesions of the frontal lobe. While it would appear to be associated more frequently with such lesions, the picture also occurred in two cases associated with temporal tumours.

GROUP 2 : Those characterized by the presence of individual symptoms.

The number of patients in this group was small, only four, and the psychotic phenomena were hallucinatory experiences. Three of these were olfactory in nature —in two associated with frontal lesions and in one with a lesion in the temporal lobe. The fourth complained that figures of men and women moved across her visual fields when her eyes were closed, but not when they were open. This was associated with a tumour of the corpus callosum.

GROUP 3.

In the third group there were thirty-six patients in whom organic features were predominant. The localization of the lesions was :—Frontal 12, temporal 13, parietal 6, thalamus 1, post-fossa 1, corpus callosum 1, secondaries 2.

Of these thirty-six patients the lesion involved the left side in twenty-nine cases; of these, thirteen were frontal and eleven temporal.

The duration of symptoms was shorter in this group. The initial symptoms were easy fatiguability and irritability. There was an inability to retain recent impressions; later a retrograde amnesia was also apparent. Only in two patients were Korsakoff syndromes observed. As in other organic forms of mental illness, the intellectual faculties became involved, judgment was impaired, and the patients became disorientated in all spheres. There was a gradual retardation of mentation. The patients offered no spontaneous conversation. When urged to speak, they did so slowly and deliberately. This mental dullness has been suggested as characteristic of frontal-lobe lesions, but it was seen also, associated with lesions of the temporal lobe. As the degree of intracranial pressure increased, such patients became more apathetic and somnolent. A peculiar fluctuation was, at times, apparent from this state, when they were difficult to rouse, to one in which they were alert and well in touch with their environment. As the degree of apathy and somnolence became greater, increasing difficulty was experienced in rousing them, and incontinence of both urine and fæces developed.

In nine of these patients the course of the illness was more acute, extended over a matter of a few months, and the degree of confusion was much more marked. They were restless and excitable, their replies to questions were irrelevant, and their conversation frequently incoherent. Their memory was grossly impaired, and they were completely disorientated. The mood varied : at times querulous and suspicious, at other times friendly and jovial. Hallucinations of both sight and hearing were vivid and troublesome. Invariably these patients were resistive, their general condition was poor, and they had to be fed. The course of the illness was rapid, and

they all died within a short period of admission to hospital, the tumours being verified post-mortem.

In summarizing these findings it would appear that abnormal mental phenomena may be present in certain cases of cerebral tumour without definite localizing signs. In this series no physical signs were apparent in seventeen per cent., and in an additional forty per cent. these signs were vague and indefinite.

Mental symptoms are much more frequently associated with supratentorial growths, especially when such involve the left side.

The form of the symptoms depends to a greater extent on the type of personality and the rate of growth of the tumour, rather than upon its location.

In slow-growing tumours changes in the personality are conspicuous; there appears to be, as it were, a release phenomenon. In rapidly-growing tumours, disturbances in the intellectual functions are marked and personality changes slight. In such cases, however, the mental changes may be indistinguishable from those the result of other organic lesions.

It would appear that no mental syndrome can be associated with a lesion of any one area of the brain.

The Vitamin C Content of Apples, and Dietary Requirements of this Vitamin

By ROBERT E. HADDEN, B.A., M.D.,
Portadown

A RECENT statement by Professor V. H. Mottram[1] to the effect that the Bramley's Seedling apple raw or cooked is an excellent source of vitamin C, has stimulated this study of the literature on the subject.

The Bramley's Seedling apple was first raised by a Mr. Bramley of Nottinghamshire in 1876. It is one of the best cooking apples, is famed for its keeping qualities, and is a greatly prized variety in Northern Ireland, where the climate suits it well—so much so that in area of cultivation it equals all other varieties put together, and accounts for about three-quarters of the total quantity of apples exported from the Six Counties (approximate proportions given by the Ministry of Agriculture).

Apples are not commonly credited with a very significant vitamin C content. Sherman and Smith, 1931,[2] give as their finding that fresh raw apples in general are half as rich in vitamin C as bananas, bananas being a third as rich as oranges. In 1930, however, Bracewell, Hoyle, and Zilva[3] had conducted a series of experiments with different varieties of home and colonial apples, under the Medical Research Council, and had found that one cooking apple in particular (the Bramley's Seedling) had an especially high antiscorbutic potency, and that there was no significant loss of potency when the apple was cooked in its skin for fifty minutes in a slow oven. These experiments were carried out in the accepted way—guinea-pigs of 300 grams weight being fed on a standard scurvy-producing diet and the

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smallest amount of apple-flesh determined which, when added to the daily ration, proved regularly capable of preventing any sign of scurvy developing during the test period of ninety days. The minimum protective dose (m.p.d.) of the Bramley's Seedling was three grams. The Dabinett came next of the varieties tested, but was three to four times less potent, and the Cox's Orange Pippin was six to seven times less potent. The effect of storage on the apples was also investigated : there was a negligible loss of potency in the Bramley's Seedling after three months' storage at 1° C. "Gas storage" caused a slightly greater but still negligible loss, while common storage permitted slight destruction of vitamin. The loss was greater in each case with Cox's Orange Pippin.

Further work by Zilva and others in 1932 and 1933,[4 5] has confirmed these findings. It seems that a high antiscorbutic potency is related to a low nitrogen content in the apple, and it is suggested that the Bramley's Seedling possesses almost the maximum potency possible in the apple. Similar work has been done in America by Batchelder, 1934,[6] with especial reference to the Delicious apple which is widely grown; it is not, however, very potent.

The following list of the minimum protective doses of a number of different varieties of apple is taken partly from the English and partly from the American figures, and shows the very wide variations in antiscorbutic potency.

Variety of apple	Country	Minimum protective dose in grams
Bramley's Seedling	England	3
Baldwin	America	4
Baldwin	England	15
Belle de Boskoop	England	5
Blenheim Orange	England	10-20
Cox's Orange Pippin	England	20 or more
Dabinett	England	10
Delicious	America	17-25
Jonathan	America	20-25
King Edward	England	20 or more
Lane's Prince Albert	England	10
McIntosh	America	20 or more
Newton Wonder	England	10
Northern Spy	America	4-5
Winesap	America	10
Worcester Permain	England	20

Such findings do not detract from the value of choice and attractive "eating" apples, which usually form part of a well-mixed diet, but the properties of the Bramley's Seedling in this country are of considerable interest and worth.

Before the figures, which refer to guinea-pigs, can be of much use in practice they must be translated into amounts applicable to man, and compared with similar figures for other common foodstuffs containing vitamin C.

We know now that vitamin C is a crystalline substance to which the name

ascorbic acid has been given. It is capable of being synthesized, and quantitatively titrated by virtue of its reducing powers. The human body apparently cannot manufacture it, although chicks and various animals and plants have this power. In the human a proportion of any ingested ascorbic acid is rapidly excreted in the urine if there is no previous deficiency, and as a result of experiments investigating the intake of definite quantities and the corresponding excretion, a minimal optimum daily intake has been determined. For an adult of ten stones weight this amounts to 25 mg. ascorbic acid : it corresponds to an excretion of about 14 mg. per day.[7]

A rough test for detecting deficient excretion (and therefore deficiency) of ascorbic acid can readily be carried out, after a test dose, by using indicator tablets of dichlorophenol-indophenol, obtainable from Roche Products Ltd. This test is quite suitable for general practice.

The daily allowance of 25 mg. ascorbic acid is equivalent to 500 international units of vitamin C, one unit being 0.05 mg. ascorbic acid, which is approximately a tenth of the minimum protective dose for a guinea-pig on a scurvy-producing diet. This 500-unit standard for minimal optimum intake is not a universally recognized one. A recent American public health year book quoted by Bridges, 1937,[8] puts an adult's requirements at 300 units, whereas Mottram, 1937,[1] gives 600 units.

However, the 25 mg. or 500-unit standard seems to have a fair amount of weight behind it as a minimum allowance, and it will be used for the following table.

Foodstuff	Minimum protective dose (guinea-pig)	Units of vitamin C per oz.	Amount needed to provide a minimum allowance of 500 units	Amount needed, approximately, to provide the 500 units
*Orange juice	1.5 c.c.	200	2½ oz.	small juicy orange
Bramley's Seedling apple	3-5 gm.	106-64	5¼-8¾ oz.	1-1⅓ apples
Lettuce	1-2 gm.	320-160	1¾-3½ oz.	2-4 large leaves
Strawberries	2-5 gm.	160-64	3½-8¾ oz.	small to large helping
Tomato juice (fresh or tinned)	3 c.c.	100	5 oz.	3-5 tomatoes (?)
New potato (boiled 15 mins.)	4 gm.	80	7 oz.	1 large potato (new)
Banana	5-10 gm.	64-32	8¾-oz.-1 lb. 1½ oz.	2-4 bananas
Green peas (boiled 15 mins.)	5 gm.	64	8¾ oz.	very large helping
Potato (boi'ed 15 mins.)	10 gm.	32	1 lb. 1½ oz.	full meal of potato (!)
Pear	10-15 gm.	31-21	1 lb. 1oz.-1⅓ lb.	4-5 pears
Apple (average) raw	15-20 gm.	21-16	1⅓ lb.-2¼ lb.	5-8 apples
Grapes	over 20 gm.	16	over 2¼ lb.	over 2¼ lb.
Milk (summer pasture)	50 c.c.	6	4¼ pints	2 quarts
Milk (boiled and quickly cooled)	100 c.c.	3	8½ pints	4 quarts

* Orange juice is not always so potent; Mottram's figures amount to 1¼-4½ oz. for 500 units, which approximate to .75-2.75 for the m.p.d.

The minimum protective dose figures for a number of common foodstuffs have been obtained for the most part from Sherman and Smith's "The Vitamins," 1931, where a full bibliography of all the investigations is given. There is often considerable variation in results, and in the table the range of the m.p.d. is given rather than an average figure. Following from the m.p.d., which equals ten units for a guinea-pig, the number of units per ounce is calculated, and along with this is tabulated the amount of foodstuff which will provide the minimal optimum daily allowance of vitamin C for an average adult weighing ten stones, i.e., 500 units. The orange is placed first, being the usual standard of comparison, and it will be seen that the Bramley's Seedling apple approaches the orange in antiscorbutic activity.

It should be added that lemon juice has approximately the same potency as orange juice, while grapefruit juice is not much more than half as potent. The Bramley's Seedling variety has been mentioned alone from among the various varieties of apples, but at least one American apple (the Northern Spy) is not far short of its potency. Gooseberries and raspberries are of the same order as strawberries: the cooking of these fruits reduces their vitamin C content by about half, and home bottling is likely to destroy it altogether. Efficient canning is not in general destructive of vitamin C to a large extent.

Cooked brussels sprouts are quite a good source of the vitamin, 500 units being contained in 3-3¼ oz., and cooked spinach is also good, the figures being 1¾-6¾ oz. (Mottram).[1] Soda should not be added to the water used for cooking, as alkalinity favours destruction of vitamin C. In connection with the figures for milk it must be noted that human milk is five or six times more potent than cow's milk, and during pregnancy and lactation a woman should have twice the usual allowance of the vitamin. An infant requires about 100 units per day.

It is interesting to know that when necessary a very efficient antiscorbutic food can be made by germinating beans for forty-eight hours at 60-70° C., and then cooking them for ten minutes; four ounces of dry beans are thereby made equivalent to four ounces of orange juice (Wiltshire, 1918, quoted by Sherman and Smith).

Comparative figures such as have been given should be of use in practice, and this usefulness may increase when more is known about the harmful effects of a subscurvy diet.

Ascorbic acid is now available in the form of tablets, but most people will probably prefer to continue to take it incorporated in their food in the ordinary way. We must be critical, however, towards the many indications suggested for the prescribing of the tablets, even though it is tempting to look for a cure in vague unhealthy conditions by correcting a vitamin C deficiency which may be common enough.

In all infective and febrile conditions and in rheumatism there is certainly the backing of general experience for giving fairly large amounts of orange juice, etc. Ascorbic acid has been shown to be very rapidly used up in such conditions,[9] [10] and should therefore be provided lavishly; but there is possibly more benefit in the natural fruit with its organic acids than there would be with pure ascorbic acid.

It is reasonable to believe, too, that patients on ulcer diets suffer from poor healing

of wounds and other disabilities owing to a deficient intake of vitamin C,[11] and this should be corrected as found suitable.

In unhealthy conditions of the gums, which undoubtedly respond well to large amounts of orange juice, the tablets of ascorbic acid might be an improvement on the fruit in the acute stages.

It is noteworthy that the actual structure of teeth is influenced by vitamin C intake. Many workers between 1919 and 19292 found that in guinea-pigs on a scurvy-producing diet the teeth were the first part of the system to be affected. After six or seven days profound microscopical changes in the structure of the teeth could be detected, and these changes could be corrected rapidly, i.e., in forty-eight hours, by the addition of an antiscorbutic. By alternating deficient with normal diet it was possible to produce distinct markings on the enamel of the teeth. It has also been found that massive doses of vitamin C have a very beneficial effect on human teeth in cases of caries and pyorrhœa (Hanke, 19292). So that it would seem wise to make sure that children have a liberal supply of the vitamin.

To conclude with perhaps the most remarkable claim for ascorbic acid, it is known that the suprarenals contain a high concentration of the acid,[12] and it has been reported that large doses of it have similar effects on the body to those of the cortical hormone.[8] Whether this will be satisfactorily confirmed or not remains to be seen.

There is no doubt, however, that for many reasons an especially liberal allowance of vitamin C in the diet may be valuable, and it is well to know that such an allowance can be made up very pleasantly with coddled Bramley's Seedling apples when such a food is acceptable. The cost of these apples is about the same as that of oranges for equivalent amounts.

Summary.

An account of the literature on the remarkably high antiscorbutic potency of the Bramley's Seedling apple raw or cooked is given. Figures for this and other foods are reduced to household terms for the amounts necessary to provide a daily intake of 500 international units of vitamin C or 25 mg. ascorbic acid. References to the possible values of vitamin C treatment are given in conclusion.

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CASE REPORTS

CARCINOMA OF THE APPENDIX

By J. S. LOUGHRIDGE, M.D., B.SC., F.R.C.S.ENG.

THE patient was a woman of 62 years of age. The personal history revealed nothing relevant. The present affection dates back about eight months, and was attributed by the patient to a fall. Following this fall she had pain in the epigastrium and had vomited frequently. The vomiting increased in frequency, and recently had been very copious. She was conscious of many gurgling and splashing sounds. She had been very constipated and had lost two and a half stones in weight. There is a history of one attack of muscular cramps in the limbs which were thought to be due possibly to an attack of tetany following the excessive vomiting.

On examination she was anæmic, wasted, and dehydrated. The abdominal wall was thin and the pylorus was palpable. The liver was not enlarged.

A diagnosis of advanced pyloric stenosis was made, and it was therefore decided to treat by operation.

The abdomen was opened under gas and oxygen combined with local infiltration of the abdominal wall. The stomach was not unduly enlarged, and the pylorus was normal. No lesion was found in the gall-bladder, liver, or pancreas.

In the free edge of a large gastro-colic omentum, four distinct lumps were found, each about the size of a walnut, firm in consistency and a reddish brown in colour. The only other lesion found was in the appendix, which was somewhat enlarged and presented the same reddish-brown colour as the masses in the omentum. The appendix and the four lumps were removed and sent for pathological examination. The patient died fourteen days after operation.

Dr. J. A. Fisher reported that the appendix was the seat of a primary adeno-carcinoma, and that the omentum tumours were secondary deposits.

The following points are perhaps worthy of notice :—

The epigastric pain and vomiting were probably due to appendicular obstruction distal to the tumour, but it is difficult to account for the copiousness of the vomit and the amount of wasting.

The manner in which the secondary deposits were stretched in a row along the free border of the omentum suggests that these four points of the omentum were in successive contact with the appendix, and that the secondaries grew by direct transference of the tumour cells.

The rarity of carcinoma of the appendix is in striking contrast to the frequency of its other pathological weaknesses. In a series of 13,000 appendices, Riemann reported seventeen cases of a new growth, or an average of just over one in a thousand. It is important to distinguish two forms of the disease, carcinoid tumour, which is much the commoner form, and a true adeno-carcinoma. The former is usually found in young people; it occurs near the tip of the appendix and, though locally malignant, does not form metastases. It has recently been classified with

certain tumours of the adrenal medulla and of the sympathetic nervous system as argentaffin tumours. True adeno-carcinoma is less common. It is usually near the proximal end of the appendix, and runs a course similar to that of a carcinoma of the cæcum.

HODGKIN'S DISEASE WITH SPINAL CORD INVOLVEMENT

By H. HILTON STEWART, M.D., M.R.C.P.LOND.

INTRACRANIAL involvement in Hodgkin's disease has been described on numerous occasions. Spinal involvement is somewhat rarer, although one authority states that fourteen per cent. of all cases of Hodgkin's disease show pathological changes in the spinal cord.[1] Up till 1931 only forty-three cases had been recorded in the literature, and three more were added in that year by Weil, whose review of the subject appears to be almost a classic. The British literature contains a few references, including one by Carslaw and Young,[2] in which Young gives a minute and excellent pathological description of one case.

The object of adding one more case to the literature is to draw attention to this complication and to discuss attempts at treatment.

J. F., aged thirty-two years, was admitted to the Ards District Hospital on the 22nd March, 1937, suffering from loss of power of arms and legs of four months' duration, and accompanied by great pain referred to the cervical region and radiating down the right arm.

His previous history was that he had been in the Royal Victoria Hospital about three years before with glands in the neck. One of these had been removed, and Hodgkin's disease had been diagnosed. Gordon's test had been done, and this was positive. He had been given deep X-ray treatment and the glands had disappeared. Glands had been found in the axillæ, and these were also successfully treated with the X-rays. One year ago he had noticed some weakness of his leg, which had improved with X-rays to the back. Paralysis, however, progressed, and the X-rays were repeated without benefit.

On examination of the central nervous system, the pupils were unequal; ptosis, enophthalmos, and small pupil were present on the right side; otherwise the cranial nerves were normal. The right arm was paralysed, and the left was very weak. Abdominal and spinal muscles were paralysed, as also were the legs. Anæsthesia was present to light touch on the inner side of the hands and arms, and the trunk below this level. Anæsthesia to pinprick also included the outer side of the arm as far as the elbow. Hyperæsthesia was present above the anæsthetic area on the trunk and almost reached the clavicles. The reflexes in the right arm showed the biceps jerk to be absent, and the supinator and triceps jerk to be present. The left arm triceps jerk was doubtful, but the other reflexes were brisk. Abdominal reflexes were absent. Knee jerks brisk. Ankle jerks brisk; ankle clonus was present. Both plantars were extensor.

The patient had retention of urine after admission, and required catheterization.

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The patient had retention of urine after admission, and required catheterization.

The diagnosis made was compression paraplegia extending as high as C.5, and certainly as low as D.1. The levels were determined by the arm reflexes on the left side (the biceps jerk was absent), and by the hyperæsthesia and anæsthesia. This was the highest detectable level, and the Horner's syndrome, indicating a lesion at D.1, was the lowest level found.

Judging by the excruciating pain from which the patient suffered, the compressing mass was deemed to be extradural.

That it was a Hodgkin's mass seemed probable, although the neck glands were all gone save one. There was no palpable spleen, and an X-ray photograph of the chest did not show any large hilar mass. The Wassermann reaction was negative. The X-ray photograph of the spine was difficult to do owing to the patient's pain, and the consequent rigidity of the neck.

The patient made no progress in hospital, and his pain was relieved only for a very short time by morphia. Owing to this unrelieved agony, and encouraged by reports in the literature, it was decided to advise laminectomy to relieve pressure on the posterior roots. Six weeks after admission a laminectomy was performed by Mr. A. M. Calder over the prescribed segments. On exposing the dura mater, this membrane was found to be grey, firm, thick, and bulged posteriorly as the laminæ were removed. On further examination this thick granular mass was found to encircle the cord like a collar, from the second cervical vertebra to the first dorsal. There was no cord pulsation. The mass was irremovable, and the wound was closed. The patient stood the operation well, but died suddenly the same night.

A partial autopsy was done, and the dura and cord in the exposed area were removed.

The dura was found to be one-eighth of an inch in thickness in this area, while the rest of the cord was normal. The cord was not invaded by the growth, but appeared to be strangulated by the mass.

Dr. Fisher and Dr. Wilson kindly examined the sections for me, and their report is as follows :

"Microscopically the dura is thickened as a result of a dense fibrosis. In this thickened dura are several small foci containing lymphocytes, eosinophil lymphocytes, fibroblasts, and reticulum cells, some of which have single or double hyperchromatic nuclei. The pleomorphic cell types seen in these cell areas are characteristic of Hodgkin's disease. The fibrosis of the dura may be due to X-ray radiation, or represents a later stage in the lymphadenomatous process. The spinal cord exhibits no evidence of invasion."

In forty-six cases reviewed by Weil, this author distinguishes four groups :—

1. Hodgkin's disease of the epidural space or vertebræ—thirty-nine cases.
2. Paraplegic cases treated by X-rays, where Hodgkin's scar tissue has been found at the invertebral foramina or epidurally—three cases.
3. Cases of infectious myelitis occurring during the course of Hodgkin's disease—three cases.
4. True syringomyelia occurring during the course of Hodgkin's disease—two cases.

This case reported appears to belong to class 1, as the tissue found was not pure scar tissue, although it must be noted that part of the fibrosis may be due to the X-rays. One case of group 2 is well worth noting from the literature. Simons[3] reports a case of a youth, aged eighteen years, in whom a paraplegia developed suddenly, and laminectomy was performed. A large granulomatous mass was found. It was inoperable. X-radiation was given. The patient died three months later from heart-failure. At autopsy the tumour had disappeared, and only white milky connective tissue remained.

The case which is reported here also illustrates the mechanism by which cord symptoms are produced, namely, by strangulation of the blood-supply, and not by infiltration.

The case reported by Simons suggests that until some more radical means of treating Hodgkin's disease is discovered, it is justifiable in these unfortunate cases of extradural masses causing spinal compression to advise early laminectomy followed by deep X-ray therapy. It is, of course, only palliative, but the alternative is a slow, painful paralysis, terminating fatally, and scarcely relieved by morphia.

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A CASE OF ALKALOSIS

By ROBERT MARSHALL, M.D., F.R.C.P.I.
from the Royal Victoria Hospital, Belfast

J. S., a male aged 34 years, was admitted to Ward VI of the Royal Victoria Hospital on 26th August, 1937, suffering from symptoms which suggested a duodenal ulcer. He had vomited frequently during the one and a half years before admission. A barium meal showed "stomach much dilated and ptosed, outline seems normal; the cap is irregular; at six hours there is a trace in the stomach and in the cap; heavy ileal stasis; (?) duodenal ulcer; no obstruction." Fractional test-meal showed a moderate hyperchlorhydria, the free acid reaching 50 at the end of forty-five minutes. Treatment on the regime of small feeds of milk foods at two-hourly intervals, together with the administration of a powder containing three parts of bismuth oxycarb. and one part of cret. præparat.; this powder was given in two-drachm doses at two-hourly intervals, in all sixteen drachms being administered during his waking hours. He had no pain, and he had no vomiting until the middle of his third week, that is, on 13th September, when he vomited his morning feed. On inquiry he admitted to having had a distaste for his food the previous day. This raised the alarm that he might be suffering from alkalosis, so the alkaline

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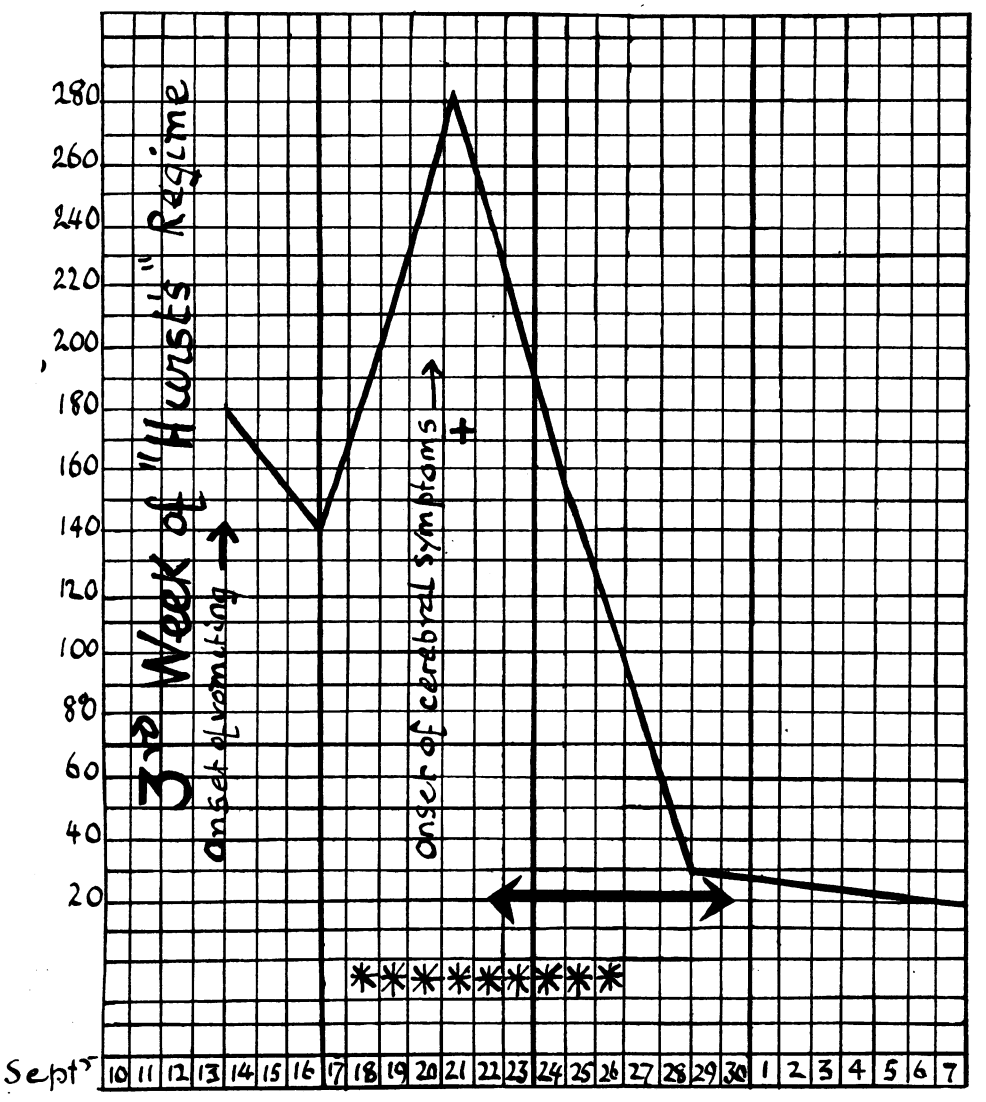
J.S., Male, aged 34. Blood-urea in mgm. per 100 c.c.



* 1 Litre of Glucose Saline Intravenously.

\+ C.S.F. Urea (172 mgm. per cent.)

<——> Ammon. Chloride gr. xv t.d.s.

powder was at once stopped. His blood-urea was reported to be 180 per 100 c.c. Glucose and fluids were given freely by the mouth, and three days later his blood-urea had fallen to 140. The patient had become profoundly depressed, and was apparently in a state of extreme general weakness. His eyes were bloodshot, his pulse was feeble, and his blood-pressure was 110/80. His condition was obviously getting weaker; his blood-urea estimated again on 20th September was reported to be 280 mgms. per 100 c.c. His mental condition was obviously worse: the depression was more profound, and he made rambling statements as if verging on delirium, in which he repeatedly said that he was going to die. In view of his high blood-urea and his alarming clinical condition, I feared the onset of coma, or even of convulsions, and at once did a lumbar puncture. The cerebro-spinal fluid was under normal pressure, and its urea-content was reported to be 172 mgms. per 100 c.c. Two days before this, on 18th September, the daily administration of one litre of glucose saline five per cent., together with 50 c.c. of concentrated glucose solution, had been commenced, and this was maintained for nine consecutive days. Following the lumbar puncture his clinical condition slowly improved. On 24th September his blood-urea was 152 mgms. per 100 c.c., on 28th September 30 mgms. per 100 c.c., on 4th October 27 mgms. per 100 c.c., and on 7th October it had fallen to 25 mgms. per 100 c.c. This fall in blood-urea coincided with recovery and the disappearance of his objective symptoms. When his condition was at its worst, a trace of albumin was present in the urine, but at no other time was albumin found nor were casts discovered. He had no history of polyuria, nocturia, or other symptom pointing to renal disease. On 21st September the alkaline reserve of his blood was estimated at 163 volumes of CO_2, and his blood-calcium 8.2 mgms. per 100 c.c. When his symptoms of alkalosis had subsided, uroselectan was injected, and the pyelogram showed that the right renal pelvis was of normal outline, but the left side showed dilatation of the pelvis of the kidney with no filling of the ureter or of the calyces.

In a previous communication to the Ulster Medical Society[1] on the end-results of treatment by intensive alkalies, I noted that alkalosis as a result of this treatment was apparently very rare in the Royal Victoria Hospital. I attributed this to the use of the less strongly alkaline powders of bismuth and chalk. Professor Mayrs[2] informs me that bismuth oxycarbonate is about thirty-two per cent. of the alkalinity of sodium bicarbonate, and so this patient was not given alkalies in massive doses. He lost no hydrochloric acid by vomiting for two and a half weeks before the onset of symptoms, so that there was no loss of acid in this way. His alkalosis was of the "non-gaseous" type, as shown by the large increase in his alkali reserve (163 volumes of CO_2 taken up by 100 c.c. of blood). The normal alkali reserve is given as 53-77 volumes per cent. It is increased in non-gaseous alkalosis, and is diminished in gaseous alkalosis due to the increased loss of CO_2 by the lungs and a compensatory increase of the bicarbonate (J. C. Spence and A. P. Thompson, 1933). The same authors[3] say that in severe cases due to excessive vomiting the alkali reserve may rise to 120 volumes of CO_2 per cent.

I suspected that renal inefficiency was a factor in this man's case, but, as has

been stated, no history was elicited, and no albumin or casts were found in his urine. Stanley Graham[4] says that "in ordinary circumstances administration of sodium bicarbonate does not lead to any retention of the alkali. In the presence of impaired renal function . . . accumulation may occur. . . ." The only evidence of renal impairment which I could discover in the case under review was the slight dilatation of the pelvis of the left kidney, as seen in the uroselectan pyelogram.

On 19th November the man reported for re-examination at my request. He was free from symptoms and had gained almost twenty-eight pounds in weight since leaving hospital. His urine was free from albumin. Mr. J. S. Loughridge kindly cystoscoped him for me, and obtained ureteric specimens of his urine. These specimens showed a few blood-cells on both sides; the right specimen contained 1,416 mgms. of urea per 100 c.c., and the left contained 1,956 mgms. per 100 c.c., constituting evidence of unilateral diuresis. A retrograde pyelogram confirmed the specimens of dilatation of the pelvis previously shown by uroselectan, but the calyces of the kidney were apparently normal. It was considered that in view of his freedom from symptoms no surgical interference of the left kidney was indicated.

The case, therefore, is one in which an unsuspected inefficiency of the left kidney was the important factor in the production of severe alkalosis following the administration of moderate amounts of alkali.

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REVIEW

CLINICAL CHEMISTRY IN PRACTICAL MEDICINE. By C. P. Stewart, M.Sc., Ph.D., and D. M. Dunlop, B.A., M.D., F.R.C.P.E. Second Edition. Edinburgh: E. & S. Livingstone, 1937. pp. 372. Price 10s. 6d. net.

The second edition of this useful handbook has been thoroughly revised, enlarged, and brought up to date. The book is intended for the use of the senior student, house physician, or practitioner, rather than the laboratory worker, and within the limitations which the authors have imposed upon themselves they present an admirable account of the technique and significance of the various tests more commonly used in clinical medicine.

In this edition the technical details of the various examinations have been relegated to an appendix. Here the tests which are usually done in the hospital side-ward are fully explained and the principles of many others mentioned.

The main portion of the book is devoted to an analysis of the results obtained and a discussion of their clinical value. Blood and urine examinations, fractional test-meals, tests of renal, pancreatic, and hepatic function, glycosuria, and the basal metabolic rate are amongst the subjects covered. The chapter on the collection and preservation of samples is worthy of the attention of every practitioner.

The book is very readable, and the authors have presented the results of their wide clinical experience to good advantage.

been stated, no history was elicited, and no albumin or casts were found in his urine. Stanley Graham[4] says that "in ordinary circumstances administration of sodium bicarbonate does not lead to any retention of the alkali. In the presence of impaired renal function . . . accumulation may occur. . . ." The only evidence of renal impairment which I could discover in the case under review was the slight dilatation of the pelvis of the left kidney, as seen in the uroselectan pyelogram.

On 19th November the man reported for re-examination at my request. He was free from symptoms and had gained almost twenty-eight pounds in weight since leaving hospital. His urine was free from albumin. Mr. J. S. Loughridge kindly cystoscoped him for me, and obtained ureteric specimens of his urine. These specimens showed a few blood-cells on both sides; the right specimen contained 1,416 mgms. of urea per 100 c.c., and the left contained 1,956 mgms. per 100 c.c., constituting evidence of unilateral diuresis. A retrograde pyelogram confirmed the specimens of dilatation of the pelvis previously shown by uroselectan, but the calyces of the kidney were apparently normal. It was considered that in view of his freedom from symptoms no surgical interference of the left kidney was indicated.

The case, therefore, is one in which an unsuspected inefficiency of the left kidney was the important factor in the production of severe alkalosis following the administration of moderate amounts of alkali.

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2. Mayrs, E. B. C., Personal communication.
3. Spence, J. C., and Thompson, A. P., 1933, in *Parsons and Barling's Diseases of Infancy and Childhood*, pp. 6, 31.
3. Graham, S., 1936, *British Encyclopædia of Medical Practice*, vol. 1, p. 292.

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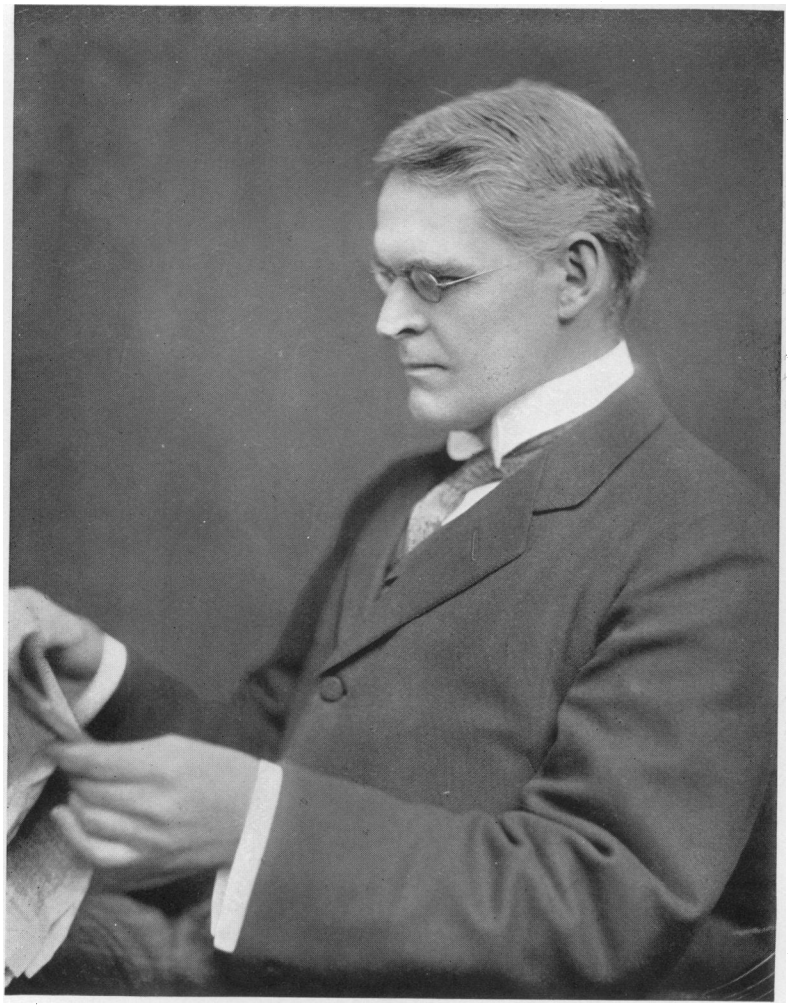

W. ST. CLAIR SYMMERS, M.B.

Professor of Pathology, Queen's University, Belfast, 1904–1929

Died 4th October, 1937

W. St. CLAIR SYMMERS, M.B.,

Emeritus Professor of Pathology, Queen's University, Belfast

THE death on 4th October, 1937, of William St. Clair Symmers was the end of a very distinguished career. For twenty-five years he had been an outstanding ornament of the Queen's University and of the Belfast Medical School; he had for many years held the office of Dean of the Faculty of Medicine, and had guided its deliberations with wisdom and dignity; he was beloved and admired at once by his colleagues and students; and he retired from his Professorship amidst universal regret.

He was the son of Mr. George Symmers of Huntley, Aberdeenshire, and was born in South Carolina on 4th October, 1863. After spending his boyhood and early youth in the land of his birth, he came to Aberdeen for his medical studies, graduating there in 1887. The next ten years of his life were devoted to the study and experience which were to fit him for his future career. After a short period of general practice, he became assistant pathologist in the Royal Infirmary, Aberdeen, and afterwards pathologist to the Birmingham General Hospital and to the Lancashire County Asylum. For some time he was resident medical officer to the West Brompton Hospital. He studied bacteriology in Paris at the Pasteur Institute, and became assistant bacteriologist in the British Institute of Preventive Medicine, now known as the Lister Institute, London.

His first real chance came in 1897, when he was appointed Professor of Pathology and Bacteriology in the Government Medical School in Cairo, and pathologist to the Government Hospital. He had not been long in Egypt when a serious outbreak of cattle plague occurred, and he was appointed by the Government to found and direct an institute for the production of a preventive serum. In this work he was eminently successful, putting an end to the plague in two years' time, and earning not only the thanks of the Egyptian Government, but the warm commendation of all those who had witnessed, and were qualified to pass judgment upon, his work. His work in the Cairo Medical School was of a very high order; he originated a pathological museum and furnished it with a large number of preparations made and mounted by himself; and some of his drawings of pathological conditions are, it is said, still used in the work of the school.

He left Cairo in 1904 on his appointment to the Chair of Pathology in the Queen's College, Belfast, where he was to spend the remainder of his life, as a pathologist of high repute, the admired and genial mentor of many generations of students. His handsome and dignified appearance, his genial address, his unaffected courtesy, his delightful wit, won for him many friends both inside and outside the University. In 1907 he was appointed secretary of the Pathological Section of the British Medical Association, and became president of the same Section two years later. He was a president and an honorary fellow of the Ulster Medical Society; he contributed many articles to the "Journal of Pathology," the "Journal of Hygiene," and the "British Medical Journal." He was a recognized authority on bilharziasis and cerebro-spinal fever.

But with his retirement from his professorship in 1929 his scientific activities came to an end with his public duties. He had not been merely Professor of Pathology, but he had been responsible in the University for the teaching of bacteriology and medical jurisprudence. He had been pathologist to the Royal Victoria Hospital and to the Mater Infirmorum Hospital. He was for many years pathologist and bacteriologist to the City of Belfast. He had performed innumerable post-mortems, and he was often called upon in criminal cases as a witness for the prosecution, where his precise and accurate evidence and his imperturbability under cross-examination made him an admired witness. All these activities came to an end simultaneously, and there is little doubt that the sudden transition from a life full of varied and interesting activities to one of almost complete inactivity seriously affected his physical health. But it did not affect the natural acuteness of his mind, his remarkable memory, or his general intellectual interests. The poetry of Virgil, the most refined and humane of poets, had strong attraction for the humanity and refinement which were the chief notes of his own character, and he spent much time in careful study of the *Aeneid*. There were few works of importance in modern philosophical speculation which escaped his attention, and he read eagerly everything which he could find to help him to understand Plato. He was modest in expressing his own views upon such high questions, but he had pondered them long and earnestly, and seemed to have reached some inner certainty which gave to him the strength, the courage, and the serenity of mind that enabled him to bear the slow failure of his bodily powers and the increasing and almost constant pain which during his later years he had to endure.

He married, in 1902, Miss Marion Latimer Macredie, whose constant and devoted care enabled him to bear the trials of his later years, and to her and their three daughters and son we offer our deepest sympathy.

ROYAL VICTORIA HOSPITAL, BELFAST

THE Medical School of the Royal Victoria Hospital, Belfast, was opened for the session 1937-8 on Thursday, 14th October, 1937. Mr. Henry Hanna occupied the chair, and Dr. F. P. Montgomery gave the address (published elsewhere in this number of the Journal). Before doing so, Dr. Montgomery referred to the resignations of three members of the staff. Two of these, Professor R. J. Johnstone and Mr. J. A. Craig, retired on reaching the age limit, he said, while the third, Professor J. S. Young, had left to occupy the Chair of Pathology at the University of Aberdeen.

Professor Johnstone, one of the most versatile men of his generation, had been engaged in the teaching of medical students for over forty years. A former holder of the Coulter Exhibition and a University Studentship, he was also Demonstrator of Anatomy and Pathology, and obtained the Fellowship of the Royal College of Surgeons of England. He joined the staff of this hospital in 1903 as an assistant gynæcologist, and for the past thirty-four years he has held an outstanding position

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in this medical school. He became Professor of Gynæcology in 1920, and a founder Fellow of the British College of Obstetrics and Gynæcology in 1929. An admirable chairman of innumerable committees, he has served this school as a Member of Parliament, as representative on the General Medical Council, and he finally crowned his medical career as President of the British Medical Association Meeting in Belfast this summer, an office he upholds with a dignity and administrative ability which are amongst his outstanding characteristics.

"When I first heard Professor Johnstone lecture," Dr. Montgomery said, "I was at once reminded of a sonnet of Wordsworth's which begins :

" 'Two voices are there; one is of the sea,
One of the mountains; each a mighty voice.'

"It seemed to me that these two voices had been admirably blended for the production of Professor Johnstone's stately and sonorous prose. Let us hope that the pleasing blend of sea and mountain in his new place of residence may have the beneficial effect of adding much happiness to his years of retirement. He will carry with him the best wishes of a large circle of friends in every walk of life.

"Mr. Craig is also one of the most distinguished sons of Queen's. He qualified M.B. with first place and first-class honours, and was then a Demonstrator of Anatomy. He was a house-surgeon in Liverpool, and spent a year of post-graduate study in Vienna, devoting his attention to ophthalmology. He also took the Fellowship of the Royal College of Surgeons of England, and joined the staff of this hospital with Professor Johnstone in 1903. Mr. Craig has been Lecturer at the university in Diseases of the Eye, Ear, Nose, and Throat for over twenty-five years, and his distinguished services as a lecturer and as a clinical teacher have been of outstanding service to this medical school. Mr. Craig is of a very retiring disposition, but no one has ever put more painstaking effort into the routine duties of the work of this hospital. I have been able to unearth only one minor lapse in Mr. Craig's otherwise brilliant career, and that was when he returned from Vienna with a Tyrolese hat and a flowing beard, at once the envy and despair of his colleagues. The hat and the beard have long since been forgotten, but I feel that it will be very long ere Mr. Craig's work for this hospital and the Belfast Medical School will fade from our memories. I can assure him that it is the unanimous wish of his colleagues, friends, and students that he may long be spared to enjoy that leisure which he has so richly earned.

"Professor J. S. Young, a distinguished graduate of the University of Glasgow, occupied the post of pathologist to this hospital for the past six years. During his short stay he assembled the nucleus of one of the finest clinico-pathological exhibits in existence, and introduced giant sections of tumours. His chief contribution to this school lay in the establishment of close co-operation and contact between the pathologist and the clinicians, a state of affairs which we hope will always continue. We wish him every success in his new sphere of work. I have much pleasure in extending a very hearty welcome on your behalf to three new members of the honorary staff—Mr. H. C. Lowry, Mr. F. A. MacLaughlin, and Professor J. H. Biggart."

ULSTER MEDICAL SOCIETY

THE opening meeting of the Ulster Medical Society for session 1937-8 was held in the Whitla Medical Institute on 28th October, 1937. The out-going president, Professor P. T. Crymble, installed the president for the incoming session, Professor W. W. D. Thomson, who, before delivering his address on "The Life and Times of Hans Sloane" (published elsewhere in this number of the Journal), referred to those members of our Society who had passed beyond the veil during the past year.

Robert McDowell, M.D., after a long illness during which no man ever heard him complain, passed to his reward on the 29th November last. He was truly a physician greatly beloved, and one who practised his art rather than his profession.

To him may be aptly applied the words once used by Seneca of just such another : "This physician bestowed more labour on me than he was bound to do; he not only contented not himself to prescribe me remedies, but also vouchsafed to apply and minister them. He sat carefully by me and succoured me : no office distasted him : no pain disliked him; if he had seen me bemoan myself he was sorrowful. To this man I am not tied as to a physician, but as to a friend."

Alexander McCambridge Dixon Monypeny, M.B., died at the early age of 33 as a result of an attack of pneumonia. Although he had been in practice barely eight years he had already established himself as a practitioner of outstanding ability. Deeply interested in his work, he counted no sacrifice of time or energy too great to be given in the service of a patient or a friend. Cheerful, unselfish, and straightforward, he was beloved and respected by all who knew him. Nor were his interests confined to his professional work—he was a lover of music and of literature and of all healthy outdoor sport.

His loss is keenly felt by his many friends, and his memory will always be retained by them in affectionate remembrance.

James Maxwell Warnock, M.D., a native of the Ards, lived and laboured in the district he loved so well. A man of high ideals, of great medical ability, especially in the diagnosis and treatment of the infectious fevers, retiring and conscientious, he was held in the highest esteem by his colleagues in this Society. The manner of his death bore testimony to his devotion to duty. Falling a victim to influenza, he was urged to take a holiday, but refused on the ground that he could not desert his practice in the middle of an epidemic. He developed broncho-pneumonia and died in a few days.

Norman Colum Patrick, M.D., died after a brief illness, on the 6th March. The greater part of his professional career, except during the years of the Great War, when he served with the army in France, was spent in our public health services, the highest position in which he occupied at the time of his death. Quiet and reserved, upright and kindly, he was held in affectionate esteem by all who knew him. With the sudden death of his brother, Colonel Patrick, a few days later, our community was robbed of two men who never spared themselves in the work of public service.

Professor William St. Clair Symmers, M.B., occupied this chair during the session 1923-4. Nine years later, in recognition of his character as a man and of his great services to our Medical School, he was admitted to the short and jealously guarded roll of Honorary Fellows.

As Dean of the Medical Faculty he was the guide, philosopher, and friend of every medical student. The dignity of his presence, the graciousness of his life, the nobility of his character, the culture of his mind, the treasure of his friendship, and the delights of his fellowship, have left an abiding impress on his day and generation.

The death of our senior Honorary Fellow, Sir John William Moore, M.D., F.R.C.P.I., at the age of 92, severs a link which connected this Society with the days when Graves and Stokes made the Irish School of Medicine famous throughout the world. Sir John succeeded William Stokes as physician to the Meath Hospital in 1875; he resigned from the active staff at the age of 88; his eye was not dimmed nor his natural force abated. "One of my most cherished memories," Professor Thomson said, "will ever be the picture of this very gentle, perfect knight entering his ward at the Meath, figure bent and long grey beard, but with active step, eyes alert, and outstretched hand to welcome with old-world courtesy his colleague from the North."

At the conclusion of Professor Thomson's address, Professor C. G. Lowry proposed a vote of thanks to the president, and Sir Thomas Houston seconded.

The second meeting of the session was held on 4th November, with the president, Professor Thomson, in the chair. The following short papers, published elsewhere in this number of the Journal, were read :—"A Problem in Diagnosis," by Mr. R. J. McConnell; "A Case of Alkalosis," by Dr. R. Marshall; "A Case of Carcinoma of the Appendix," by Mr. J. S. Loughridge; "A Case of Hodgkins' Disease, with Spinal Canal Involvement," by Dr. H. H. Stewart; "A Report on Five Cases of Influenzal Meningitis," by Dr. F. F. Kane.

The third meeting of the session, held on 18th November, was devoted to the Robert Campbell Memorial Oration. It was delivered by Dr. Leonard Colebrook of London, and the subject chosen was "The Control of Infections Due to Hæmolytic Streptococci." This oration is published as a supplement to the Journal. Professor Thomson, the president of the Ulster Medical Society, occupied the chair, and at the conclusion of the meeting a vote of thanks was proposed by Sir Thomas Houston, which was seconded by Professor R. J. Johnstone.

The fourth meeting of the session was held on 2nd December, with the president, Professor Thomson, in the chair. Mr. G. D. F. McFadden read a paper entitled "Carcinoma of the Large Bowel." This paper we hope to publish in the April number of the Journal. An interesting discussion followed the paper, in which the following took part : — Professor Crymble, Mr. Ian Fraser, Mr. S. T. Irwin, Professor Lowry, and Mr. Woodside.

H. HILTON STEWART, *Hon. Secretary.*

Malone Road, Belfast.

B.M.A.—NORTHERN IRELAND BRANCH
NORTH-EAST ULSTER DIVISION

THE Division met in the Café, Coleraine, on Monday, 1st November, and the chairman, Dr. G. Bateman, presided. The members stood for a few moments in silence as a tribute to the memory of the late Dr. Keers, formerly of Rasharkin, who had died since the last meeting. The main business was the chairman's address, and Dr. Bateman spoke on "Medical Men as Portrayed in Later English Literature." He gave many quotations from English authors which showed that there has always existed a great difference of opinion amongst novelists regarding the qualities and abilities of our profession. Although the doctor has been ridiculed and severely castigated in many books, on the other hand he has had praise showered on him by not a few famous authors during the past hundred years.

Dr. McClelland proposed, and Dr. McGlade seconded, a vote of thanks to Dr. Bateman for his most interesting and illuminating paper, which was a very pleasant departure from a purely clinical address.

The programme for the session was discussed, and attention was drawn to the poor attendance at several meetings in the past. It was decided to have a meeting devoted to five-minute papers, and several members volunteered to take part. The usual silver collection for medical charities was taken, and the chairman was thanked for very kindly providing tea.

Eglinton Terrace, Portrush. J. M. HUNTER.

BRITISH MEDICAL ASSOCIATION
PORTADOWN AND WEST DOWN DIVISION

THE first meeting of the present session of the Portadown and West Down Division of the British Medical Association was held at the Lurgan and Portadown District Hospital on Wednesday, 27th October, at 3.30 p.m., by invitation of the matron and medical staff.

A large attendance of members and hospital nursing staff viewed a film dealing with "The Use of Elastoplast in Modern Surgery and General Practice." The members were afterwards entertained to tea.

The Manor House, Lurgan. W. WARING BASSETT, *Hon. Secretary*.

REVIEWS

PHYSICAL SIGNS IN CLINICAL SURGERY. By Hamilton Bailey, F.R.C.S. Eng. Sixth Edition. Bristol: John Wright & Sons; London: Simpkin Marshall, Ltd., 1937. pp. 283; figs. 358. Price 21s.

It is a pleasure to welcome a new edition of this work, which, since it was first published in 1927, has been a "best-seller," and is well on the way to becoming a "classic." In our experience, a student is rarely attached to a surgical unit for more than a few days before the "Physical Signs" make their appearance!

Seriously, however, this must be considered one of the most useful handbooks ever produced. A student, however well grounded in the pre-clinical subjects, finds himself on entering hospital in a completely new world, and a certain amount of time must elapse before his examination of the living patient becomes more than a source of vexation to both. Tutorial classes and demonstrations are indispensable, but, before the publication of the first edition in 1927, teachers must often have wished for a book which would supplement their teaching and be perpetually available—as even the most enthusiastic tutor cannot!

From the earnest but heavy-handed beginner who does not know how to test for fluctuation, to the senior student (or even the resident) anxious about a possible intestinal obstruction, or a doubtful osteomyelitis, no one can open this book without getting fresh light on the methods of physical examination, which, as the author emphasizes, "must always remain the main channels by which a diagnosis is made."

The illustrations, which are such an important feature of the work, are almost all actual photographs—some of which are coloured—showing exactly how each physical sign may be elicited, as, for example, the excellent series of illustrations of the examination of the shoulder-girdle. In addition, there are many excellent pictures of patients suffering from various diseases in their most characteristic form. For the most part, common complaints are shown, but a few coloured illustrations of rarer conditions are included. We must acknowledge that our first case of fragilitas ossium was diagnosed on the recollection of a picture in "Physical Signs"!

The new edition has been slightly altered as to arrangement, and now reads almost consecutively from head to foot. New photographs include (among many others) thyroglossal fistula and tuberculous epididymo-orchitis, both coloured; also saphena varix and gumma of hard palate—a useful reminder of a condition which is becoming rather rare.

The general layout of the book and the reproduction of the illustrations remain excellent, while the clear style and occasional dry humour make it a joy to read. It may safely be said that, apart from actual experience, there is no better way for the student to acquire the elements of his art than through its pages.

DISEASES OF THE HEART. Described for Practitioners and Students by Sir Thomas Lewis, C.B.E., F.R.S., M.D., D.Sc., LL.D., F.R.C.P. London: Macmillan & Co. pp. 297. Price 12s. 6d.

"In the making of books there is no end," and it is but rarely that there is a published book of this quality.

When the first edition of Sir Thomas Lewis's "Disease of the Heart" was published in 1933, it was quietly accepted as the work of a master; simple, sincere, and stripped of every unnecessary word. In his preface he said: "A chief reform needed in medical education to-day is that students should be encouraged to take a more leisurely and intelligent interest in phenomena, not of the laboratory, with which they will soon lose all connection, but of everyday practice." One might suggest a second reform: that every student should be required to read Lewis's "Diseases of the Heart." The book is essentially clinical, pulse and galvanometric tracings having been introduced only occasionally and the better to illustrate a bedside

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observation. At first glance one sees little change in the second edition, but closer scrutiny shows that the work has been the subject of careful revision. Some of the amendments are interesting; e.g., enlargement of the thyroid gland is now included as a cause of distended cervical veins. Sir Thomas now states that nitro-glycerine is "as valuable as amyl nitrite and causes less throbbing and headache; it is the more valuable remedy when a progressive angina of effort has brought a man to his chair or couch." In considering operative measures for the relief of angina he prefers the injection of alcohol into the posterior roots of the upper thoracic nerves to removal of sympathetic ganglia; and he adheres to his opinion that the results of thyroidectomy have not yet established the claims made for it. For the immediate treatment of heart-failure with fibrillation, he now recommends the intravenous administration of Burroughs, Wellcome's digoxin (0.5 to 0.75 mgm. in normal saline 10 c.c.), and considers that strophanthin is so unreliable that its use should be discontinued. He also recommends digoxin to be taken by the mouth in tablets of 0.25 mgm., instead of Nativelle's granules recommended in the first edition. The classification of adherent pericarditis has been slightly rearranged into "rheumatic" and "constrictive" types, and here one is tempted to the criticism that these categories are not completely exclusive of each other.

One is interested to note that the author remains unconvinced as to the precise value of the oxygen tent, and that he repeats his unbelief in the value of injections of strychnine or camphor.

In rearranging certain phrases in his preface, one may safely say that "in deliberate and vigorous terms" he has "drawn and held our attention" throughout, and has succeeded in his attempt "to teach this first, simple, and essential lesson," that "in managing our patients our thoughts must be chiefly set in terms of function and not of structure." —R. M.

THE CATECHISM SERIES. ANATOMY : THE UPPER EXTREMITY. Part I. By Charles Whittaker, F.R.C.S.E., F.R.S.E. Fifth Edition. Edinburgh : E. & S. Livingstone, 1937. pp. 79. Price 1s. 6d.

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Recent advances in treatment are included, and comprise collapse therapy and all its difficulties, as well as the more general treatment of the sanatorium.

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THE MEDICO-LEGAL ASPECTS OF THE RUXTON CASE. By John Glaister, M.D., D.Sc., and James Couper Brash, M.A., M.D., F.R.C.S. Edinburgh: E. & S. Livingstone, 1937. pp. xvi + 284. With 172 illustrations. Price 21s.

Of the various murders characterized by mutilation and dismemberment of the body, the Ruxton case is outstanding. The fact that the mutilated parts of the two bodies were found intermingled, the extent of the dismemberment, and the careful removal by the accused of all those areas which might serve for identification, rendered the medico-legal study of this crime more than usually difficult. That the problem was eventually solved reflects great credit on the authors of this book, and shows to advantage the result of successful team-work between medical jurist, pathologist, anatomist, radiographer, photographer, and various other specialists.

In this book the story of the murder, of the finding of the bodies, and the ensuing scientific and police investigations, and the medical evidence at the trial, is carefully unfolded. The reader is immediately impressed by the extreme care which these investigators have taken in the collection and evaluation of the evidence. Their attention to detail, the constant check upon their interpretation by collateral laboratory investigation, their evident intention never to be unfair, all justify the compliment paid to them by the presiding judge that "in his experience, never had he seen expert-witnesses more careful and more eager not to strain a point against an accused person."

In few, if in any, trials has the anatomist played so large a part, and Professor Brash is to be congratulated not only upon his successful reconstruction of the bodies, but also upon his studies concerning the problems of identification.

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