CONTENTS

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THE ULSTER MEDICAL JOURNAL

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THANKS

9 College Gardens,
Belfast.

Sir,

May I ask you to be so good as to publish the enclosed letter, which has been sent to me by an old lady whom the Royal Medical Benevolent Fund Society of Ireland has been very glad to help? It is typical of many such letters, expressing gratitude and appreciation, and she is more than willing to have it published in your columns.

I find that it is only those who have come in contact with such cases who know what a tremendous difference even a little financial help may make—just the difference between utter poverty and "straitened circumstances," together with the feeling of being "not forgotten."

I am, sir,
Yours faithfully,
ROBERT MARSHALL,
Hon. Secretary, County Antrim Branch,
Royal Medical Benevolent Fund Society
of Ireland.

Belfast,
30th December, 1938.

Dear Doctor Marshall,

I would like to try to let you know what the Benevolent Fund has done for me. The knowledge that I can count on £10 twice yearly is a most wonderful comfort. This year especially it has saved me from despair, as owing to my paying-guest taking suddenly very seriously ill, he had to be removed to a nursing-home, I could not see how to meet the most ordinary expenses. My daughters were trying to help me, but this was bad, as they could not afford to put anything by out of the salaries they were earning. My second daughter was in hospital suffering from a poisoned vein. You can, I think, understand what it was to me to get, not only the usual cheque, but also the £5 bonus.

I have been in bed, under constant medical care for years, so I am quite helpless. There is only one thing about the grant I do not like, and that is having to trouble my good doctors to read and sign the form twice yearly.

Yours sincerely,
———— ————.

Annual Meeting of the Belfast Hospital for Nervous Diseases

Held on Wednesday, 5th April, 1939

MR. R. H. Stephens Richardson, D.L., who presided at the meeting, held on Wednesday, 5th April, 1939, stated that the past year had been one of great progress. The erection of the new building was a credit to the Committee and helpers responsible, and he paid tribute to Mrs. Mulholland for her magnificent work. To Mr. R. W. Henry, hon. treasurer, Mr. Richardson said they owed a particular debt of gratitude for the preparation of the financial report. He stated that £7,000 had been expended on the extension, which would cost £10,000 altogether. A further four or five thousand would, he added, be required for equipment.

Mrs. Mulholland is chairman of the Building Fund Committee, and it was mainly due to her efforts that the extension had been acquired. To date the Committee has raised £1,450, and of this £300 was realised by Mrs. Mulholland's broadcast appeal. The admission charged by Mr. McMaster for inspecting the "Dream Home" at the "Northern Whig" Ideal Home Exhibition brought in another £200.

Presenting the Committee's report, Miss McCallister, hon. secretary, said they had faith that the generous public would rally round to pay for a hospital of which they might well be proud. The hospital had continued to be used to its full capacity, and there had been a long waiting list throughout the year. Some alterations had been made to Killowen—it had been been enlarged and a pure water supply had been ensured.

What was described as the best financial report it had ever been his privilege to present was submitted by Mr. Henry. There had, he said, been an increase in the income from every source. Mrs. Mulholland had been responsible for the raising of £1,000, and in doing so she had been greatly assisted by Hon. H. G. H. Mulholland and Miss Patsy Mulholland. He was confident that now that the new building had been acquired well-wishers would come forward to help with the necessary equipment.

Dr. H. Hilton Stewart, presenting the medical report, said that in the extern department 421 new patients had been admitted—an increase of twenty-three on the previous year. There had been 7,807 attendances for consultations and treatment, which represented an increase of 1,262. In the in-patient department there had been 94 admissions, 16 re-admissions, 107 discharges, and three deaths. At Killowen there had been thirteen admissions, one re-admission, five discharges, and no deaths.

The reports were adopted, on the motion of Mr. W. R. Maconkey, C.B.E., seconded by Mr. J. Lynn Hazelton. The Council was re-elected, on the motion of Mr. W. Campbell, seconded by Miss McCallister. The speakers were thanked, on the motion of Miss J. McConnell, seconded by Mr. A. Irwin, and all who had helped the hospital in any way were thanked, on the proposal of Mr. R. Finlay, seconded by Captain Crawford Browne, M.P.

THE ULSTER MEDICAL SOCIETY

THE MEDICAL INSTITUTE,
COLLEGE SQUARE NORTH,
BELFAST.

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.*
C. A. CALVERT, *Hon. Treasurer.*

.....19.....

To MR. C. A. CALVERT,
8 UNIVERSITY SQUARE,
BELFAST.

Please have my name proposed for election to the Ulster Medical Society.

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Postal Address.....

.....

Year of Qualification.....

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(Ulster Medical Journal)

.....19.....

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This should be sent to the Honorary Treasurer, MR. C. A. CALVERT,
8 University Square, Belfast, for registration.

THE
ULSTER MEDICAL JOURNAL

PUBLISHED QUARTERLY ON BEHALF OF THE ULSTER MEDICAL SOCIETY

VOL. VIII 1st APRIL, 1939 No. 2

WAR!

WITH the nations of Europe passing from one crisis to another, no excuse is made for drawing the attention of medical practitioners to the scheme for the protection of their practices evolved by the British Medical Association.

The scheme has been evolved from the experience of the later years of the Great War, when the need became apparent for some arrangement to prevent the appropriation of those on active service by an unscrupulous minority at home. The British Medical Association has since then given the subject much thought, and the present more or less final scheme is the result.

The scheme is conducted by a Local Emergency Committee thoroughly representative of all types of practice in the area. Its aim is to protect, while he is away on active service, the capital value of the doctor's practice, and also to ensure that fifty per cent. of the receipts, while he is on service, should go to him.

The scheme may not be able completely to prevent encroachment on a doctor's practice while he is away, but the prospect of returning to find his practice dissipated, scattered among those colleagues who have stayed at home, would be removed. It is strongly to be desired that all general practitioners should take part in the scheme. Even if a practitioner arranges with another to conduct his practice in his absence, some or many of his patients may not choose to go to the nominated practitioner, in illness, death, or calling up.

The panel aspect of practice will be looked after by the same machinery by which the Ministry of Labour conducts insurance practice during peace time. For private practice the Local Emergency Committee will set up a bureau, empowered to collect accounts and distribute the receipts between the acting and the absentee practitioner.

Details of the scheme were considered at a special meeting of all medical practitioners (reported on another page of this issue of the journal). It requires no words on our part to stress the importance of the scheme on our readers, and it is our considered hope that all our members will give the scheme their active support.

The Background of Medicine in Ireland

By EILEEN M. HICKEY, M.D., D.P.H., B.SC., F.R.C.P.I.
Hon. Physician to the Mater Infirmorum Hospital, Belfast

Chairman's Address to the Belfast Branch of the B.M.A., November, 1938

Ladies and Gentlemen,

When I tell you that I have condensed the Medical History of our country for a period of over two thousand years into the narrow bounds of a brief lecture, you will know in advance that I cannot have done my task thoroughly, nor even well. Yet I would ask you to be patient and to let the magnitude of my task blot out, in part at least, the inadequacy of my achievement.

I have endeavoured to write a human document rather than tabulate mere cold facts, and to depict the background against which our medical history has been sketched.

Just as in the web of life you will find strange admixture, so, too, in this. Famine and desolation may bring a mist before your eyes, sack-em-up men may fill you with loathing, but you will rejoice over the moral courage of Colles, the physical courage of Graves, and you will see the beauty of death through the eyes of Stokes in the face of the destitute poet.

I want to take you very far back with me; so far that all will be shrouded in mist. Figures will loom indistinctly, so indistinctly that at times you will scarcely feel sure whether they are human figures or ancient gods.

Greatest, and most imposing of all these misty figures is Diancecht, our Celtic Aesculapious. Men say that he was a Druid. Certain it is that his learning included magic as well as more orthodox medicine. His medical skill must have been considerable, since it is recorded that at the Battle of Moytura in the County Sligo he prepared medicinal baths of herbs into which the wounded were plunged, to emerge subsequently healed.

When King Nuada was wounded in the battle in 487 B.C., Diancecht furnished him with a silver hand, fashioned, as the Annalist tells us, by Creidne, the great worker in metals. This artificial hand was so wonderfully constructed that it was as useful to him as his other hand.

Diancecht has also left us the prescription for his "porridge" (the oldest known Irish medical remedy). It consists of oatmeal boiled with dandelion, hazel buds, chickweed, and woodsorrel. This was to be taken morning and night for sore throats and colds.

Another giant misty figure who flits across the horizon is Trosdale, the Druid, "reknowned," it is said, "for his skill in physick." He was able to prepare a bath from the milk of white-faced cows in which warriors bathed, and, thereupon, became immune to the wounds of poisoned weapons.

Within the first few decades of the Christian era we hear of a king of Ulster

being wounded in the head by a ball from a sling. His physician resolved not to attempt the extraction of the ball, preferring what one might call expectant treatment, indicating plainly that cerebral surgery was by no means unknown in our country even in those days. This is, perhaps, not a matter for surprise when we know that trephined skulls from the neolithic period have been found in most European countries.

But let the Annalist tell you the story. "On the brink of the Ford Conchobar fell. His physician was brought to him; namely, Fingen. He it was that could know by the fume that rose from a house the number that was ill in the house, and every disease that prevailed in the house. 'Good,' said Fingen, 'if the stone be taken out of the head thou shalt be dead at once, if it is not taken out of it, however, I would cure thee, but it would be a blemish on thee.' 'The blemish,' said the Ultonians, 'is better for us than his death.' His head was then healed, and it was stitched with threads of gold because the colour of Conchobar's hair was the same as the colour of the gold."

Dim figures also are those spoken of in the Genealogies of the MacFirbis, viz., "Capa for the healing of the sick, the first doctor that came into Erinn; Eaba, the female physician, was the second; and Slanga was the third."

In the Annals of Tighernach it is related that in the year 366 a princess died in consequence of having swallowed a "poisoned draught," so that it appears certain that there was already knowledge as to the preparation of drugs.

Speaking of these Annals, the Rev. Charles O'Connor says: "Not one of the countries of Northern Europe can exhibit a historian of equal antiquity, learning, and judgment with Tighernach. No chronicler more ancient can be produced by the northern nations."

Tighernach was one of the most important scholars of Clonmacnoise, a great seat of learning and sanctity, seven miles below Athlone on the east bank of the Shannon, the favourite burying-place of kings and nobles for one thousand years after its foundation by St. Ciaran, until it was despoiled and plundered.

When the mighty Cuchulain engaged in conflict, it is recorded that the professors of healing and curing came "to heal and cure, applying salving herbs and plants to the sores and cuts and many wounds."

It is sad to think that even in those days of saints and scholars there was an occasional physician who would have been hardly dealt with by the General Medical Council, had such a body been in existence. We hear of some physicians who so far forgot the dignity of their calling as to allow themselves to be persuaded to poison the wounds of the king's enemies, and so make it impossible for them to heal. Perhaps it is fortunate that it was so, as it has preserved for us an account of the first clinical lecture of which we have any record. It so happened that the personal physician of the wounded warrior arrived on the scene with his pupils. This physician posed shrewd questions as to the nature of the trouble, each question being answered just as shrewdly by the various pupils, and so a most accurate diagnosis was finally arrived at. Adequate treatment was immediately applied, with the object of expelling the poisons, and the patient's wounds, which

had remained open for a year under the treatment of the unworthy physician, now promptly healed.

Another skilful feat, also of a surgical character, which dates from the time of Cormac MacArt, is the treatment of a warrior's wound by the application of the skin of a ewe freshly taken from the animal, and which became "so firmly adfixed to the part that it grew a fleece of wool, which was periodically shorn."

The Book of Ballynote contains such a marvellous description of this monarch (Cormac MacArt) that it seems to me not in à propos to read it to you, that you may know what a chieftain of those days looked like, and how serious it would be should a "blemish be upon him."

"His hair was slightly curled and of golden colour. A scarlet shield with engraved devices and golden hooks and clasps of silver, a wide folding purple cloak on him with a gem set brooch over his breast, a gold torque around his neck, a white collared shirt embroidered with gold upon him, a girdle with golden buckles and studded with precious stones around him. Two golden network sandals with golden buckles upon him. Two spears with golden sockets, and many red bronze rivets in his hand, while he stood in the full glow of his beauty, without defect or blemish, you would think that it was a shower of pearls that were set in his mouth, his lips were rubies, his symmetrical body was as white as snow, his cheek was like the mountain ash berry; his eyes were like the sloes, his brow and eyelashes were like the sheen of a blue-black lance."

He was the first Christian king of Ireland. In later life he had the misfortune to lose an eye, and because of this "blemish" he resigned his kingdom. He is said to have been choked by Druid magic. He had expressed a wish not to be buried in the royal grave of his ancestors, but at Rosnaree. After his death his followers, disregarding his wishes, bore off the coffin towards the royal burying-ground. The Boyne rose as they were endeavouring to ford it, and swept away the body, and so the poet sings :—

"At morning, on the grassy marge,
Of Rosnaree, the corpse was found,
And shepherds at their early charge
Entombed it in the peaceful ground.

Round Cormac Spring renews her buds,
In March, perpetual by his side,
Down come the earth fresh April floods,
And up the sea fresh salmon glide."

The fame of our physicians was not confined to their own shores. As early as one and a half centuries before Christ we are told that Josina, ninth king of Scotland, was sent to Ireland to be educated among them and to study medicine.

The status of these ancient physicians was apparently high. Their rank was the same as that of a craftsman in precious metals, which was high in those days. They had special seats allotted to them at the royal banquets. It was a

common custom for the chieftain of a tribe to allot a portion of land, usually five hundred acres, to the physician, in order that he might continue his studies undisturbed.

The Brehon Laws under which they worked were codified at the request of St. Patrick, but were even then very ancient. They had come down from prehistoric times.

The physicians' fees were fixed by these laws, and varied with the rank of the patient as well as with the gravity of the case. For a death wound, the fee was four cows and a three-year-old heifer from a king; three cows and a two-year-old heifer from a chieftain. If, however, he was not a professional physician and had failed to disclose that fact, he was liable to a fine if his treatment was unsuccessful.

When the liag (leech) attended a patient, he and four pupils were entitled to their food at the house of the patient, but if the wound was inflicted maliciously, the offender had to supply the cost of the food. If the wound healed in an unsatisfactory way, the physician might have to refund his fees unless a certain stipulated time had elapsed between the healing and the wound breaking out again.

There were strict laws concerning the house where a wounded man should be nursed (usually the liag's house). It must have four doors, so that one could always be open no matter what the direction of the wind. It must have running water, so that it was either built over a stream or on the banks of one. It must not be snail-besmeared. Fools, female scolds, and forbidden food were not to be allowed in the house.

Beside the leech's house there was also the "House of the territory," which, under the Brehon Laws, took the place of hospital or nursing-home (since patients or those who inflicted the wounds were expected to pay the fees. We also hear of a Royal Hospital, Broin Bearg, near Tara and Emaniah, before St. Patrick's time.

Many of the old physicians probably studied abroad, and much of the teaching was from father to son. Families of hereditary physicians grew up. O'Lees, O'Cassidys, O'Hickeys, O'Callenans, etc. The O'Lees' book is one of the most complete systems of medicine of its day. The Aphorisms of Hippocrates were put into Irish by A. O'Callanan and Nicholas O'Hickie. Donogh Oge O'Hickie wrote a book which is said to be a "valuable remnant of ancient Irish learning as well on account of its language and its beautiful penmanship as on account of the testimony which it bears of our ancient physicians being at least as learned and having as much skill in their profession as any of their contemporary physicians."

The Danes in their devastation of the country took particular care to destroy every book that they could lay hands upon, and so most of the early medical manuscripts were destroyed. Michael O'Cleary, Chief of the Four Masters, laments: "Strangers have taken the principal books of Erinn into strange countries and among unknown people."

One of our oldest manuscripts begins thus: "I have collected these practical notes from works for the honour of God, in mercy to the Irish people, and for the instruction of my pupils, and for love of my friends and of my race, out of Latin books into Gaedlig—that is from the authority of Galen in the last book of his Practical Pantheon and from Hippocrates from the book of his Prognostics. These are things gentle, sweet, profitable, of little evil, and have often been tested by us and by our instructors."

Apprenticeship was, of course, common amongst Celtic physicians. The students lived in the leech's house, and paid a fee for their tuition and lodging.

An amusing story is told of the ingenuity of an Irish surgeon who, in A.D. 213, by means of probing a wound, discovered in its depths a rusty spearhead. He then directed that a portion of a ploughshare should be made red hot. He seized the improvised weapon, and "with a cruel countenance" he brought it near the patient, who was so alarmed that he leapt up and ran across the room. This effort had the desired effect, as the contraction of the muscles forced the spearhead to the surface of the wound, from whence it was removed with ease by the surgeon."

At a later period in Irish history we find Campion referring to the Irish physicians in the following terms:—"They speak Latin like a vulgar tongue, learned in their common school of leachcraft and law, whereat they begin children, and hold on sixteen or twenty years, conning by rote the aphorisms of Hippocrates, etc."

The O'Maras were, by their writings and repute, much esteemed in Great Britain and on the Continent. They were perhaps the first of the line of hereditary physicians in Ireland who wrote medical works in Latin, certainly the first who published such.

The learning of the hereditary Irish physicians was chiefly derived from manuscripts, of which the largest collection in any known language for the period dating from the end of the thirteenth to the beginning of the eighteenth century, still exists in Irish character.

As testimony to the high state of civilisation of the early Irish, we find in Lecky's History of Ireland in the eighteenth century, vol. I: "Civilisation had so far advanced in Ireland that it enabled Irishmen to bear a great and noble part in the conversion of Europe to Christianity. It made Ireland, in one of the darkest periods of the Dark Ages, a refuge of learning and piety."

It is believed that from the fifth to the tenth century the Irish were more cultured than almost any European people.

We hear of a celebrated Irish scholar, John Scotus Erigena of the ninth century, being sent for by Charles the Bald to translate certain Greek works.

The fact that there were so many manuscript translations of Latin and other works shows that there must have been a considerable public for them, as the men who translated and copied them could so easily read Latin that there would have been little point in making these translations for themselves.

Manuscripts were greatly prized by the Irish, and were more than once the stipulated ransom of a chieftain, and even became the object of a tedious war.

The manuscripts in the Royal Irish Academy, Dublin, and elsewhere show clearly

that all the great physicians of past ages in Europe were well known and studied in Ireland, and that the Irish physicians shared the medical culture of Europe.

(In Vol. I, Part 2, of the History of Medicine) Professor Max. Neuberger, Professor of History in Vienna, speaking of the upheavals in Europe, sacks of towns, devastation of country, sacrifice of life and art treasures, says: "The Church, alone unshaken by all changes, stood as a bulwark against the flowing tide of racial migration and preserved a link with the past. She rescued the arts of peace from total annihilation. Monasticism in particular has eternally to its credit that it afforded to culture a sanctuary in the midst of barbarism." The study of medical authors and the rescue of medical writings from complete destruction was undertaken by the Order of St. Benedict.

Further on he says: "It appears a wonderful dispensation of providence that during the terrible devastations of the sixth to eighth centuries, in a truly forlorn age of general decay of civilisation the heirlooms from antiquity should have been hidden in Ireland—there (in the monasteries) alone was preserved a knowledge of the Greek language at a time when it began to die out in Italy." He also refers to the missionary zeal of the monks, reminding us that our Irish St. Columba founded Bobbio near Padua, and his companion St. Gall founded the monastery bearing his name in Switzerland (where there are still Irish medical manuscripts to be seen). Alcium founded the University of Pisa, Johannes Scotus Erigena was the first Professor of Philosophy at Oxford.

At a still earlier period, i.e., during the reign of Cormac (A.D. 227-268) our literature attained the highest degree of cultivation, when the learned people, i.e., Druids, poets, musicians, etc., became so numerous as to be a burden on the people. Trouble arose, but the learned ones were invited into Ulster, and hospitably entertained there for a space of seven years.

In the sixth and seventh centuries there was considerable intercourse with Britain, Gaul, and Spain. Wine was imported from France, and foreign merchants came to the Irish fairs. There was a high state of culture at this time.

Professor E. O'Curry, who has made a special study of ancient Ireland, states that when St. Patrick arrived from Rome he found the country teeming with men distinguished for their acquirements in the native language and literature, poets, judges, Druids, etc.

A vast number of schools were founded. Ardmacha, where one-third of the school was set apart for the exclusive use of foreign students, especially Saxons and British; Bangor, founded in 555 by St. Comgall; Clonard, which at one time had three thousand students; Glasnevin, Birr, Clonfert, Mungret; Emly, where the students were so numerous that, about the year 740, they were forced to live in huts in the neighbouring fields.

The country was then believed to be the most advanced in the civilisation of the age. The school of Tuaim Brecain, near Belturbet, is of particular interest to us, as it appears to have been of medical character, and was founded by St. Brecain, a skilled medical practitioner, renowned above all for his skill in cerebral surgery. He died in 578.

Cupping was used by the Irish physicians of those days. It is recorded that Bebinn, a lady doctor, drew the poison from a wounded leg by means of two cunningly-constructed tubes, and the wound healed. She also gave five emetics to the patient. Apparently there were many women practitioners in those days. In Southey's "Morte D'Arthur," Sir Tristram came under the care of a woman in Ireland, "who was a most noble surgeon."

Sweating-houses were common. The remains of some are still to be seen in Northern Ireland. They were made of stone about six feet long and with a low opening for a door. They were built near a pool of water. A fire was lit inside and kept going till a high temperature was reached. The ashes were then raked out, and the blanket-enveloped patient crept in, after which the door was closed. After free perspiration he came out, had a plunge in the bath, and finally a good massaging.

What were the diseases that afflicted our countrymen in those early days? As early as A.D. 432 we hear of leprosy in Ireland, in so much as St. Patrick maintained a leper in his own house and tended his sores. After that time there are numerous references to it, and it appears to have become relatively common, since, in 594, we read of a spy who "disguised himself as a leper by rubbing his body and face all over with rye dough moistened with the blood of a calf and fixed his knee in the socket of a wooden leg."

The earliest mention of dysentery was in A.D. 365, when a king died at Tara, having been much troubled with a "flux of the belly."

In the sixth century there was a great epidemic lasting thirty years, preceded by famine and followed by leprosy: it is believed to have been yellow fever. Smallpox also made its appearance about this time; it was called *bolgach*. In the seventh century there was the second appearance of the yellow plague, and of another great plague (which carried off four abbots at Bangor). Ten years later smallpox broke out again, followed in four years' time by a great plague of cattle, "and there was such scarcitie and famine in Ireland," says the historian, "for three years together that men and women did eat one another for want."

From 760, for a period of twenty years, there was fearful famine and pestilence, smallpox, dysentery, etc.

In 895 there was a plague of locusts.

In 949 we hear of great lues and bloody flux. Syphilis, it is believed, had already been introduced into this country when the Danes overran the land.

In 963 there was intolerable famine, so that the " father used to sell his son and daughter for food."

In 992 there was great mortality amongst cattle and bees. Honey was a staple article of diet at this time.

In 1038 there was a great crop of acorns. It was a great oak-growing country, hence Derryvolgie, Derriaghy, etc. Nuts and acorns were grown as food for swine.

In 1084 plague killed three-fourths of the men of Ireland.

In 1088 the King of Albania gave a camel to an O'Brien (whether as a medical fee or not is not related).

In 1174 the Priory of Knights Templars at Kilmainham was erected.

In 1312 it was granted to the Knights of St. John of Jerusalem as an almshouse and hospital for the sick.

In 1185 a leper hospital was founded in Waterford by the Benedictines. There was one leper in it as late as 1775.

In 1220 the Steyne Hospital in Dublin was founded by Archbishop de Lounders.

In 1232 we hear of the death of a man in Co. Galway, who kept "an open house for strangers, sick and the indigent, and also for the instruction of the people." (This was evidently of the nature of a hospital.)

In the year 1300 a court held at Drogheda fined a man six marks for an assault and half a mark for the physician. This appears to be a little bit of elementary justice that might very well be revived in our own day.

The year 1315 was distinguished by plagues of all sorts—black death, influenza, barking mania, etc.

1317—Famine is once again rife; bodies were dug up and "boiled in their skulls, women devoured their infants."

1320—A university was established in connection with St. Patrick's Cathedral, but it only lasted a short time.

1327—Smallpox.

1328—Influenza.

1331—Famine, partly relieved by an unusual occurrence, i.e., the catch of two hundred whales in Dublin Bay.

1344—Hospital of St. Stephen founded (now Mercers).

1348—There is a description in Clynes Annals of the Plague of that year which reads:—"That pestilence deprived of human inhabitants villages and cities, castles and towns, so that there was scarcely found a man to dwell therein, the pestilence was so contagious that whoever touched the sick or dead was immediately affected and died, and the penitent and confessor were carried together to the grave. . . . Many died of boils, and abscesses and pustules, on their skins or under the armpit, others died frantic with pain in the head and others spitting blood."

1370—Third great plague.

1403—Hospital for the sick existed in Duleek, Co. Meath.

1408—Hospital for lepers near Wexford.

1446—King Henry VI established by Royal Charter a Fraternity or Guild of Barbers. This was the first in the United Kingdom. The next was the London Barber Surgeons in 1461. Women could be admitted into the guild.

1450—Margret, daughter of the King of Ely, died of a sore of the breast. (? Cancer.)

1467—Leprosy Hospitals in Limerick and Tyrone.

1489—Plague so great that the dead were not buried.

1491—The great sweating sickness (scarce one per cent. of those afflicted recovered).

1504—Hospital for sick poor established in Kevin Street, Dublin.

1543—St. Bridget's Hospital, Galway, open for the sick poor.

1577—Queen Elizabeth's charter, uniting the surgeons and barbers.

1580—Corporation of Dublin granted a yearly stipend of £10 to Dr. Nicholas Hykie "to induce him to make their citie his abode." (Possibly the origin of post of city surgeon. Abolished 1823.)

1586—Famine, and human flesh eaten.

1591—Trinity College founded. During the next quarter of a century 109 persons graduated here, but only one in medicine.

1588—Potatoes were introduced into Ireland by Sir Walter Raleigh.

1602—A terrible famine followed the driving off of cattle and the destruction of crops by the English army, after which the officers of the said English army saw "the most horrible spectacle of three children eating their dead mother, upon whose flesh they had fed for twenty days past, roasting it continually by a slow fire."

It is also related that during this period "some old women near Newry used to make a fier in the fields, and divers little children driving out the cattle in the cold mornings and coming thither to warm them, were by them surprised, killed, and eaten." The old women were executed.

"No spectacle," we read in a letter from the Lord Deputy, "was more frequent in the ditches of the towns and especially in wasted countries than to see multitudes of these poor people dead, with their mouths all coloured green by eating nettles, dock, and all things they could rend up above ground."

In 1614 we come upon a somewhat less tragic letter. It is from Richard Stanihurst, and he is paying tribute to our national brew, potheen. Here is what he says of it: "It drieth up the breaking out of hands and killeth the flesh-worms if you wash your hands therewith. It scoureth all scurf and scalds from the head, being therewith daily washed before meals. Being moderately taken it sloweth age, it strengtheneth youth, it helpeth digestion, it cutteth phlegm, it abandoneth melancholie, it relieveth the heart, it lighteneth the mind, it quickeneth the spirits, it cureth hydropsies, it healeth the strangurie, it pounceth the stone, it expelleth the gravel, it puffeth away all ventocitie, it keepeth and preserveth the head from whirling, the eyes from dazzling, the tongue from lisping, the mouth from maffling, the teeth from chattering, and the throat from rattling. It keepeth the weasan from stifling, the stomach from wambling, the heart from swelling, the bellie from wirching, and the guts from rumbling, the hands from shivering, and the sinews from shrinking, the veins from crumpling, the bones from aching, and the marrow from soaking."

In 1628 a professorship of physick is founded in the university.

In 1652 Sir William Petty, Physician to the Army in Ireland, writes: "The rickets, a disease peculiar to young children, may also with good reason be reckoned among the reigning diseases of Ireland, although undescribed by any physician, either English or of any other nation, up to that period."

(The staple food of the Irish at that period was potatoes and milk.)

In 1654 the Fraternity of Physicians was established in Trinity Hall, and thirteen years later became the College of Physicians, Dublin. No person could now practise physick in or within seven miles radius of Dublin without their permission.

They also had power to fine and imprison. The College was to receive annually the bodies of six executed malefactors for anatomies. Each body cost £2 4s. 10d., of which nine shillings was given to the soldiers who watched, and three shillings to the said soldiers for drinks.

In 1659 Dr. John Stearne published some work in Dublin. He was the first President of the Fraternity of Physicians and also of the College of Physicians.

In 1665 the Great Plague of London reached Ireland.

In 1671 a doctor practising in Cork is accredited with the earliest book on midwifery in the English language, in the form of a dialogue between doctor and midwife.

In 1672 the computed population of Ireland was 1,100,000, of whom 800,000 were Irish, 200,000 were English, and 100,000 were Scotch.

In 1684 we come across the earliest Dublin bill of mortality.

It concerns 2,158 deaths :—527 fever, 322 consumption, 238 convulsions, 159 aged, 143 smallpox, 122 measles.

In the middle of this century (1649) Van Helmont visited Ireland, and said: "I remember that the chieftains of Ireland used each to give a piece of land to a 'healer' who lived with them; not one who had come back trained from the universities, but one who could really make sick people well. Each such healer, I may mention, has a book crammed with specific remedies bequeathed to him by his forefathers, accordingly he who inherits the book inherits the piece of land. The book describes the symptoms of ailments and the country remedies used for each, and the people of Ireland are cured more successfully when ill and have generally far better health than the people of Italy, who have a physician in every village."

Despite the fact that the disturbed condition of the country during the sixteenth, seventeenth, and eighteenth centuries impeded research or the progress of medical knowledge, that the population was poor and small, Dublin, the only large town, and Trinity College, the only seat of learning, things were not absolutely at a standstill. There were, however, very few books published in Ireland during the sixteenth century. An Irishman, Dr. Thady, practising in Switzerland, published a book in 1591.

A Dr. Niel O'Glacan (born in Donegal about the end of the sixteenth century), educated abroad, filled the chair of physic at Toulouse and Bologna, very important seats of learning. He was physician and Privy Counsellor to the King of France.

Dr. Bernard O'Connor, of Kerry, was doctor to the King of Poland about the end of the seventeenth century. He wrote several medical treatises.

One Dr. Dermod O'Mara, of Dublin, in the early part of the same century published work which was reprinted in London and Amsterdam.

In 1683 the Dublin Philosophical Society, founded by William Molyneux, established a laboratory, museum, and botanical garden. There were thirty-nine

members, including eleven medical men. It was discontinued in 1686 on account of troubled times.

After the extinction of this Society the Philosophical Transactions of the Royal Society of London were the chief medium for announcing new medical or scientific facts.

In these one Allen Mullen wrote papers on ovarian disease, scurvy, ague. He also dissected an elephant burnt to death in Dublin. He hailed from the North of Ireland.

In the early part of this century (1627) the Hon. Robert Boyle was born in Waterford. He was the most celebrated scientist of his time. He has been facetiously called the Father of Chemistry and the son of the Earl of Cork.

George Phillips, of Londonderry, published in 1691 "A problem concerning the gout."

Hans Sloane was born in 1660, too well known to need further mention.

This century saw a considerable number of Huguenot doctors settling in this country. There was also the Huguenot Lord Mayor of Cork, who made the famous bull that, in writing to the Lord Lieutenant at the time of the French landing in Bantry Bay, he did so "with a sword in one hand and a pistol in the other."

There was very little published during the first quarter of the eighteenth century. Sir Edward Barry, F.R.S., Professor of Physick in Trinity College, was a distinguished writer. In his treatise on consumption of the lungs he states that under certain conditions it is contagious.

Swift immortalized Dr. Arbuthnot when he wrote of him :

"Removed from kind Arbuthnot's aid,
Who knows his art but not his trade,
Preferring his regard for me
Before his credit or his fee."

One John Rogers, M.D., practising in Cork about this period, seems to have had very liberal ideas concerning stimulants to patients suffering from fever. To a young person he gave daily for a month four to six quarts of sack whey and two quarts of mulled canary.

In 1704 Sir Patrick Dunn left a bequest for the foundation of a medical school, and professorships were instituted. Some half-century later the professors were directed to lecture in Trinity College.

In 1725 five children were inoculated with smallpox in Dublin. These were the first in Ireland, and the matter is reported in one of Dr. Bryan Robinson's treatises.

In 1725 one David MacBride was born in Ballymoney. One of his books was translated into French, German, and Italian, and another into Latin. It is of him that Gilborne wrote :

"A celebrated writer is MacBride,
Great his merit, moderate his pride,
Cures all diseases that mankind befall,
Relieves the fair by rules obstetrical."

1728—Charitable Infirmary founded (now Jervis Street Hospital).

In 1730 Thomas Molyneux, former President of the College of Physicians and Professor of Physick in the University, was created baronet. He was the first medical man to receive this honour in Ireland. He has been called the Father of Irish Medicine. The first medical knight was Maurice Williams, M.D. (Padua), who died in 1753.

In 1734 John Ferguson, of Strabane, published an account of partial extirpation of the human spleen.

In 1739 was the great potato rot, and the same year we find it recorded that one J. Blow published such a convincing treatise on Mrs. Stephen's remedies for the stone, that Parliament was induced to buy her remedies.

1740-41—Fever, famine, dysentery, and, according to the chronicler, "want, and misery in every face, the rich unable to relieve the poor, the road spread with dead and dying, mankind of the colour of the weeds and nettles on which they feed."

In the early part of this century there were no regular schools of surgery except private ones.

Here is an advertisement from a weekly paper of the time :—

"A course of anatomy in all its branches will be given by James Brennan, M.D., at his house on Arran Quay, the operative part by Peter Brennan, Surgeon. Fees : Two Pistoles (P.=17/1). Accommodation at the same place on reasonable terms."

In 1750 Mr. George Daunt (Surgeon to Mercers) invented a lithotome and conductor. He submitted them to the Royal Academy of Surgery in Paris, and the Academicians reported that they were satisfied with them.

In 1751 the foundation stone of the Rotunda Hospital was laid.

In 1756 The Medico Philosophical Society was established, and some two hundred and thirty papers were read during its lifetime.

In 1757 H. M. Kennedy, M.D., from Monaghan, published a work on the chemical and medicinal properties of the sulphurous water at Aughnacloy.

At about the same period the Co. Limerick was fortunate in having for its surgeon one Silvester O'Halloran. He is described as a daring surgeon and a prolific writer, and as the "tall thin doctor in his quaint French dress, with his gold-headed cane, beautiful Parisian wig and cocked hat."

During the early part of this century the College of Physicians had examined the candidates for medical degrees in the University, but being requested by Trinity College to examine Ould, the man midwife, they refused to do so on the grounds that the practice of midwifery was derogatory to the dignity of the profession of medicine. The College of Physicians persisted in the refusal, so the University dispensed with their services and conferred the degree on him. Thus the College of Physicians, Ireland, ceased to be the examiners for the medical degree in the University. Ould's treatise on midwifery was long considered to be the best in the English language. On February 5, 1761, we read in the minutes of the College "That the College of Dublin in conferring a degree in physic on Fielding Ould, Licentiate in Midwifery, has treated this college with very great and undeserved

disrespect. That the connection subsisting between this body and the College of Dublin be dissolved."

There was apparently a good deal of feeling about man-midwifery in those days, and even half a century later, if one may judge from the tone of this editorial. It is written in what one might call a robust style, and is à propos of two medical tracts. "Of all the beastly, licentious, demoralizing, and mendacious productions of this age, those before us stand unparalleled—we shall not pollute our pages with the filthy and disgusting trash contained in these two miserable pamphlets. He (the author) is much more obscene and disgusting than the most infamous quack in this city of empirics."

There were several dining-clubs about this period, e.g., the Philo-Oesophogeals, The Phagocytes, The Rough and Readys, whose toast was "Here's to the Royal Rough and Ready moral courage buffers. May the D—— blow the roof off the house where we're not welcome—Our Club."

In 1767 puerperal fever for the first time visits the Rotunda.

During the years 1771-2-3, 28,650 emigrants sailed from ports in Northern Ireland for America. In the last of these sad years, one of Dublin's greatest sons was born. This is how the news was conveyed to Richard Colles, Stephen's Green.

The letter reads :—

"Dear Brother,

"My dear Mary at three o'clock this morning made me the joyful father of a fine little thing—one of the light infantry."

This was Abraham Colles, so well known to all of us. Of him I will say nothing, only read his last letter, so characteristic of the man—

"To Dr. Robert Harrison.

"My dear Robert,

"I think it may be of some benefit to ascertain by examination the exact seat and nature of my last disease. I am sure you will grant my request that you will see that this be carefully and early done. The parts to which I would direct attention are the heart and the lungs, a small hernia below the umbilicus, and a swelling in the right hypocondrium—I suspect that there is some connection between this swelling of the hypochondrium and the diseased state of the heart.

"Yours truly, dear Robert,

"A. Colles."

—and so passed on his way this great Irish surgeon, of whom it is recounted that he once inadvertently passed a bougie into the peritoneum of a patient and, turning to the class, said : "Gentlemen, it is no use mincing matters, I caused the patient's death."

1763—Foundation of the College of Surgeons.

In 1789 this College had for president one William Dease. It is related of him (although it is by no means certain that the story is true) that having accidently opened an artery in mistake for an abscess in a patient, he retired to his study and opened his own femoral artery.

In 1797 one William Hartigan was president of the same College. His greatest claim to notoriety consisted apparently in his great affection for cats, so that his tail pockets were full of them whenever he was making his rounds.

About the middle of this century these two notices appeared:—

"A reward is offered for the apprehension of a grave-digger who assisted at the theft of a body. The said Fox (grave-digger) is blind of one eye, a tall, thin young man, wore a blue coat and pewter buttons."

The second notice is concerning a sexton who had stolen a Mrs. Murphy's body—"he was above middle height with red hair and wore a black coat and breeches." From these facts we may deduce that dissection was not being altogether neglected.

In 1782 the Dublin General Dispensary was founded and lectures in medicine and surgery were delivered in it.

During the seven years preceding 1797, six hundred children suffering from venereal disease were admitted to the Foundling Hospital, and all except one perished.

1797—R. J. Graves was born. A story which well illustrates his character is worth recording. He was once in a terrible storm in a boat manned by Sicilians near Sicily. The sails were torn, pumps choked, vessel leaking, and the crew gave up in despair. Graves, lying ill down below, heard that they were going to take to the boat and abandon him and the one other passenger.

He seized an axe, told the captain that the boat could not live in such a sea, was answered with oaths that it did not concern him, as he was going to be left behind in any case. "Then," said he, "if that be the case, let us all be drowned together; it is a pity to part good company," and so saying, he destroyed the boat with the axe. The captain thought of rushing at him with his dagger, but thought better again. Graves took command, cut slices from his boots to repair the suckers of the pumps, the crew returned to duty, and the vessel was saved. He was a friend of Turner, the artist. In 1818-9-20 he was in foreign universities, and even spent ten days in an Austrian prison as a spy. He settled in Dublin, became physician to the Meath Hospital, and a world-renowned clinical teacher. He told his class that if they were ever at a loss for an epitaph for him, he gave them this: "He fed fever." His book of clinical lectures received the highest praise on the Continent, especially by the great Trousseau, who entreated his pupils to consider it "as their breviary."

1800—Mr. Creighton opened a dispensary for the infant poor and cowpock inoculation.

1802—Dominic Corrigan was born, another great clinician.

1804—Cork Street Fever Hospital was opened, and Mr. Crampton, afterwards Sir Philip Crampton, fitted up his stable and coachhouse as dissecting-room and lecture theatre. He was assisted by a clever resurrectionist, who led the parties of students in midnight raids.

There were other schools also, e.g., Kirby's. Kirby was fond of pistol-shooting

at corpses standing upright against a wall. The body was then examined and the bullet extracted.

1813—Great outbreak of typhus.

1817-19—Fever again.

1822—Fever, stalking on the heels of famine. £300,000 voted in Parliament for public works, such as road-making, to relieve distress.

1830—The Royal College of Surgeons in Ireland thought it degrading to dissect the bodies of malefactors, and asked to be relieved of the duty. In the universities abroad at this period there was not the same scarcity of bodies, as they could be obtained for a few francs, but in Ireland the only way was by theft.

In Dublin there were certain graveyards that lent themselves particularly to that, e.g., Bully's Acre, which was low-walled and lonely. There was free burying for the poor, and no one to watch the graves by night. The medical students with the sack-em-up men were usually able to steal with impunity. Grappling-irons were inserted under the coffin lid, and all pulled till the lid broke across, then the rope was fastened round the neck of the corpse, which was dragged to the surface. The grave-clothes were not taken away, as that was regarded as stealing. The body was conveyed in a covered car, but if that was wanting, it was occasionally dressed in an old suit, and, supported on either side by students, made to stagger along as if drunk. In encounters, firearms were sometimes used by medical students. Sack-em-up men have often been severely beaten and ducked in the Liffey, sometimes even beaten to death. Bodies used to be exported to Edinburgh, London, Glasgow, for dissection. Once the populace found a body ready to be exported, and the infuriated mob murdered a porter in the College of Surgeons.

In the same year, however, ninety-four gentlemen of good social position in Dublin signed the following:—"We whose names, etc., believing that the erroneous opinion and vulgar prejudice which prevail with regard to dissection will be most effectively removed by practical examples, bequeath our bodies for dissection."

A few years later an Act was passed remedying matters.

1831—Malcolm's History of Belfast states to be memorable in Belfast for the worst outbreak of fever since 1817. There were 1,200 admissions in eighteen months.

The following year asiatic cholera swept over the country.

1838—The sum of thirty pounds was paid for an ankylosed skeleton of a man who died in the Isle of Man. His body had been broken up by his relatives to prevent an exhibition of his remains, but at great personal risk the resurrectionists disinterred it and removed it to Dublin.

In 1841 thirty-seven workhouses were in operation, the following year ninety-two.

1845—Queen Victoria gave her assent to the founding of a number of Colleges in Ireland, including Queen's College, Belfast.

In 1848 we find Busche of Bremen writing: "Since the publication of Laennec's great work, which formed an epoch in medical history, many valuable treatises have appeared in France and England on the same subject, but none of them

can bear comparison with that which has lately emanated from the pen of Dr. William Stokes, of Dublin. This eulogy refers to Stokes's "Treatise on the Diagnosis and Treatment of Diseases of the Chest."

There is a story told of Stokes, that one morning as he was doing his hospital round, the porter told him that admission was being asked for by a miserable-looking man at the door. This was Mangan, the poet, who said to him, "You are the first who has spoken one kind word to me for many years."

He died a few days later. Stokes hurried away to Sir Fredric Burton (artist), and said to him: "Clarence Mangan is lying dead at the hospital. I want you to come and look at him, for you never saw anything so beautiful in your life." Sir Fredric came and made the sketch, now in the National Gallery.

In 1849 the principal proprietor of one of these private schools of anatomy in Dublin (Park Street), one Hugh Carlisle, became Professor of Anatomy to the new Queen's College, Belfast. His museum was sold to us, and the school closed.

It is interesting to know that at about this period all the more illiterate Irish students went to London for their examinations (as being easier than at home).

This explains why Sir Astley Cooper was able to tell the following story :—

He was examining an Irish candidate, and he asked him :

"What is a simple fracture?"

"A simple fracture is when a bone is broke."

"What is a compound fracture?"

"It's when it is all broke."

"What do you mean by all broke?"

"Oi mean broke into smithereens."

"And what is smithereens?"

He turned upon Sir Astley with an intense expression of sympathy and said: "You don't know what smithereens is? Then I give ye up."

It is nice to think that in spite of the curious impressions Sir Astley must have had of Irish students, we find him telling the Select Committee of the House of Commons in 1837—"There is a galaxy of talent in the City of Dublin."

It may be added that Sir Benjamin Brodie also, speaking before this Committee on the subject of anatomy, said with reference to the Dublin students: "I believe the majority of them are better anatomists than the English students."

In addition to the legitimate medical profession, Dublin as well as London suffered much from the ministrations of quacks.

As long ago as 1619 we have evidence of this. Here is a letter from one Dermod O'Meara to the Lord Deputy :—

"There are certainly more persons in Dublin at the present day practising the art of medicine than any other art, yet there are very few of them that have the qualifications which Hippocrates requires in a medical doctor. Here (Dublin) not only cursed mountebanks, ignorant barbers, and shameless quack compounders, but also persons of every other craft whatsoever, loose women and those of the dregs of humanity who are either tired of their own proper art and craft or inflamed

with an unbridled passion for making money, all have free leave to profane the holy temple of Aesculapious"—ending up with a plea for some legal procedure.

Apparently a similar state of affairs prevailed in London. One Dr. Ryan, editor of "London Medical and Surgical Journal" (1830), says: "They are allowed to flourish to an illimitable extent, and to destroy more than the sword, famine, and pestilence united."

In the middle of the last century Sir William Wilde, in his census reports, referring to the famine period (of 1846) says: "No such amount of suffering and misery has been chronicled in Irish history since the days of Edward Bruce, and yet, through all, the forebearance of the Irish peasantry and the calm submission with which they bore the deadliest ills that can fall on man, can scarcely be paralleled in the annals of any people."

He also tells us that during 1848-54 seven-and-a-half million pounds sterling were sent home by emigrants, "which affords," as he says, "so honourable a testimony of the self-denial and affectionate disposition of the Irish."

On July 3, 1847, out of a population of eight millions, nearly three millions received free food.

During the years 1846-49, inclusive, 17,494 persons died of starvation in Ireland. Famine and plague seemed to follow one another with cruel persistence, sapping the lifeblood of our people. One may readily ask how could medicine or research advance with such a tragic background.

Thirty-five famines were recorded in Ireland during the first one thousand years of the Christian era, and since that time another 149 have been chronicled. On our own Antrim Coast Road there is an inscription by Frances Anne Vane, Marchioness of Londonderry, who was "desirous of handing down to posterity an imperishable memorial of Ireland's affliction in the years 1846-47, unparalleled in the annals of human suffering."

The story of plague is equally if not more terrible. Between 1000-1665 there are one hundred and twelve plagues recorded. The second yellow plague (middle of the seventh century) left only every third person alive in Ireland.

One or two diseases that afflicted us appear to be extinct now, e.g., barking mania of the fourteenth century, and the king's game in 1361 (like dancing mania).

Also the Sudor Anglicus or sweating sickness of 1491, 1528, 1543, 1713, does not appear to have its counterpart in any modern disease.

Time marches on. In 1863 we learn that the Royal College of Surgeons in Ireland became possessed of a large microscope and a set of microscopical preparations for the sum of £140.

1867 found the British Medical Association in Dublin, and Syme of Edinburgh and Bowman of London both received honorary fellowships.

Half a century ago finds the British Medical Association meeting there again, and it is pleasant to learn that the College held a conversazione to which "more than seven hundred ladies and gentlemen were invited. Music, the electric light, and numerous exhibitions of microscopy and scientific articles, were employed successfully to entertain the assembly."

Of modern Irish medicine I will say nothing. The task would be too great, and events and personalities are still too close for the perspective to be accurate. Ireland has long ceased to be a country with only one large town and one university. Our hospitals are probably the equal of any in the world. Our physicians and surgeons can hold their heads very high. Nevertheless, it is sometimes good to look back, for Irish medicine has a great tradition behind it, a tradition that should inspire both pride and gratitude. Pride to think that we still carry the torch that burned so brightly with Diancecht and Trosdale, and gratitude to those who kept its light undimmed through centuries of pestilence, famine, and war.

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Speech Therapy

By Miss M. L. Hayward, a.s.s.t.

It is only during recent years that speech therapy has become known, although for many years the treatment of speech disorders has been carried out by persons interested in the subject, and it is they who have laid the foundations of and built up what is now a recognised profession.

Very often the work of an elocutionist is confused with that of a speech therapist, but there is little similarity between the two. Certainly both deal with speech, but whereas the elocutionist seeks to improve and beautify normal speech, the work of the therapist is confined to treating defective speech in order that it may become normal. In short, the therapist leaves off where the elocutionist begins. Apart from this, the personalities required in both types of work are totally different; that of the elocutionist must be evident, while that of the therapist must be sunk, in the interest of her patient.

The objectives of speech therapy are primarily to make defective speech normal and intelligible to others, and secondarily to make it easy for the patient, so that it is with these objectives in mind that the therapist works.

Both children and adults are treated, and each patient is recognised as an individual, having individual problems and requiring individual attention.

The types of cases treatable by speech therapy are as follows :—

Stammering, lalling, aphonia and dysphonia.
Cleft palate, tongue tie, lisping, nasality due to adenoids or paralysed palate.
Motor and sensory aphasias.
Alexia and agraphia.

Speech defects resulting from :—

Mental retardation (very little can be done if the intelligence is very low).
Abiotrophies of the motor speech centre.
Localised cerebral agenesis.
Chorea.
Post encephalitis lethargica.
Bulbar weakness but not bulpar palsy.

The percentage of speech defects in school children is five per cent., one per cent. being comprised of stammerers.

Before attempting to give the causes, prognosis and treatment of the more usual of these speech defects, I should like to give you the general principle on which treatment of all defects is based.

Speech is an outlet for the emotions, and if this outlet is blocked, as it is when a speech disorder arises, the result is serious. The feeling of frustration which the patient experiences when his words will not flow freely or cannot be understood by others, must at times be almost overpowering. Then there comes to the patient a realisation of the difference between his own speech and that of others, and this

leads to a feeling of inferiority. The longer the disorder remains untreated, the more complicated will the patient's emotions become, until finally as much psychological re-education as actual speech treatment will be needed. Then again, a number of cases of speech disorders arise as the result of some emotional disorder and the cause of this must naturally be removed before a cure can be effected; thus it is seen that treatment is not confined solely to the speech, but to the whole personality, and often includes re-education of parents and teachers.

Success of treatment depends very largely upon the co-operation received from the patient, from his family and friends, and if he is a school child, from his teachers. Without this co-operation the therapist is severely handicapped, and many a failure to effect a cure has been traced to lack of it. In some cases the defect acts as a defence-mechanism, and this the patient is naturally loath to give up.

I should like to mention here that I have been very surprised by the amount of corporal punishment which is practised in the elementary schools in Belfast. The children tell me that they get slapped on the hand with a cane, not only for their misdeeds, but for failing to get a sum right or to spell correctly. In case this was exaggeration on their part I visited one of the larger schools, where a teacher admitted that there was far too much slapping in the school. It is obvious the effect that this practice has on the children. It is not only unnecessary and unfair, but definitely harmful. The children become terrified of their teachers, and have a deep-seated fear of school and everything connected with school. I believe that two or three cases of stammering with which I am dealing at present are affected by this; if it is not actually the cause of their stammer, it is a seriously aggravating factor, and until the matter is put right their progress is greatly hindered.

Another important factor concerning children with speech defects is their general health. They must be in good health and well nourished before relief or a cure can be effected. If a child is suffering pain or discomfort he cannot concentrate during his treatment nor give his energies to following out instructions, and when he is at home he will be too tired and miserable to practise his exercises, etc. Even if he is not actually in pain but is run down, he will be listless and fretful, and cannot make the effort necessary to improve his speech. This is often the case with children who come from poor homes and are undernourished. Any physical disorder, however small, is bound to affect the mental health of a child. So it is necessary that any child with a speech disorder should be under the care of a doctor.

The method of introducing play into treatment to make it more interesting, is invaluable, and this method is one which is used a great deal in speech therapy. It is not to be expected that young children will concentrate on exercises designed to improve their velar action: that is, action of the soft palate, or to enable them to gain better control of their tongue. However, as these exercises are often necessary, they are disguised in simple games which the children enjoy.

Persuasion and suggestion also play a large part in the treatment of speech disorders as they do in all curative work.

It is often necessary to condition the environment, where this appears to be the main cause of an emotional disturbance. Although this usually only means talking to parents or school teachers in an attempt to show them in what way they are hindering the progress of the patient, it is sometimes serious enough to warrant complete removal to other and more congenial surroundings. For this purpose children are occasionally sent to a convalescent home for a month or two, or their parents are advised to send the child to a new school. Some people argue that this step is little better than useless, as the return to the old environment is often necessary, and the child encounters the same difficulties as before. However, during his absence he will have gained confidence and a new outlook, both of which enable him to withstand the demands made upon his emotional life.

Although all movements require a certain amount of muscular tension, excess tension causes difficulty and straining of what should be natural and easy movements. Thus when a patient suffering from a speech defect becomes very tense through anxiety and effort to speak correctly, speech becomes more difficult, the patient becomes more tense, and so on. To counteract this, general relaxation is given; this applies mostly to cases of stammering, but where excessive tension is noted in other cases, it is also practised.

As the majority of cases of speech disorders are found among the working classes, it is only natural that strong dialects are encountered, and the therapist is often asked, "Do you teach the children to speak standard English when attempting to cure their defect, or do you allow them to retain their own pronunciation?" The answer is that the dialect is retained; the reason for this is simple, for it is easy to imagine the type of reception a young child from the Falls Road would get were he to return to his playmates minus the defect but plus a standard English accent.

There are various types of stammering which are classified according to their causation.

The true stammer is believed to have a congenital predisposition to stammering. When a child is young there may be no evidence of the weakness, but later, a shock, an accident, an uncongenial environment, or even the mere developing of speech, may act as a secondary cause, and the stammer will make its appearance. This theory is upheld by the fact that when the emotional factor has been removed a residual tic often remains.

The psychasthenic stammer, better termed the "psychological speech hold-up," originates from some emotional disturbance, and the pre-disposition does not seem to exist. This type of stammer is characterised by an inability to commence speaking, but when once started the patient is able to continue smoothly and naturally.

The pseudo stammer is an outcome of a physical condition, and is associated with such conditions as chorea, diaphragmatic tic and nervous breakdown. Although this stammer may disappear as the physical condition rights itself, it is always best to give treatment, as it alleviates the patient's anxiety and prevents the habit of stammering from forming.

The light stammer is the one which causes people to believe that if the person is left alone he will "grow out of it." It usually starts in early childhood, but given favourable conditions such as a happy home life, healthy curriculum, and the minimum of excitement, the stammer will disappear without actual speech treatment. However, a certain amount of treatment is advisable, in order to prevent the disorder becoming serious.

Some schools of thought believe in the theory that left-handedness may affect the speech adversely—that is when the naturally left-handed person has been persuaded or forced to use his right hand. A great deal of research work has yet to be done in this direction. Suffice it to say that some very successful results have been obtained by re-educating a stammerer to using his left hand when there has been a change over in his childhood. A history of left-handedness is always taken into account and every stammerer is tested for laterality.

There is no one cure for stammering. Treatment as a rule consists of :—Removal of the cause (if it can be discovered, and this is often difficult); physical relaxation and psychological and speech re-education.

If there are body tics, such as facial ones, they are treated by rhythmical movements; in the case of diaphragmatic tics, breathing exercises are given, but it must be carefully explained to the patient that these are in no way connected with his stammer.

Successful results are often not obtained until treatment has been carried on for as long as one or two years, but there are cases which can be cured in as short a time as four or five months.

In cases of cleft palate the services of a speech therapist are requried after the surgeon and dentist have accomplished their treatment. However perfect the result of an operation may be, the child cannot be expected to start talking normally straight away. If the operation has been performed after the child's speech has been fully established, the bad habit of speech which it had acquired will still remain. If, however, the speech has not been fully established before the operation, the muscles of the velum will need a great deal of exercising before normal velar action is obtained, and this velar action is essential to normal speech. Although no child can really be taught before the age of five, the way to normal speech can be paved from the age of two or three, when simple exercises for tongue, lips, velum and breath direction can be given in the form of simple games. Lip exercises are especially needed when a hare-lip is present, for difficulty with labials is then encountered. After correct breath direction has been gained, denasalisation of vowels and consonants takes place; small words are then attempted, later short phrases, and, finally, reading and conversation.

Some good results have been obtained with patients who are fitted with obturators, as well as those who have been operated upon. On the whole, the treatment of cleft palate can be said to be successful, for the patient will benefit to a greater or lesser degree.

Lalling is a stage in the development of every child, baby talk, which fails to adjust itself properly and is extended beyond the normal time. The child with

lalling may appear to be more backward than he really is, for sometimes the condition is so bad that the speech is almost unintelligible, but progress is seldom difficult. This defect may be due to some emotional disturbance, which may also show symptoms in behaviour disorders, sleep-walking, and enuresis; on the other hand, it may simply be due to neglect on the part of the parents when speech is undergoing development.

When treatment is commenced, an analysis of every sound is taken, and those which are absent or badly produced are worked on. When each faulty sound is produced correctly, both before and after vowels, one-syllable words containing the sound are attempted, and they are gradually introduced into general conversation. Length of treatment varies according to the severity of the case, but usually it takes a few months—of course, improvement will be noticed long before this, but in order that speech may become unconscious once more, a great deal of practice in conversation is necessary.

When tongue tie has been operated upon, stretching exercises for the tongue are advisable in order to prevent the frenum becoming short again. These exercises are surprisingly successful, and are also used when the frenum is extra short but an operation does not appear to be really necessary—and an operation for this is always best avoided.

In working with aphasic patients the method is that of the mental cycle or of association, and it is found to be invaluable. A chain of associations is set up between the sight of an object, the sound of its name, the written symbol, the actual writing of the name, and, if possible, the feel of the object.

In congenital auditory imperception, or congenital word deafness, the child is able to hear perfectly, but is unable to understand what he hears. Speech is of the idioglossic type, and the mentality of the child is not impaired. If the child does not have the correct treatment, his mental development may, however, become retarded, as the result of being unable to pick up information by listening to conversation around him, as most children do. Unfortunately, however, children with this defect are often diagnosed as imbeciles; the progress in most cases is good. Treatment consists, as in all aphasic conditions, of association, but, in particular, association between the sight of an object and the sound of its name. In severe cases it is necessary to commence with single letters, and the alphabet should be learnt phonetically. The reason being that this enables the patient, when seeing a word written down, to analyse the sound contents, and from this deduce what the sound of the whole word will be.

In acquired word deafness, the treatment is the same as that used in the congenital type.

If the patient is alexic, he must concentrate particularly on the written symbol in conjunction with the sound for which it stands—if he is agraphic, on the movements involved in writing the name, and so on. In cases of motor aphasia, tongue and lip exercises are also used.

Congenital aphasics are much easier to treat than acquired adult aphasics, for they have never known what it was like to have the ability to, in the case of the

motor aphasic, speak. In the adult one has to fight all the time against the patient's anxiety.

Speech disorders of hysterical origin, for example, aphonia and psychic deafness, require the usual psychological treatment as well as speech treatment. When the cause of the primary fear has been investigated, the speech therapist gives the patient exercises which are used in organic disorders of the same type, as this helps the patient to feel that something is being done. Strong suggestion is given throughout the treatment.

Case Histories.

Stammering.

Case 1—Girl aged 17.—Stammer was of the psychasthenic type, and the patient's whole demeanour was indicative of emotional instability. There were head and diaphragmatic tics, while all bodily movements were quick and jerky. Patient lacked confidence in herself to a marked degree, and was very timid. Although she wished to take her part in everyday social activities she was too timid to do so. She was a domestic servant, and her mistress spoke highly of her work and general character; patient was anxious to be a children's nurse, as she was very fond of children.

The family history was bad. The mother had committed suicide, and patient, who was then only twelve years old, was the first to find her, with her head in the gas oven. Previously to this home life had been most unhappy, due to frequent quarrels between the parents. After her mother's death, patient lived with her father until two years previous to her first visit to the clinic, when he died of pneumonia. Since that time she had been living with her brother and sister-in-law and their two children. She was not very happy, as her sister-in-law was not good tempered.

The patient had had no illnesses, but had a weak heart. There was no history or nervous disease or left-handedness in the family. Treatment consisted of physical relaxation, which greatly reduced the jerky movements of the body. The patient attended a psychiatrist for five weeks—one visit a week. After this her emotional condition was much better, but she still required a certain amount of psychological re-education. Breathing exercises were given, and these, together with the psychological treatment, cured the diaphragmatic tic. Speech re-education helped her to regain the lost rhythm of her speech. Within two months of the commencement of treatment, the patient was attending a girls' club for social evenings and swimming lessons, and began visiting friends and relations, whom she had not seen for years. At the end of four months she was ready for discharge from the clinic, although she continued to come for some weeks after this, so that a check on her progress could be kept.

Case 2—Boy aged 10.—Congenital motor aphasia and tongue tie.

The birth had been an instrumental one, and for a fortnight afterwards there was paralysis of the right side.

The tongue tie was not severe, but the patient was unable to raise it high enough for the production of t, d, l, etc., and both this and the poor movement of the

tongue due to the aphasic condition, made speech very difficult. Lip movement was also very weak, and while speaking they were hardly ever opened beyond the minimum required for breath escape.

The result was that speech was mumbling and indistinct, and the absence of certain consonants combined with poor vowel production made it at times almost unintelligible.

Tongue exercises were given for stretching the frenum, and for gaining control of the tongue. At the end of five weeks the patient was able to produce the consonants t, d, l, n, and had learnt to open his mouth well—improvement in vowel sounds was noted almost immediately.

When the boy failed to produce a word correctly, he was made to look at it written down, analyse the sound contents, and so get it firmly fixed in his mind. As he was extremely intelligent and eager to co-operate, progress was fairly rapid for the type of case, and at the end of four months it was easy to understand the speech, although he still needed a lot of practice before it became quite easy for him, and would probably attend the clinic for a year or more.

Cleft Palate.

Case 3—Girl aged 29.—Complete cleft and hare lip.

An obturator had been fitted two years previous to her first visit to the clinic, and she had had a little treatment for her speech in her home town. She left home, however, and so came to the hospital for treatment.

The obturator was found to be inadequate, and a new one was fitted, which extended over a larger area.

Although she had been practising breathing exercises for some time, these were continued.

Her labials were very weak, so that lip exercises were given, and in a few weeks time improvement was shown. Her voice was very soft and low, so she was told to concentrate on getting her voice well forward, instead of back in the throat.

The last time I saw her she had been attending the clinic for about four months, and she was managing to make herself understood fairly easily.

Cleft Palate.

Case 4—Girl aged 9.—Cleft soft palate, which had been repaired in early childhood.

Patient attended the clinic weekly for about fifteen months, during which time she was given the usual cleft palate treatment. At the end of the fifteen months her speech was normal, except for a scarcely noticeable nasal tone. This is an exceptionally good case and was due chiefly to excellent surgical treatment.

Localised Cerebral Agenesis.

Boy aged five. Had never spoken at all, although he occasionally made attempts to do so. Youngest of nine children. Birth was normal, and there was no paralysis following it. Had had whooping cough when three years old. No operations.

Patient had severe behaviour disorders, such as biting, kicking, and hitting people, and was always up to mischief. He refused to try to speak during treatment at first, although he often made a great deal of noise by yelling. His hearing was

good, as was his understanding of speech. He could write well, and could show what different objects were used for, by gesture. His intelligence, judged by performance tests, was above the average.

Treatment was very uphill work, and no progress was made for some months. Then gradually, through play, he attempted single sounds, and tongue and lip exercises. Practically all treatment was given through play, as his concentration was poor. Also, his activities during play acted as an outlet for his emotions. At the end of two years he was able to name everyday objects, his own clothes, the parts of the body, and was attempting short sentences. His behaviour disorders gradually disappeared as his speech improved, so it seems that they were due chiefly to lack of the best emotional outlet, speech.

It will be seen that the student who wishes to take up speech therapy must have a knowledge of such subjects as anatomy, physiology, general and child psychology, psychopathology, and neurology.

The syllabus of the British Society of Speech Therapists requires a two years' full-time training in speech therapy and allied subjects. There are at present only two centres where conditions are fulfilled, namely :—

(1) The West End Hospital for Nervous Diseases, London; and

(2) A course in connection with the National Hospital for Nervous Diseases, London.

There is only one diploma for speech therapy, namely, the A.S.S.T., and is open to all entrants.

A year's diploma course is also taken at the University of London, in English phonetics.

REVIEW

GARDINER'S HANDBOOK OF SKIN DISEASES. Fourth Edition. Revised by John Kinnear, M.D., M.R.C.P.(Ed.). 1939. Edinburgh : E. & S. Livingstone. Pp. 256. Price 10s. 6d. net.

THE first impressions created by this small textbook are the excellent manner in which the publishers have produced it, and the abundance of coloured plates and half-tone illustrations—sixteen of the former and seventy of the latter.

Although the book is short and concise, the descriptions given of the various diseases are good and adequate for an elementary textbook, and the illustrations are of a high order.

Here and there we find examples of looseness of expression which, although irritating, do not detract from the practical value of the instruction offered, e.g. (1) "the *other* foolish virgin," when, in fact, the folly of one virgin is being contrasted with the wisdom of the other; (2) "the use of a preparation . . . *have* sometimes been successful"; (3) "the interval between *each* period."

Certain views are expressed on oral organotherapy which will be by no means generally accepted, as, for example, when it is stated that "recent research has shown" that the effect of calcium lactate on chilblains is intensified by the simultaneous administrations of *parathyroid,* 1/10 grain twice daily, and, in the treatment of senile pruritus, when it is stated that small doses of thyroid, *ovarian* or *orchitic* extract may be used.

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Diseases of Animals Communicable to Man*

By JAMES McALLAN, M.A., B.SC., M.R.C.V.S.
Chief Veterinary Officer, Ministry of Agriculture, Northern Ireland

IN this paper I propose to deal with some of the diseases of animals which are communicable to man, to discuss some of the analogies and differences shown in these diseases, and the way in which they affect the different species. A study of the different ways in which a disease affects man with his highly developed thinking powers, and the various species of animals which have no thought for the morrow, but live only short, sometimes very short lives, whose highest ambition may be a meal, an automatic sleep and the excitement of an occasional fight or love affair, is well worth while, and produces points of value and interest. That is well recognised since comparative medicine is now a definite study. Through it our sphere of knowledge of disease as a whole has been definitely enlarged. By comparing the symptomatology, the sites especially affected in diseased conditions, immunity or susceptibility, in comparative medicine and pathology undoubted progress in the fight against disease has been made.

I do not, however, propose to go into what might be termed the truly pathological or medical aspect of the disease problem. I propose more to deal with the better known diseases of animals communicable to man, first in so far as they manifest themselves in domesticated animals, how we try to control these diseases for the sake of the animals themselves, and the means we adopt to protect man against possible infection.

The following diseases, indisputably communicable to man, will be dealt with: tuberculosis, anthrax, glanders, rabies, foot and mouth disease, brucellosis, salmonella infections, and certain parasitic conditions in man in which parasites require an animal host in order to complete their life cycle.

TUBERCULOSIS.

To none of us here is it necessary to emphasise the importance to man and to animals of that old and terribly powerful enemy, tuberculosis. Gladly, however, has it to be recorded that its ravages in man are lessening and that the mortality from the disease has been declining for many years. Is the assumption that we are at present at the end of a protracted epidemic of tuberculosis correct? There seems to be considerable evidence for that assumption. Tuberculosis as a disease stands in a category by itself, as it not only spreads from man to man, from animal to animal, and from animal to man, but in the last-mentioned case it does its deadly work so insidiously through milk, that by-product of the cow so necessary —nowadays, should I add?—as a food for children; and even when the animal is dead it is still a danger, although to a much lesser extent, in that man eats meat. It is not necessary for me, in such a company, to emphasise the figures which tell the toll of bovine tuberculosis on human beings. The careful researches

* A paper read before the Ulster Medical Society on 9th February, 1939.

of Griffith, Munro, and others have long been familiar to us, and the deductions which have been made from their work. These men have demonstrated beyond dispute the sorry position that the bovine type of the bacillus is responsible for a considerable percentage of tuberculosis mortality among children, particularly, I regret to say, in Scotland. And what of the incidence of the disease in bovines? It is estimated, and we have no reason to doubt the estimate, that forty per cent. of all dairy cows in Britain and Ireland would react to the tuberculin test, but the percentage of animals so reacting in each herd naturally varies within wide limits. To say that forty per cent. of all cattle would react to the tuberculin test does not mean that forty per cent. of all dairy cows are necessarily dangerous to man in that they are secreting tubercle bacilli in their milk. Those actually dangerous animals with tuberculosis of the udder do not amount to 0.5 per cent., and every year now sees that figure reduced owing to the real but belated efforts that are now being made to tackle the disease in bovines with the ultimate aim of eradication always before us. That is a very big and costly problem.

Tuberculosis in cattle is usually of a chronic nature, and as a rule is slowly progressive. The reason for this is probably the natural resistance shown by cattle against the disease, and the strenuous fight that they put up against its spread in the body. Still, any adverse conditions such as sudden changes of weather, exposure, and the physiological strain of parturition, are liable to break down the natural resistance in the body, so that latent lesions of the disease may rapidly become acute. The disease is one of advancing age, and the incidence is much higher in females than in males, but this is accountable for by the fact that the mode of life and the housing of dairy cows together in large numbers are not always of the best. In pigs the disease has a tendency to become more rapidly generalised, and for some unaccountable reason disease of the vertebræ is much more frequently found than in bovines. The disease in the horse is comparatively rare, and has a tendency to seat itself in the cervical vertebræ.

How are we tackling the disease in animals? Under the Diseases of Animals Acts there is an Order known as the Tuberculosis Order. That Order is operative in Britain and in Ireland, with this difference, that, in Northern Ireland the Order has for some time been worked by the Central Authority, i.e., by Government officers, and only recently by the Central Authority in Great Britain. Briefly, the Order provides for the slaughter with compensation to the owner of bovine animals showing definite clinical symptoms of the disease. Thousands of pounds have been spent, and thousands of animals have been slaughtered since the Order came into force after the war, with, I regret to say, doubtful results as far as reducing the incidence of the disease in our herds is concerned. All that the Order has done, I am afraid, is to remove from our herds animals which were a danger to others in the herd, and have, alas! not always been removed before that danger has been done. When we had to depend on stock-owners reporting suspected cases we could not look for great results. The Tuberculosis Order could not be looked upon, until recently at any rate, as anything but a public health measure, a complement to various Milk and Dairy Acts. It never could have been a real measure for the

eradication of tuberculosis from our herds. It but gave a certain amount of protection to milk consumers.

What of this disease in Northern Ireland? The Tuberculosis Order, as I said, is now worked centrally, and experience in its working since the Government Veterinary Service took it over certainly indicates that we are now making progress. Routine dairy inspection by the Ministry of Agriculture veterinary officers of all dairy stock in the country has marked a distinct advance in that we can claim an obvious improvement in the type of cow in our dairy herds, and a very marked reduction year by year in the number of cows taken under the Tuberculosis Order as being clinically affected with the disease. This routine dairy inspection, not always blessed by the medical profession, with the improved housing which we are able to get, has, to my mind, definitely brought about a reduction in the incidence of the disease in our herds. We are able to get rid of a greater number of dangerous animals before they do the maximum damage to their fellows.

It might not be out of place here to emphasise the possibility of milk becoming infected from a sufferer from tuberculosis who may be engaged in dairy work. Such a possibility should, of course, be entirely the medical man's responsibility. He should stop such workers from participating in milk production.

As is known, too, we have a number of Grade A herds in Northern Ireland which supply milk from cows which have passed the tuberculin test carried out by the Ministry of Agriculture's veterinary officers. With a view to getting some idea of the extent of the disease in ordinary dairy herds in Northern Ireland I have from time to time arranged for the tuberculin testing of some such ordinary herds, and the results have been most gratifying and, indeed, surprising. We now have, in addition to the definitely Grade A herds, a number of Grade C herds, i.e., as far as price of milk is concerned, which we are keeping on a tubercle-free basis, and will, therefore, form a nucleus from which we can start the greater effort at eradication of the disease from all herds which will have to follow when finances permit. We have got the owners of these ordinary herds interested, and our hope is that, however slowly, the interest aroused will become infectious, and that we shall be able to make some progress along voluntary lines that will be really valuable. What may help in that is the knowledge that owners of tuberculin-tested herds are convinced that from the point of view of general health and ordinary ailments their herds are altogether improved, for it is a fact that herds free from tuberculosis are less prone to the lesser everyday troubles. Great Britain, with its recently started State Veterinary Service, will, I am sure, soon be making big strides towards what is its ultimate aim, the eradication of tuberculosis. The task of eradication in Great Britain is not an easy one, since, from a farming point of view, Great Britain is a congested country, and one in which the disease has existed for years unknown. In countries like Canada and the United States of America, where eradication of tuberculosis in bovines has made extraordinary strides, the job was easy, simply because of the "newness" of these countries. Centuries of intensive farming and stock-rearing in Britain have given tuberculosis

in our herds a hold that only time, great perseverance and much money will break down. We in Northern Ireland will in time, of course, have to follow Great Britain's lead in measures of eradication, otherwise our valuable export trade in live stock will suffer. It might not be known to you all that the tuberculin test for cattle which is now the official one is the double-intradermal, i.e., one injection, followed by a second at forty-eight hours with a final reading at the seventy-second hour. The test, after experience in reading it, is, undoubtedly, an improvement on the old subcutaneous test, which was, of course, a temperature reaction.

Of the dangers to man from eating tuberculous meat, I need not say much, since I do not think they are very great. By that I do not suggest that we need take no precautions against it, or that we should relish such meat, but cooking, of course, as practised in this part of the world at any rate, makes the risk from eating a piece of meat unknowingly infected with disease almost negligible.

If I were really intending to start a good argument here, now is the time, I think, by my asserting under this heading of tuberculosis that I do not believe in the pasteurisation of milk; but I have more sense than to do so! It is for you medical men to decide as to whether it should be made compulsory or not, but as a general observer and as one who has had some experience of pasteurising plants and their working, I would venture to say that I should like to see pasteurising plants more nearly foolproof, and that pasteurisation should be definitely efficient and controlled, and I should also like to see plans formulated for the supply of all consumers—people in small villages as well as in large cities—with the pasteurised article if pasteurisation ever becomes compulsory. When reading medical journals on this vexed question I am struck by the lack of practical outlook on the difficulties of ensuring a complete supply of pasteurised milk to the whole country. It is not enough merely to advocate its use. How its use can be made universal has also got to be considered. And I would like you medical men to realise that the introduction of compulsory pasteurisation does not mean the end of the fight against bovine tuberculosis. That disease has to be fought for the sake of the stock itself, and not merely for the sake of protecting mere man against possible infection from a bovine source. The financial loss to stock-owners alone justifies the most strenuous campaign being waged against the disease.

Anthrax.

Tuberculosis is an endlessly interesting subject, but I make an end of it now and pass on to anthrax, another deadly disease of animals that affects man.

The disease in animals is a septicæmic which results in the sudden death of the animal—bovine, pig, and horse being chiefly affected. It is, perhaps, worth my while dealing with this disease if only for the reason that recently it has been making itself fairly prominent in Northern Ireland. Last year we had quite a spate of cases in different parts of the country, whereas during the previous five years we have had one case altogether. I cannot emphasise its importance to man better than by stating now that one of the cases with which the veterinary staff dealt came to our notice first of all by a medical officer reporting anthrax in two butchers.

These men had dressed an animal which died in emergency on a farm—no thought of anthrax arising till the butchers developed malignant pustule. Both recovered, and from what I hear are not likely to try conclusions with an animal in extremis!

The more I see of anthrax the more peculiar it gets, and the less it seems to behave "according to the book." In my student days the danger of the spread of the disease was so emphasised that we could not believe that one animal dying of the disease on a farm did not mean further deaths. Such I find is not the case. The disease in animals, as I have said, is a deadly septicæmia. Blood from the natural orifices at death is almost a diagnostic symptom, and yet in spite of that, and even after splashing of blood from an animal which has had its throat cut to save its life—as the saying is!—further cases on the same farm are rare if the carcase is dealt with by burning or deep burial and thorough disinfection of the premises is carried out. Carelessness, ignorance, or non-reporting of the disease will, of course, result in further cases, as we know to our cost, but I have little fear if a case is reported to us at once of a second case arising from the first—that in spite of the persistence of the anthrax spore.

Another peculiar thing about anthrax in animals is that generally only one animal is affected on a farm. The source of infection in practically every case is probably a feeding-stuff of foreign origin from countries where the disease is endemic. I need not explain that actual proof against a feeding-stuff per se would be most difficult to obtain. To search for B anthracis in even one one-cwt. bag of meal would be comparable to "the needle and the haystack." Yet widespread infection by a feeding-stuff seems a rare occurrence. I am of opinion that it is not so much a case of actual and definite contamination of a foodstuff itself, cakes or meal, that brings anthrax to us, as infected hides, or other infected material, on board ship coming in contact with the feeding-stuffs, and contaminating them to such a degree that only one animal is unlucky enough to get a fatal dose.

It might not be out of place to give a warning here that we may expect periodic cases of anthrax in Northern Ireland, since a change has come about recently in farming practice here in that our farmers are now feeding and finishing cattle for the butcher where they were not wont to do so. Fattening cattle means more imported feeding-stuffs—more imported feeding-stuffs means more risk of anthrax.

Anthrax is dealt with under the Diseases of Animals Acts. It is the duty of the owner to report to the police any animal which he suspects of having died of the disease, and that means any animal that has died suddenly from any unexplainable reason. A veterinary officer visits, makes the diagnosis on microscopical examination, and if he confirms anthrax, the animal is immediately destroyed either by burning or deep burial in lime. Thorough disinfection of the premises is carried out, and the local medical officer of health is notified, so that any human beings who may have run the risk of infection can be examined. The remaining stock is kept under observation for ten days, and if no further sign of the disease appears the premises are freed from the restrictions imposed.

I am confident that the cases of anthrax we have had in Northern Ireland have done good, in that I feel all suspected cases will now be reported to us. As a

matter of fact, we have been inundated with reports of suspected cases owing to the publicity given to our few cases.

Amongst human beings likely to become affected with anthrax these are chiefly butchers, farmers, veterinary surgeons, and hide workers. Cases must be known to you all—at least by repute—of workers in hide merchants' premises who have contracted malignant pustule through handling contaminated hides.

Glanders.

Glanders is a disease affecting the horse that as far as this country and Britain are concerned is now extinct. The last case in Ireland was in 1910. The veterinary profession's great weapon, slaughter, plus that valuable diagnostic agent mallein, must get the credit for that happy position. In 1901 some 2,370 horses were destroyed for glanders in Great Britain. In 1920, after the sale of some 150,000 army horses and mules which had been gathered together from various countries, only twenty-two animals had to be destroyed for the disease. The disease in horses takes the form of a lymphangitis, generally of the limbs, although the lungs and respiratory passages can become affected. A unilateral thick discharge from one nostril would arouse suspicion if glanders were about.

Mallein, as a diagnostic agent, has been of invaluable service in attaining the eradication of the disease. By its aid glanders was kept completely under control in British horses during the war, and I believe no case of glanders in man was reported. In the South African war the story was different, where glanders was rife, and a source of endless anxiety both to veterinary and medical officers.

I know a member of my own profession, a research worker in India, who contracted the disease, and survived only after an incredible number of operations, which left him with only one arm. The disease, I believe, is difficult to diagnose in man, and would naturally be more difficult now since it would be the last disease suspected.

Rabies.

Rabies is another of the diseases of animals which the veterinary profession in Great Britain can pride itself on having stamped out, and is able by legislative measures almost surely to keep out of the country. The disease is prevalent in the East, and all animals can contract the disease. It is spread, of course, from animal to animal by bites. Cases of the disease have not occurred in Britain since 1922, when the disease was introduced by a dog smuggled into the country in an aeroplane. The culprit naturally was not blessed! Prompt measures soon controlled the threatened outbreak, although dog lovers do not like these methods of control, since it means a general muzzling order for all dogs in the area which the rabid dog may have visited in its wanderings. Gentle-hearted ladies naturally look upon such treatment for their pets as a form of cruelty devised by ignorant and hard-hearted officials. A description of, or the sight of, a case of hydrophobia might make them change their opinions! Similarly our regulations to prevent the introduction of the disease from abroad are deemed desperately harsh by the ignorant—the quarantining for six months of every dog imported from abroad.

That is a regulation most rigidly enforced, and king and commoner have to recognise it. The period of six months was fixed since it is considered a safe one from the point of view of incubation, although it is really an arbitrary one in that the period of incubation might be longer. I myself diagnosed clinically a case of suspected rabies in a dog after its six months' period of incubation was up, but fortunately the dog, a female, when just due for release, developed amorous propensities, and the owner decided to leave her pet till she got over these propensities. Death was the final release to this animal, which showed the dumb form of rabies, and not the more easily diagnosed furious type. Final and definite diagnosis is, of course, made by a microscopical examination of the brain for the presence of negri bodies.

Foot and Mouth Disease.

Of foot and mouth disease I do not intend to say much since, although it is communicable to man, it is but rarely so. Yet it is a disease of such importance to the community that it might not be uninteresting to you if I said a little about it. As I said, it but rarely affects man, although cases have been reported in children who drank the milk of affected cows, and I knew one veterinary surgeon who contracted the disease in the course of his duty. I may say human beings develop only the mouth lesions, for as the name of the disease indicates, lesions actually occur in animals on the foot and in the mouth. The disease is caused by an ultra-microscopic and filtrable virus, by the most virulent of viruses, and at least three viruses have been typed. That but emphasises the difficulties we are up against in any vaccination against immunity that may be attempted, since any one virus does not protect against the others, and one attack of the disease does not give a permanent immunity. The disease is characterised by an intense fever, and by the development of vesicles in the mouth and on the feet. It spreads with great rapidity from animal to animal, and if uncontrolled would soon spread from one end of the country to the other. Last year on the Continent, where the so-called slaughter policy is not adopted, the spread was terrific and completely disorganising to the countries in which the disease was prevalent. Great Britain and Ireland have always stood by the slaughter policy, i.e., the immediate slaughter of all animals affected with the disease, and of all in-contacts, and the disposal by destruction of the carcases. That policy is often scoffed at by the ignorant. What would happen if we abandoned it? Disease raging from end to end of the country, a scarcity of milk and meat, since cows go completely off milking, and flesh simply melts off affected animals, and the end of our very valuable export trade in pedigree stock, for we must not forget that British pedigree stock is the foundation and the source of replenishment of stock all over the world. Uncontrolled foot and mouth disease would soon put an end to that.

To prevent the introduction of the disease into Britain we have, of course, many regulations varying from the prohibition of the importation of bovines from abroad, or carcases from the Continent, and even of hay and straw from countries where the disease exists. Everything that can be done, short of bringing trade to a

standstill, is done to keep out the disease. Yet England gets periodic outbreaks of foot and mouth disease, but these are dealt with so energetically that a real epidemic seldom occurs. We, in Ireland, are even more stringent in our prohibitions than Great Britain. It is only with reluctance that we take stock from England even. It might not be out of place to say that the reason for our strictness is that one case of foot and mouth disease here means the complete cessation for a time of our export trade in live stock, and you can readily visualise what that means.

Undulant Fever.

I now turn to what we might term the latest disease for which the cow has been blamed—but justly this time, of course. Gone are the days when the cow was the source of most of the ills of man, diphtheria, scarlet fever, etc. To brucellosis—the undulant fever of man—she has definitely to plead guilty. Contagious abortion is probably the greatest scourge in the live stock industry to-day. The losses from it are tremendous, and probably twenty per cent. of cattle are affected. The causal organism, brucella abortus, invades the placenta of the pregnant bovine, and brings about the expulsion of the foetus before it is viable. There is seldom any sign of illness in the animal actually, and the abortion might escape notice altogether if the animal is at grass.

Great prominence has recently and justifiably been given to the question of "undulant fever" in man and its relationship to animal sources of infection. "Malta fever" is primarily an infection of goats caused by brucella melitensis, whilst contagious abortion is primarily a disease of cattle and of pigs caused by brucella abortus. The organisms causing these diseases give rise to secondary infections in man, the symptoms being characterised by a protracted, febrile condition with a tendency to recur, although the symptoms in man are really so indefinite that differential diagnosis is almost impossible without the aid of serological methods. Only recently has the relationship between contagious abortion of cattle and of pigs to infections in man been recognised. "Undulant fever" is the term almost universally adopted at the present day to describe human infections with either of the three strains of organism in the goat, bovine or pig. These three strains are probably descendants from a common strain.

Cases of "undulant fever" in man are now being reported with comparative frequency from different countries, and one is undoubtedly justified in saying that ignorance of the disease and failure to diagnose it, and not its non-existence, account for the paucity of recorded cases in the past, and that the mere recognition of the disease, as a disease, in man has led to the more frequent recording of cases in every country.

Workers amongst animals and those handling meat are probably most frequently victims of the disease, at least in America, but infection is undoubtedly acquired through drinking infected milk, and the chances of that can be gauged since probably twenty-five per cent. of all raw milks contain B. abortus. That makes me, a veterinary surgeon, ask these questions of you—Why is it that with abortion in cattle so rife and milk so generally infected, undulant fever is so rare? And

why are cases in children so rare? Has the organism a variable virulence in Great Britain? Is the undulant fever of Denmark, Germany, and the U.S.A. due to the porcine strain of the brucella which may be more virulent to man and is, as far as research has gone, rare in Great Britain?

Much has yet to be done to clear up such questions.

Are we doing anything to combat the disease in cattle? Very little, I must admit. Research has been going on into the disease for years, and vaccines galore, dead and alive, have been tried with varying but certainly no permanent success. The only satisfactory way to deal with the disease if it is well established in a herd is to let it take its course, since the abortion leads to immunity, and the chances of an animal aborting a second time are rare. That does not help the purchaser of a reacting animal, of course. Spread of the disease is continued by the unfortunate introduction of such an animal into a clean herd. Were the disease one that really caused illness in an animal more could be done in the way of its control. No seller of an animal that has aborted is likely to advertise the fact. The purchaser will soon know all about it.

Salmonella Infections.

Salmonella infections causing outbreaks of food poisoning are not common. Most are probably the result of contamination from human sources, although one authority on food poisoning has suggested, and with good reason, that the cow is possibly more frequently to blame than we think. I can agree with that authority, for I myself was instrumental in tracing three outbreaks of food poisoning in Scotland to an individual cow in each outbreak. In one case 497 persons suffered, and an organism identical in every way with those of the stock strain of B. enteriditis and with the strains of the organism isolated from the patients and the milk as supplied to the patient were grown from the udder and flesh of the cow. In the other two cases B. enteriditis gærtner and B. ærtrycke were isolated from the intestines of the guilty cows, and typed against the organisms isolated from the patients.

I mention these cases which have, of course, been recorded elsewhere, since they are unusual but worthy of bearing in mind in the elucidation of food poisoning outbreaks. Medical officers of health should not overlook the cow herself.

Parasitic Diseases.

I shall now deal briefly with parasitic diseases which fortunately have not an immense importance in this country. T. Solium and T. Saginata are but rarely found in this country now. In the case of T. Solium, it is practically non-existent under a water sewage system. It will be realised, however, that in the absence of such a system where a pig-feeder is the host of this worm, his infection, though not serious to himself, provides a serious economic problem in the pig. So rarely, however, is the cysticercus cellulosæ found now in this country that in meat inspection it is seldom examined for. The same can be said of cysticercus bovis, the intermediate stage of T. Saginata of man, probably the commonest tape worm of man in this country. Yet it is the case that so-called measly pork is more common than measly beef.

Hydatid disease in which man acts the part of intermediate host to a very minute tape worm of the dog is comparatively common in some countries. In the Shetland Isles, for instance, where the dog is very much one of the family in confined accommodation, hydatid disease is, I believe, not rare. I read once that in Glasgow hospitals in abdominal troubles in natives of Shetland the possibility of hydatid disease is always borne in mind.

The obvious methods of control are the destruction of all organs in slaughter-houses showing the least sign of hydatid disease. Dogs should be excluded from slaughter-houses, and anthelminthic treatment of dogs should be adopted where possible.

Trichinosis, which has an ancient history going back probably to the Hebrew prohibition of pork, promulgated by Moses about 1500 B.C., is continually being recorded in other countries where the adequate cooking which is the rule in this country does not obtain. A recent annotation in the "Lancet" dealt with the examination of three hundred human diaphragms, of which forty-one were positive for trichinosis. Fortunately we have no trichinosis problem in this country and, as I said, our system of cooking has to be thanked for that.

Recent Fractures of the Upper End of the Tibia

By R. J. W. WITHERS, M.D., M.CH., F.R.C.S.

Surgical Registrar, Royal Victoria Hospital; Hon. Assistant Surgeon, Ulster Hospital for Women and Children, Belfast

THE importance of fractures at the upper end of the tibia has only recently been brought to the notice of the medical profession, mainly through the startling increase in road accidents in the past ten years.

Their importance is due to the fact that they all involve the knee-joint, and they present to-day one of the biggest groups of knee-joint injuries necessitating in-patient hospital treatment.

In a consecutive series of 106 cases of injury round the knee-joint which I had the opportunity of treating whilst in the Manchester Municipal Service, thirty-one cases were fractures of the tibial head; i.e., twenty-eight per cent. of the whole. In the same series there were :—

21 cases of semilunar cartilage injury.
20 ,, ,, fractured patella.
9 ,, ,, tears of the tibial collateral ligament.
11 ,, ,, osteo-arthritic hæmarthrosis.
5 ,, ,, fracture of the lower end of the femur into the joint.
2 ,, ,, ruptured cruciate ligaments.
1 ,, ,, osteo-chondritis dissecans.
1 ,, ,, traumatised pedunculated pad of fat.
5 ,, which did not fit in with any well-defined lesion.

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Whilst tibial head fractures may be produced by indirect violence, such as falls on the feet, much more commonly they occur as a result of direct violence. Fractures of this latter type have become so commonly associated with motor-car injury, that Cotton and Berg in 1929 applied to them the expressive name of "bumper and fender fractures." They defined it as a crushing injury produced by abduction of the leg forcibly enough to smash the external tuberosity of the tibia against the fulcrum of the lateral condyle of the femur.

A large percentage of their cases was due to the impact of the front car bumper against the lower leg of pedestrians, and usually the lateral tuberosity of the tibia was the part fractured.

In 1935, Clarke, of Manchester, before the Royal Society of Medicine, stated that two-thirds of the cases he had examined were produced by collisions between motor-cars and pedestrians.

Within the past five years, however, attempts to improve riding comfort and to increase the speed of cars have led to a lowering of the height of the chasses, as a result of which the "bumper injury" more frequently involves the tibial shaft than the upper end. This is well borne out in the present series.

Moore, in 1937, analysed a series of road accidents occurring along the Southend by-pass road near Ilford, and showed that the upper end of the tibia was seldom injured, but that severe comminuted fractures of the mid-shaft of the tibia and fibula were increasingly common.

Dyas and Goren, of Chicago, in a recent paper on bumper and fender fractures, have emphasised the significance of the lowering of the height of car bumpers, and point out that they will strike the legs of pedestrians some distance below the tibial head.

I have measured the height of the front bumper in thirteen different types of car in common use to-day, and find that the average is 15¼ inches. This varies from 13½in. in the Standard 10 to 17in. in the Wolseley 18, Morris 12, and Morris 8.

I have also measured the height above the ground of the upper end of the tibial head when ordinary outdoor shoes are worn, and find that it is 19½in. in males (average height of the residents of the Royal Victoria Hospital), and 18½in. in females (average height of the nurses of the Royal Victoria Hospital).

It would, therefore, appear that the car bumpers will strike the legs of pedestrians between three and four inches below the upper end of the tibial head, thus sparing the tuberosities and injuring the upper part of the shaft of the bone.

In the present series of thirty-one cases, whilst direct violence was the cause in all, only eleven, or thirty per cent., were the result of the bumper injury. Of these eleven, seven, or 63 per cent., occurred in females. The remaining cases (twenty) were due to:—

Falling down steps	5 cases
Works injuries	9 cases
Kick by horse	2 cases

Striking knee against running-board of tramcar	2 cases
Kick during football match	1 case
Fall from chair on to kitchen floor	1 case

Fractures of the tibial head are best classified in the following three groups :—

1. Fractures of the intercondylic eminence (sometimes called tibial spine).
2. Fractures of the tibial tubercle.
3. Fractures of the tibial tuberosities.

Fractures of the Intercondylic Eminence.

There were four cases in this group; all were males, with an average age of 28 years. The fractured portion of the eminence was found on X-ray examination to be displaced upwards and tilted backwards into the joint, and formed an appreciable bony block to full extension of the joint. There was an associated hæmarthrosis in each case. The treatment employed was :—

1. Aspiration of the hæmarthrosis and injection of 10 c.c. two per cent. novocaine into the joint.
2. Replacement of the bony fragment into the intercondylic groove by forcibly extending the knee-joint under anæsthesia.
3. Immobilisation of the limb in a long leg plaster of paris cast for seven weeks.

There were no complications in these cases, and the average period of disability was fourteen weeks, at the end of which time the knees had almost full range of movement and were completely stable, and painless.

Fractures of the Tibial Tubercle.

There was only one case of this type of fracture in the present series. It occurred in a boy of twenty-two years who had sustained a direct kick on the upper end of the tibia during a football match.

The fractured portion of bone was triangular in shape, and consisted of the front part of the intercondylic eminence along with the anterior aspect of the mid-portion of the tibial head containing the tubercle. This portion of bone had been displaced upwards by the action of the ligamentum patellæ. Hæmarthrosis was again present.

The treatment employed was practically the same as for the first group, but the limb was kept immobile in plaster of paris for twelve weeks. Almost complete reduction of the fractured portion was obtained, but when last seen, this case had still some limitation of full extension. I feel sure that, had an operative reposition of the fragment been carried out, an excellent result would have been the outcome.

In this connection, Garrison, of Chicago, reported a similar case last year, in which he replaced the fragment by an open operation, and held it in position by the use of a few "periosteal sutures." His patient obtained an excellent result with full range of movement without pain nine months after the original injury.

Fractures of the Tibial Tuberosities.

There were twenty-six cases in this group; twelve were males and fourteen females. The average age was 52 years—much older than in the other two groups. The youngest was 45, and the oldest 65 years.

In practically every series reported, fractures of the external tuberosity constituted by far the greatest proportion of the cases. In this series, nineteen (seventy-three per cent.) were fractures of the external tuberosity, six of the internal tuberosity, and one was of both tuberosities.

In fifty-three per cent. of the external tuberosity fractures there was some form of associated injury to the upper end of the fibula, as follows :—

Eight cases of fractured neck of fibula.

One case of fractured head of fibula.

One case of dislocation of the superior tibio-fibular joint.

By the aid of X-rays these tuberosity fractures can be classified according to the following simple scheme :—

1. *Depressed Fractures.*—Seventeen cases, or sixty-five per cent.—these can be subdivided into two groups :—

(a) Simple depressed, i.e., where the tuberosity has been displaced mainly in a downward direction (six cases).

(b) Depressed and comminuted, i.e., where the depressed tuberosity has been crushed into several small pieces (eleven cases).

2. *Non-depressed Fractures.*—Nine cases or thirty-four per cent.—these again can be subdivided into :—

(a) Spreading fracture, i.e., where the tuberosity has been displaced, mainly in a lateral direction (five cases).

(b) Chip or sheer-off fracture, i.e., where a small piece of bone has been detached from the edge of the tuberosity (four cases, and all lateral tuberosity).

Every case had an associated hæmarthrosis; the average amount of bloody fluid aspirated from the joint on the first attempt was sixty c.c.

Following aspiration of the knee-joint and injection of novocaine into it, the most characteristic finding in these cases was lateral instability of the joint associated with valgus deviation in cases of lateral tuberosity fracture, and varus in those in which the medial tuberosity had been broken.

The treatment employed was as follows :—

1. Aspiration of the hæmarthrosis, repeated several times if necessary.

2. Axis traction of the limb on a Thomas' splint for a period of seven to ten days. This allows the swelling around the fracture to subside, and also helps to correct the valgus or varus deformity of the joint.

3. As soon as the swelling had disappeared, the tibial head was strongly compressed by the application of Bohler's "redresseur" in an attempt to mould the tibial plateau so as to produce a joint surface congruous with the corresponding femoral condyle. Great care must be exercised, in the use of the redresseur, to avoid injury to soft parts, especially the common peroneal nerve—in one case in the present series this nerve was injured.

4. A well-fitting plaster cast was then applied, forcing the knee into the maximum varus position in lateral tuberosity cases; in medial tuberosity cases the maximum valgus position was aimed at. The cast was always padded on the outer side of

the ankle, the inner side of the knee, and the outer side of the thigh—in lateral tuberosity cases. In medial tuberosity cases the reverse parts were padded. The cast extended from the upper third of the thigh to the toes.

5. The limb was immobilised in this plaster for twelve weeks, and following its removal an elastic knee-support was worn for a period of six months.

6. In depressed fractures (group 1) this non-operative line of treatment never seemed to produce any appreciable change in the X-ray appearance of the fractured tuberosity, and so in them a steel pin was inserted below the fractured area, having first removed a window in the plaster over the affected part. By using the pin as a lever, an attempt was made to prise the depressed bone upwards into its normal position.

In following up this short series of twenty-six cases, it is evident that very unsatisfactory results have been obtained, and in ten only could a good result be claimed. In these ten cases there was little or no disablement, the patients could walk well and without pain, there was no valgus or varus deformity of the knee-joint, and they were all able to return to their previous normal occupation.

In sixty per cent, therefore, of tuberosity fractures treated in a conservative manner, bad results were seen.

I have examined carefully the follow-up X-rays of these cases, from the time of the commencement of their treatment until their discharge from the fracture clinic, and there is little doubt that good results only occurred in those cases in which the reduction of the fracture led to the re-formation of a proper tibial articular plateau. A plateau incongruous with the femoral condyle invariably was associated with genu valgum or varum and lateral instability of the knee-joint.

In the earlier cases, particularly where there was marked comminution, subsequent X-rays showed that much less correction resulted from the redresseur pressure than one had felt confident had been accomplished. In this connection it was also evident that tuberosities, insufficiently elevated during the early stages of treatment, appeared in four to six months' time more depressed than originally. Patchy sclerosis throughout the bone was in these cases also a feature, and probably was due to the reaction set up by the presence, in the cancellous bone, of the cracked and crushed-in articular cartilage.

In the bad-result cases of this series the following complications were seen :—

1. Instability of the knee-joint with subsequent osteo-arthritis.
2. Meta-traumatic œdema.
3. Recurrent attacks of "synovitis."
4. Common peroneal nerve paralysis.

Whilst Eliason and Ebeling, Forrester and Cotton and Berg, and others have strongly advocated non-operative treatment, everyone must agree that a good anatomic restoration of the tibial articular plateau is of prime importance, provided this can be carried out without undue trauma to the surrounding structures.

The present series indicates that whilst non-operative treatment will give good results in the non-depressed group of cases (group 2), some efficient operative

method for the elevation of the depressed part in group 1 types is absolutely essential.

The method of elevation employed by Bohler did not, in this series, give satisfaction.

Dickson, of Cleveland, has described an operative approach to the whole problem, which in his hands has produced markedly improved results. He elevates each little depressed portion of the tuberosity by using a special dull, flat periosteal elevator, and pays special attention to the crushed-in articular cartilage, so that the contour of the whole tuberosity is re-established. He states that this is by no means as easy as it sounds, and restoring a smoothe plateau requires meticulous care and patience. The defect underneath the cartilage after elevation is filled in with small bone chips and cancellous tissue obtained from the tibia at a lower level.

Kindersley described a method in which he compressed the tibial head by encircling it with a plain rubber bandage, each successive turn being made tighter than the one before. He then struck the bandaged area with a heavy mallet in order to "shake" the fragments into position, and thus allow the circular compressive force of the bandage to impact the fracture. This method would appear to have a place in the treatment of the spreading types of fracture (group 2a), but it is very doubtful just how it would be of use in the depressed and comminuted varieties.

Summary.

1. A short series of fractures of the upper end of the tibia is analysed, with special reference to the "bumper injury," and the results obtained from conservative treatment.

2. Fractures of the inter-condylic eminence, of the tibial tubercle, and non-depressed fractures of the tuberosities, may be expected to give good results with non-operative methods of treatment.

3. Depressed fractures of the tuberosities, especially if comminuted, should be operated on and some mechanical form of elevation, of the depressed tuberosity and especially of the articular cartilage, carried out.

Non-operative treatment of this type in the present series has given very bad results indeed.

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The Role of the Orthoptist in the Treatment of Squint

By Miss D. D. Rankin, B.Sc.(Lond.)

Orthoptist, Belfast Ophthalmic Hospital; Benn Ulster Eye, Ear, and Throat Hospital; Ulster Hospital for Children and Women

Many people are aware that the old idea in the treatment of squinting children was to prescribe glasses as required, and then, if the appearance of the eyes did not improve, wait until at least fifteen or sixteen years of age before operating. This postponement of operation until early adult life was considered essential, so that it could be performed without general anæsthesia, and with the co-operation of the patient, a more satisfactory cosmetic result obtained.

These methods, though satisfactory in certain instances, were far from being so in the vast majority of cases. This will be obvious when one considers certain factors in connection with squint.

In early childhood, it is probable that double vision accompanies most cases of squint. In the average case, however, the disadvantages of double vision lead to the suppression of the images seen by the deviating eye. This suppression is psychological, but ultimately the functioning of the eye becomes impaired, and the visual acuity of the squinting eye deteriorates rapidly.

Happily the danger of loss of vision in connection with monolateral squint is being more and more realised, and by forcing the squinting eye into use, through occlusion of the good eye, a great deal has been done lately to overcome and prevent it. However, unless these squinting children receive still further attention, once occlusion of the good eye is discontinued, they rapidly re-suppress, and amblyopia becomes established once more. *One still* encounters far too large a number of young adults who only possess 6/60ths vision or less, in the squinting eye.

Other more obvious defects, in the old method of treating squint, are realised when one considers the disadvantages incurred by a child who is forced to attend school, suffering from a deformity. This invites taunts from his school-fellows, and, through lack of binocular vision, places the child in a disadvantageous position where games, studies, and later employment are concerned.

Many people, including Claude Worth, realised these deficiencies, and felt that squinting children should receive much more attention. It is, however, chiefly to Miss M. C. Maddox, who worked in conjunction with her father, Dr. E. E. Maddox, F.R.C.S.Edin., that we owe the modern methods employed in the treatment of squint. These methods are now known as "orthoptic treatment."

Briefly, this treatment takes the form of regular binocular stimulation, on specially-constructed instruments, and by means of it, it is possible to obtain as an ultimate result in cases of squint, not only alignment of the visual axes, but single binocular vision and full co-ordination between the eyes.

"Orthoptic treatment" was started by Miss Maddox in London in 1919. She was subsequently appointed as the first orthoptist, at the Royal Westminster

Ophthalmic Hospital, London. This was the first hospital to make an appointment of the kind. Other hospitals soon followed this example, so that many in all parts of the British Isles now possess orthoptic departments. In addition, schools at which students may train as orthoptists exist at the Royal Westminster Ophthalmic Hospital, Central London Ophthalmic Hospital, in Reading, and in Birmingham.

I should like to emphasise two points. Firstly, that orthoptic treatment is not in any way to be regarded as a substitute for the wearing of glasses, nor for operation, though in certain cases it will cure a squint without resort to operative interference. It is to be looked upon as supplementary to these methods.

Secondly, it is futile to attempt to treat all cases of squint by orthoptics. For instance, the following are factors which make it impossible to obtain a cure: intractable amblyopia; paralysis of one or more of the extrinsic ocular muscles; complete lack of the "fusion faculty," that is a positive force, or demand on the part of the human brain for single binocular vision.

Orthoptic treatment should only be carried out by a fully-qualified person. In order to safeguard patients, an Orthoptic Board has been formed, which is a sub-committee of the Council of British Ophthalmologists. The duties of this Board include regulation of the training, and qualifications of orthoptists.

To qualify as an orthoptist, the student must be of matriculation standard of education, and must study for at least a year at a training school approved of by the Orthoptic Board. A surgeon from the hospital to which the school is attached must be a member of the Orthoptic Board.

Training includes an intensive course in practical orthoptics, optics, anatomy, and physiology of the eye. When training is completed, the student must satisfy the examiners, selected by the Orthoptic Board, as to his or her efficiency. Before a diploma is granted, the orthoptist must sign an agreement stating that she will treat only cases referred to her by ophthalmologists, and that she will not prescribe glasses. As an orthoptist works in such close conjunction with ophthalmic surgeons, it is not essential for he or she to possess a medical degree.

Within the past few months, the British Orthoptic Society has been formed, and is recognised by the Orthoptic Board. The objects of this Society are to provide a means of circulating knowledge for the improvement of orthoptics, and to promote conferences, public meetings, and lectures in connection with orthoptic work.

Having qualified, the orthoptist is in a position to assist ophthalmic surgeons, both by establishing a private practice to which he or she can refer cases for private treatment, and in organising orthoptic departments at the various hospitals.

The orthoptic department is devoted entirely to the examination and treatment of squint and latent squint. Here the orthoptist works and conducts at least two, but preferably three or more, clinics per week.

When the squinting child first comes to hospital, he is referred to the ophthalmic surgeon in the extern department. The visual acuity of each eye is determined. The surgeon examines the eye, and subsequently prescribes glasses to correct any existing refractive error.

When glasses are obtained, the visual acuity of each eye is again determined. If the vision in the squinting eye is defective, steps are taken immediately to improve it. As I have explained, the squinting eye is forced into use by completely occluding the sound eye. During the period of occlusion, the child reports to the extern department for supervision by the surgeon at regular intervals, varying from one to four weeks.

When the visual acuity of the poorer eye reaches at least 6/18ths, the surgeon refers the child to the orthoptist for a report regarding the state of binocular vision.

When the child comes to the orthoptic department, a detailed history of the case is tabulated, indicating duration of squint, mode of onset, attributed cause and family history. Next the orthoptist subjects the child's eyes to a detailed examination, carrying out specialised tests on the various orthoptic instruments. This examination cannot, as a rule, be performed in less than twenty minutes, especially when dealing with a very young child. If the child is shy or nervous, insufficient information may be obtained, and a second examination at a later date prove to be necessary.

The aim of the orthoptist is to determine whether or not binocular vision exists, and, if so, of what grade. The first grade is indicated by the power to perceive coloured lights simultaneously with both eyes at a distance of five metres; the second, to perceive dissimilar pictures simultaneously when presented to both eyes at the angle of squint; the third, to fuse flat pictures; and the fourth or highest grade, by the ability to perceive depth, that is stereoscopic vision. As the examination is carried out, the orthoptist prepares a report for the surgeon, and later discusses the case with him. She gives her suggestions as to future treatment, suitability for training, either without or combined with operation, and the estimated number of treatments. If the child is suitable for training, this is arranged at the earliest opportunity. If too young, he is re-referred to the extern department, and continues to attend there, for supervision by the surgeon, until old enough to be placed on the waiting list of the orthoptic department.

It is difficult to lay down any hard and fast rule as to the age at which to begin training, because so much depends upon the ability of the child to co-operate. I find that an average child can co-operate usefully at the age of about five years. It is essential in every case to begin treatment as soon as possible, because suppression and other complications become increasingly difficult to correct the longer that a squint has been in existence.

When the child begins treatment, he must attend regularly at least twice, but preferably three times, per week, each treatment lasting twenty minutes to half an hour, and in addition carry out exercises at home.

At first the treatment is designed to overcome suppression and establish binocular vision, so that the child recognises diplopia, or double vision. Its second aim is to strengthen the desire for fusion, and finally use fusion amplitude to converge or diverge the eyes to the straight position, either with or without operation, so

that the double images are brought within reach of fusion. In cases requiring operation, it is desirable that a child has a course of pre-operative treatment, and obtains some idea of fusion, so that when the dressings are removed by the surgeon, single binocular vision can be established by immediate post-operative orthoptic treatment. Due to the fact that the orthoptist can give such detailed measurements of the angle of squint, operation can be performed under general anæsthesia, and, therefore, in children as young as six years of age.

The average period of training lasts three to four months, but this naturally varies greatly according to the type of squint, the intelligence of the child, and the co-operation obtained from the parents in respect to regular attendance and supervision of home exercises. During the period of training, of either a private or hospital case, reports are sent to the surgeon at regular intervals.

It is disappointing for parents, that throughout the early stages of treatment there is little or no improvement in the appearance of the squint. It must be realised, however, that each stage has to be slowly and carefully carried out if a permanent cure is to be effected. It is useless to hurry on to fusion and to straightening the visual axes, if the habit of suppressing one eye still persists.

When a patient is discharged from the orthoptic department he must continue home exercises, and report at regular intervals to prevent any possible relapse, until adult life is reached. It is interesting to note in connection with the history of squint that a fright of some description is generally the attributed cause. In treating these children, I find that the majority are of the same type, that is, highly intelligent, and rather nervous. They are often fonder of reading and indoor hobbies than outdoor games. These characteristics may often be due to their being poor at games, not only because of their lack of binocular vision, but also because of a lack of co-ordination in other movements, apart from those of their eyes. It is interesting to note in this respect that mothers often remark that much of the child's apparent clumsiness disappears after a course of orthoptic treatment.

The fact that these children are of an enquiring nature is often one of the underlying causes of squint, where a high degree of hypermetropia or long sight exists. When the child begins to look at near objects, he finds it an effort to retain binocular vision, consequently he uses one eye only, the other is suppressed and a convergent squint results. In many of these cases the squint apparently disappears when glasses are obtained. The majority of such cases, however, are found upon detailed examination to have defective binocular vision, or to squint again immediately the glasses are removed. These cases should not be deprived of the advantages of orthoptic treatment. When the child is taught how to know when he squints and how to control the deviation, he can attain a high grade of single binocular vision, both with and without glasses.

Until now I have been dealing only with the rôle of the orthoptist in the treatment of manifest squint. I should like to point out the importance of orthoptic treatment in connection with latent squint or heterophoria. In spite of wearing the required glasses, patients suffering from latent squint often experience headaches and other symptoms of eye-strain, especially when tired or ill. These symptoms are due to

the fact that the extrinsic muscles of the eyes are not in equilibrium, so that the eyes tend to deviate from their normal relative directions. These patients have a strong desire to maintain single binocular, but in order to do so must overcome this deviation, so that an abnormal effort has to be made by the ocular muscles. Orthoptic treatment improves the muscle tone and balance. By treating the underlying cause of the symptoms, there results more permanent and satisfactory relief than is obtained by merely incorporating prisms in the spectacles.

Orthoptic treatment has also been proved to be of great assistance to candidates for the various services, particularly the Royal Air Force, in enabling them to attain the high standard of muscle balance necessary for their work.

Adults form the majority of cases suffering from latent squint. After several attendances, they can carry out home exercises which are sufficient to maintain and further the improvement, so that the frequency of their visits can be reduced. This, however, is not the case in dealing with children suffering from manifest squint.

A child naturally cannot grasp so quickly what is required of him, and though also doing homework, must attend frequently and regularly for treatment and supervision by the orthoptist. This is one of the reasons why I strongly recommend that a child be taken to a doctor as soon as a squint is noticed. If the child receives attention at once, amblyopia can be prevented, or quickly overcome, so that the visual acuity of the squinting eye is sufficiently high to allow him to begin orthoptic treatment as soon as he is old enough to co-operate. Thus he is well advanced before the strain of studies in higher classes begins.

In conclusion, I should like to say how grateful I am to ophthalmologists in Belfast for their interest and co-operation in orthoptic work. I feel, however, that in future to increase the benefit to be derived from this branch of ophthalmology, that not only must there be co-operation between the ophthalmic surgeon and the orthoptist, but also a sympathetic understanding on the part of the family doctor, the school authorities, and the parents.

REVIEW

ALCOHOL AND HUMAN LIFE. By Courtenay C. Weeks, M.R.C.S., L.R.C.P. Foreword by Sir Thomas Barlow, Bart. London: H. K. Lewis & Co., Ltd. Pp. 455. Price 6s. net.

THE subject dealt with is one which seldom receives the attention its importance demands, and the author has rendered a valuable service in presenting a simple, yet scientific, account of the social, physiological, and therapeutical aspects of the alcohol question.

The book is divided into fifteen chapters, of which three should be of special interest to the medical profession, namely, "Alcohol in Medical Treatment," "Alcohol in Relation to Road Traffic," and "Narcotics and Narcosis."

Police surgeons and other medical men who have from time to time to give evidence in the law courts in cases of motorists charged with "being under the influence of drink," will find here much valuable food for thought.

Both teetotalers and non-abstainers will probably agree that the author has succeeded in dealing with his subject in a dispassionate manner, and without introducing evidence of personal bias.

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Colour Photography as Applied to Medicine with Special Reference to the Finlay Colour Process

By THOMAS C. DODDS, F.R.P.S.,

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THERE can be no doubt that colour photographs are infinitely more valuable in the teaching of medicine than those in monochrome. This is made obvious by the increasing number of colour illustrations to be seen in the present-day medical textbooks and by the number of lantern slides in natural colour used by lecturers. There are many instances where colour photographs are essential to illustrate an important point, such as colouration of the skin, etc., in clinical cases. In photomicrography also colour is often necessary to bring out certain elements in relief to others. A branch of medicine where colour photography has recently been found to be of great value is in medical legal work, where colour photographs of fibres, hairs, blood-stains, etc., are invaluable.

Colour photography itself is by no means a recent introduction; the first colour process was patented by MacDonough of America in the year 1892. This was followed about two years later by Professor Joly's process. Although MacDonough was first to patent his process, Joly of Dublin was first to produce results. These processes were followed by others, and in 1910 the Finlay Process was produced by the late Mr. Finlay at Wandsworth, under the name of the Thames Plate. The reseau was composed of red and green circles, with the remaining area blue, unlike the modern Finlay screen, the reseau of which is of regular dot formation.

There are several colour processes, and these can be divided into two main groups, the first of which are the "subtractive" processes, where a set of negatives are exposed through tri-colour filters, and a colour positive built up from yellow, red, and blue pigments. An excellent example of this is the Autotype Carbro Process. The main objection to the "subtractive" processes is the amount of time involved to produce the colour positive.

The second group comprises the screen plate or "additive" processes, which are divided into two types—the combined and the duplicating processes. In the combined process the sensitive emulsion is spread over the mosaic colour screen, and, after having been developed as a negative, is reversed to a positive. Present-day examples of this method are the Agfa, the Lumiére, and the more recent Dufay Colour processes. In the duplicating type of "additive" process a negative is made on standard panchromatic emulsion through a separate mosaic screen. The result is that any number of colour positives can be made from this negative. The only example of this method is the Finlay Colour Process.

Before discussing the application of this process to medical work, a short description of the manufacture of the Finlay screens will no doubt be of interest.

The dyes incorporated in the reseau are red, green, and blue-violet, in accordance with Maxwell's theory that the transmitted light of these three colours, if suitably combined, will produce practically all the colours of the spectrum. The single elements of colour in the reseau are of a size below that which is visible to the naked eye.

As this is a duplicating process, it follows that the screen elements must exist in a precise position on every screen manufactured, and to ensure this, great care is taken in the production of these screens. A sheet of special glass is coated with a substance to form the medium into which the dyes are introduced. This is dyed green, and, when dry, is covered with a sensitised coating which will harden by the action of light. A black cross-ruled screen with clear spaces corresponding to the size of the individual elements of the reseau is used as the master negative, and by means of an arc lamp the sensitised coating is hardened under the clear spaces in the master negative. By washing off the unhardened coating and introducing the whole plate into a bleach bath, the green dye is removed from where it is not protected by a hardened coating, leaving green square dots, which are the green elements of the finished screen. The plate is then dyed red and again coated with the sensitised layer. The master negative is then placed in a position so that the intersections of the black lines cover the existing green elements. The plate is again exposed to the arc lamp, and the procedure of washing and bleaching repeated. The green and red elements are now in position, and on dyeing the plate with the blue-violet dye the screen is complete except for a protective coating to prevent abrasion.

The Preparation of Colour Slides by the Finlay Process.

From the foregoing remarks on the duplicating process it will be seen that, as the exposure has to be made through the colour screen in contact with the panchromatic plate, a dark slide of sufficient depth to accommodate the two must be used. It is possible, however, to use metal dark slides, if the panchromatic plates purchased are of extra thin glass.

As the most important part of this process is to ensure even contact between the screen and the panchromatic plate at the moment of exposure, extreme care should be taken to see that no dust or glass chippings are sandwiched between them. The taking screen, i.e., the screen used in the dark slide, can be used indefinitely, and should, therefore, be protected from scratches when not in use.

The panchromatic plates, although of standard types, must be only those recommended by the Finlay Company; these are the Ilford Trichrome, the Ilford Soft Gradation, the Ilford Special Rapid, and the Ilford Rapid Process Panchromatic plates. It cannot be too strongly emphasised that only the range of compensating filters manufactured by the Finlay Company for each of the four types of plates mentioned must be used.

Method of Procedure.

The dark slide is loaded with the combination of taking screen and panchromatic plate, placed film to film in contact, so that the light reaching the plate must first pass through the taking screen. The compensating filter for the particular light

source to be used can, if in film form, be placed between the components of the lens. However, if much work is being done, a filter sealed in optical glass and mounted to slip over the front of the lens should be purchased. It should be mentioned here that a mixture of lighting should not be used, such as daylight and artificial light.

As the combined density of the taking screen and compensating filter must be taken into account when making the exposure, a multiplication factor of approximately six times should be used. After making the exposure the plate may be developed in any soft working and non-staining developer. The type of negative required is one soft in gradation and with much less contrast than would be required for a monochrome one of the same subject. The developer which the writer has found most useful is :—

Metol	16 grms.
Sod. Sulphite	500 grms.
Sod. Carbonate	64 grms.
Pot. Bromide	3 grms.
Water to make 2,000 c.c.	

After development the negative is fixed, washed, and dried in the usual way.

From the negative a contact black and white positive is printed, and here again the positive plates supplied by the Finlay Company should be used. These plates, being quite slow, can be handled safely using a ruby safelight. A printing box is necessary for standardising exposures, and, using a lamp of fifteen watts at a distance of three feet, the exposure would be from two to three seconds from a negative of the proper density.

For developing the positive, a developer of the Metol hydroquinone or hydroquinone caustic type should be used. The positive should have slightly less contrast than a monochrome slide, with detail in the highlights and shadows. The writer uses the following formula, which will give a perfect positive with one to one and a half minutes development at 65° F.

(a)

Hydroquinone	25 grms.
Pot. Metabisulphite ...	25 grms.
Pot. Bromide	25 grms.
Water	1,000 c.c.

(b)

Caustic Potash	50 grms.
Water	1,000 c.c.

For use take equal parts of (a) and (b) and one part of water.

The positive, after being fixed and washed, is dried. It is then placed film to film in contact with a viewing-screen, care being taken to see that no dust is between the two, and that any rough edges on the positive plate have been scraped off. This stage is known as registering, and should be carried out in front of an

even light from a window, or soft, diffused artificial light. In registering a 3¼ in. x 3¼ in. size printed from a ¼-plate negative, a scratch will be seen along one edge of the viewing-screen; this should be placed against the side of the positive plate which was printed from a long side of the negative. The two are now held together with the thumb and forefinger at the tip of one corner, and the thumb and forefinger of the other hand at the tip of the corner diagonally opposite, and with the viewing-screen uppermost. The viewing-screen is rotated over the positive as if there was a pivot at the centre, and a pattern of small squares will be seen gradually getting larger, and finally disappearing when the colours begin to appear. At this stage the squares of colour on the viewing-screen are in alignment with the dots on the positive, but the colours may be complementary, i.e., red appearing green, and *vice versa*. Hold the two firmly at the centre with the thumb and finger and put a bulldog clip on two sides. Look at the picture from all angles to see in which the correct colours appear, and then gently ease the viewing-screen in that direction until correct register is obtained. The two are then bound together with a continuous binding-strip. Allow a minute for the strip to dry before removing the clips, and the transparency is then complete.

The advantages of the separate screen process are that it allows the unlimited production of duplicates from a single negative, that black and white copies may be made from the same negative, and that it has more latitude in exposure. The fact that the resulting transparencies are brilliant allows the projection of the slides with standard projectors. The application to medical work is quite inexpensive, as a large number of positive plates made at a small cost may be kept as a record to be combined with a viewing-screen when required.

Clinical Photographs of Patients : Post-mortem Room Photography.

The standard photographic equipment as used in most hospitals will be found to be suitable. Care should be taken to avoid mixed lighting, and whichever type of light is used should be fairly flat, otherwise skin tints are inclined to be over-emphasised in parts. Another point which should be carefully watched is that backgrounds which are inclined to be too prominent should be avoided. Otherwise the process is carried out as already described.

Photography of Museum Specimens.

All specimens should be photographed either when under water or when in glass museum jars of fluid, so as to avoid highlights from spots of moisture. The glass jar must be free from blemishes and have a flat, polished surface. The writer has found that the best lighting system for work of this type is four 60 watt clear-glass type lamps mounted on a frame which is placed in front of the specimen, and here again the lighting should be fairly flat. In most cases no special background will be necessary, as it is best to block out the background on the glass side of the negative. The two illustrations of naked-eye specimens (figs. 1 and 2) were photographed while in rectangular museum jars and the background blocked out. The actual photographic procedure is as previously described.

Such a system of colour photography is particularly valuable on account of its latitude and the ease with which the contrast can be increased without the colour value being altered. It is essential to employ a light source, for which the Finlay Company issue a compensating filter, and those to be recommended are the Pointolite lamp for D.C. supply, or the Ribbon filament lamp for A.C. supply; no Finlay compensating filters are made for use with the arc lamp. The filter should be placed between the light source and the microscope, so that all the light is filtered; the gelatine filter can be used, or the same can be bound between two pieces of lantern-slide cover, there being no need to have a filter sealed in optical glass for this type of work.

The actual camera and microscope for work of this type need not differ in any way from those used for monochrome work. Some workers state that the lens equipment must be apochromatic, but this is not the case; good achromatic lenses will give a perfect colour rendering. As a matter of fact, the writer has found that the results when using apochromatic lenses are inclined to lack brilliance.

The substage condenser must be of the achromatic type, as the Abbé condenser does not give a colourless background, this being due to the varying foci of the different colours. The ideal condenser for photomicrography in colour is the Universal condenser by Watson & Sons. The best plate for medium- and high-power work is the Ilford Soft Gradation Panchromatic, and for low-power work and subjects lacking in contrast, the Ilford Process Panchromatic.

Exposure.—Presuming that the lens system is objective $\frac{1}{8}$ in. and ocular x 7 with a bellows extension of about 9 in., giving a magnification of about x 300 diam., the exposure would be in the region of a quarter of a second when using the soft gradation type of plate for normal monochrome work without a filter. For Finlay work, the necessary increase in exposure being six times, the exposure will be one and a half seconds. The exposure when using lenses of lower or higher power will be correspondingly shorter or longer, the N.A. of the lens, of course, being taken into consideration.

Provided that the worker is capable of producing good monochrome negatives on panchromatic material, there should be no difficulty in producing negatives which will yield perfect colour transparencies. It is to be hoped that in presenting this article the writer has not enumerated too many difficulties which will deter the reader from attempting this fascinating branch of photography, for, with a knowledge of what he is about to do and with reasonable care, he can make valuable records of material, which, if produced in monochrome, would be in many instances a sheer waste of time and material.

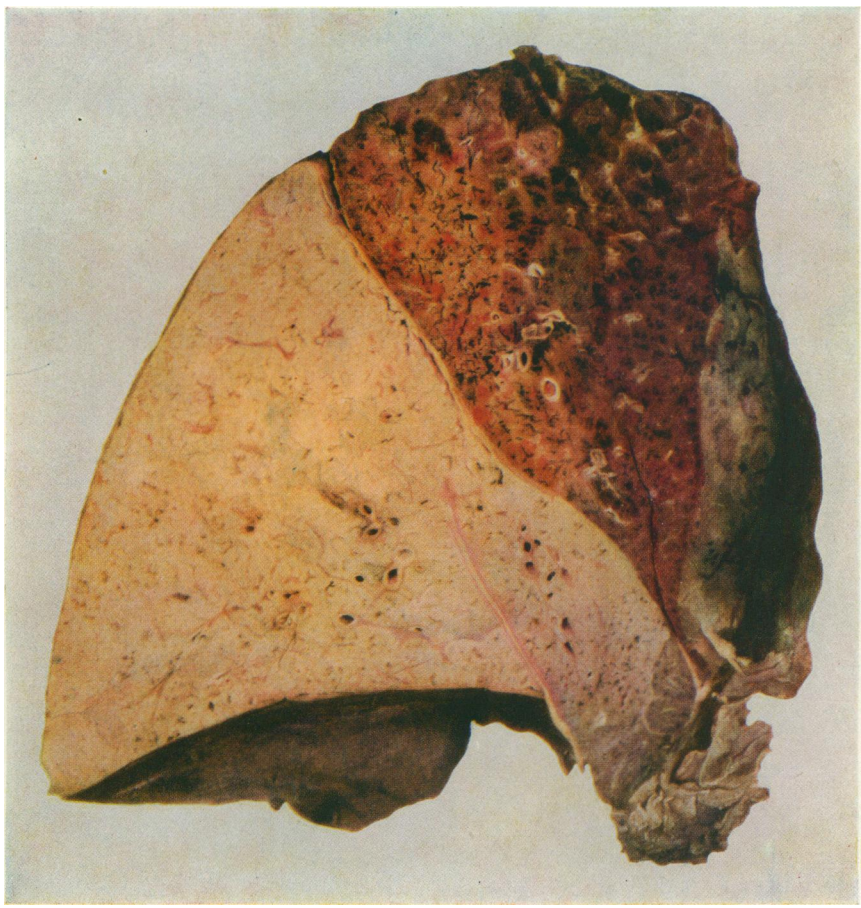

Fig. 1.—LOBAR PNEUMONIA.

The greater part of the lung is consolidated, the lower lobe showing grey hepatisation, the lower half of the upper lobe red hepatisation, and the upper half acute congestion. Upper and lower lobes are united by fibrinous pleurisy.

From "Practical Pathology," by James Miller, M.D., and James Davidson, F.R.C.P.E. Third Edition. Adam and Charles Black, London.

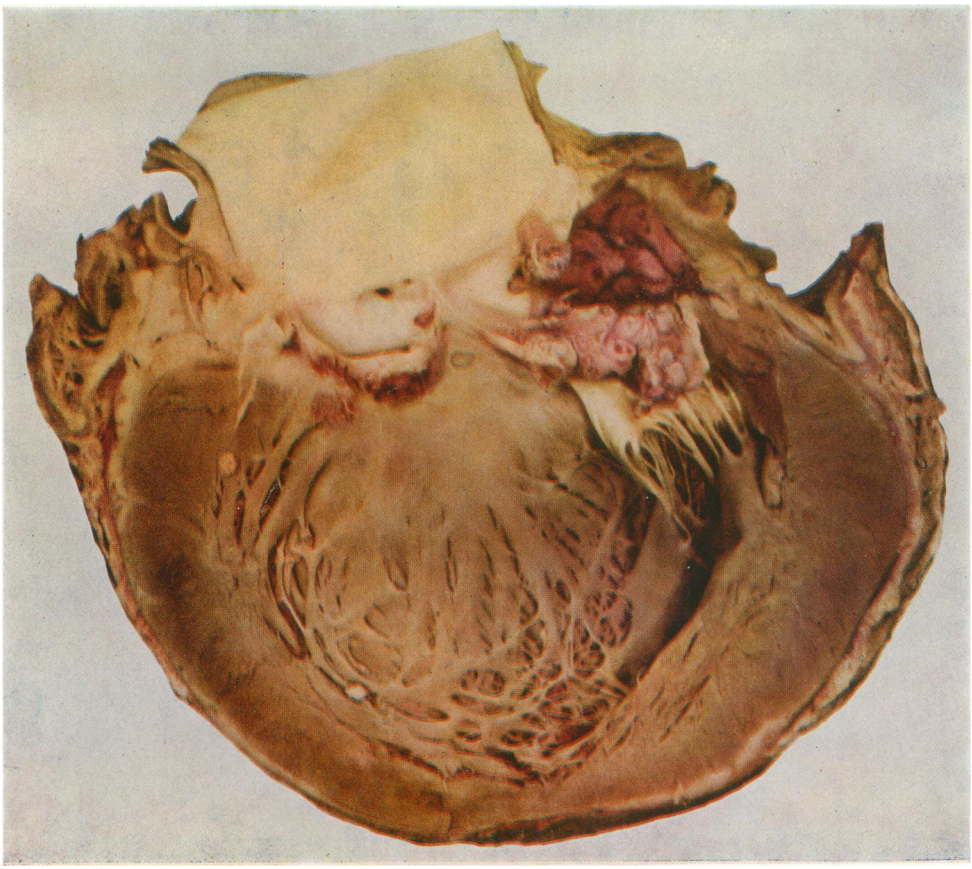

Fig. 2.—ACUTE BACTERIAL ENDOCARDITIS.

Heart opened to display cavity of left ventricle and aortic valve. The valve is covered with large, soft vegetations which have destroyed one of the segments and which extend on to the septal cusp of the mitral valve. The left ventricle is dilated and the muscle pale from toxic change. Two small thrombi project between columnæ carneæ.

From "Practical Pathology," by James Miller, M.D., and James Davidson, F.R.C.P.E. Third Edition. Adam and Charles Black, London.

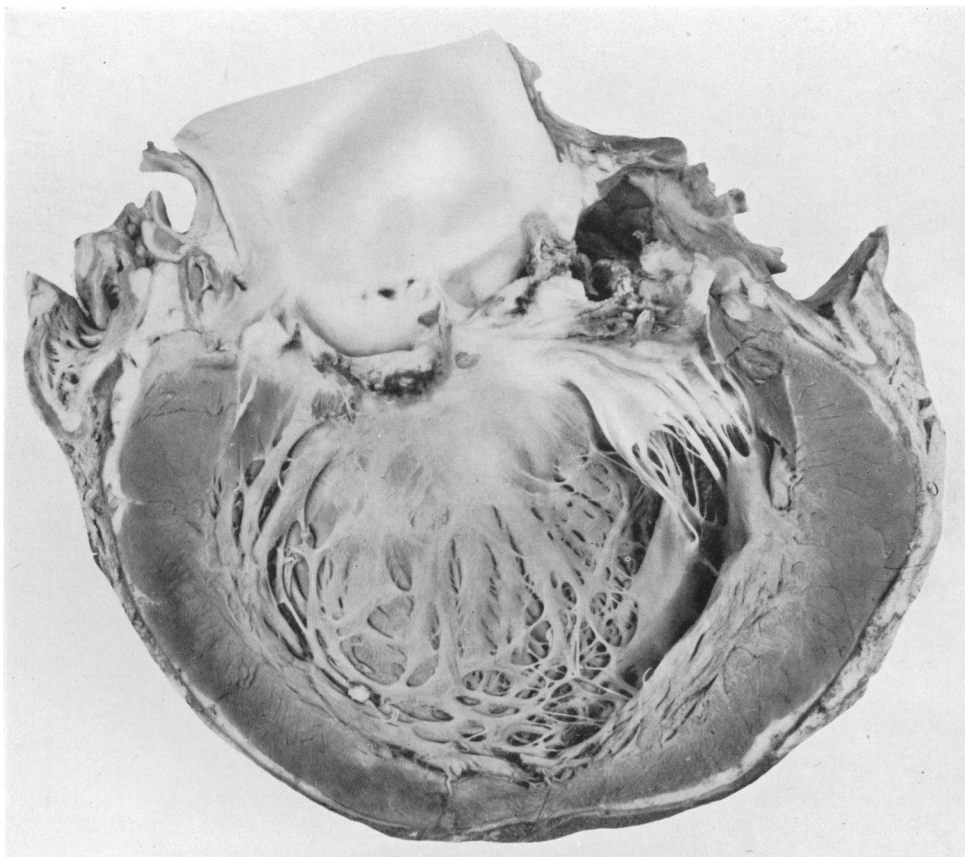

Fig. 3.—Monochrome photograph of same specimen as fig. 2.

The Treatment of Pneumococcal Infections

by 2-Sulphanilyl-Aminopyridine (M & B 693)

THE advent of sulphanilamide gave an immense stimulus to research for chemical substances active against specific bacterial infections. Experiments have shown that sulphanilamide, while being extremely active against hæmolytic streptococci, is practically inactive against pneumococci, some degree of activity being found against Type III, which is, of course, closely allied morphologically to the streptococcus. A large number of compounds allied to or derived from sulphanilamide have been examined; some of these have proved to be distinctly more active against the pneumococcus than sulphanilamide, but few of them appear to be sufficiently active and at the same time sufficiently non-toxic to be worthy of clinical trial. One exception is the compound 2-sulphanilyl-aminopyridine, better known by its experimental number M & B 693. This compound, one of a number synthesised in the May & Baker research laboratories, has been shown by Whitby "to protect the mouse effectively against 10,000 lethal doses of pneumococci Type I, and to afford considerable protection against 10,000 lethal doses of other types of pneumococci; it is as effective, dose for dose, as sulphanilamide against hæmolytic streptococci, and, experimentally, appears to be equally active against meningococcus." This drug, then, appeared to possess anti-pneumococcal properties far superior to any other drug, and since it was active against several other micro-organisms and possessed a toxicity for experimental animals notably less than most products of this type, it appeared to deserve trial in pneumonia in man.

Evans and Gaisford were the first to make clinical use of M & B 693, and their early results were sufficiently promising to justify further trial. They have recorded their findings in a hundred cases of lobar pneumonia observed simultaneously with an equal number of comparable cases serving as controls and receiving non-specific treatment. The case mortality-rate was 8 per cent., as compared with 27 per cent. for the control series observed at the same time.

As a safeguard against possible geographical factors affecting the virulence of human pneumococcal infections, similar work is being carried out in equally large series of cases in other parts of this country and in the Dominions.

Evans and Gaisford used this drug also in a series of cases of broncho-pneumonia. Owing to the relatively mild nature of most of their cases, they hesitated to express an opinion as to the place this drug may take in the treatment of pneumococcal infection in infancy. Remarkable results were, however, obtained in several cases, and the authors remark upon the ease with which the drug may be administered to babies.

It is considered that sufficient work has now been done to justify the production of the drug on a large scale to meet the demand for it by the medical profession. It seems established that it is effective in many cases of pneumococcal infection,

but it is obvious that a considerable time must of necessity elapse before it will be possible finally to assign to M & B 693 its proper rôle in the treatment of pneumonia.

Dosage Forms.

Oral.—M & B 693 is supplied in the form of compressed tablets for oral administration (each containing 0.5 gramme of active substance) in aluminium containers of 25 and 100 tablets.

Parenteral.—M & B 693 is also supplied in ampoules containing a solution of the sodium salt and in ampoules of an oil suspension.

Administration and Dosage.

Oral.—Tablets should be finely crushed and swallowed in a little milk. In acutely ill patients, difficulty in swallowing may be overcome by giving the crushed tablets in suspension by means of a filler funnel or catheter. The catheter is passed to the back of the mouth and the suspension is run in slowly, the patient swallowing as he lies recumbent.

It appears to be most undesirable to administer any kind of cough mixture, except a simple linctus or one containing heroin or codeine, during treatment with the drug, and any being given should be stopped at the commencement of specific treatment.

The dosage in lobar pneumonia in adults is determined by the severity of the infection, but in all cases there is a fundamental principle to be observed, and that is to obtain a high concentration in the blood-stream as rapidly as possible by the administration of relatively large doses at frequent intervals. As clinical improvement takes place the dose is gradually reduced.

The ease with which this initial saturation is obtained varies from one patient to another, and will also vary with the severity of the infection. There is some basis for believing that at least in some individuals the rate of absorption from the stomach is much higher in health than in disease. At the present stage, it does not appear desirable to waken patients in order to keep the programme of dosage; the necessary adjustment can be made when the patient wakes. Otherwise the normal scheme of dosage should be adhered to very strictly, even if this requires a departure from routine hospital hours for giving medicines.

Severely ill patients or those with the disease well established should receive four tablets (two grammes) as an initial dose, followed by another four tablets (two grammes) in four hours' time; after this, two tablets (one gramme) should be given four-hourly for about thirty-six hours, except during sleep. At the end of this time there will commonly be clinical evidence of response.

With clinical improvement, the dosage may be reduced by administering one tablet four-hourly for another twenty-four or thirty-six hours, finally giving one tablet thrice daily. A total dosage of forty tablets (twenty grammes) is usually adequate.

In less-severe cases, after an initial dose of four tablets (two grammes), four-hourly administration of two tablets (one gramme) may be begun.

The dosage in lobar pneumonia in children should be the same as in broncho-pneumonia (see below).

The following dosage is suggested for cases of broncho-pneumonia in children :—

Age	*Dose in tablets*
1-3 months	¼ tablet 4-hourly
6 months to 2 years	½ tablet 4-hourly
3 years	¾ tablet 4-hourly
5 years	1 tablet 4-hourly

In severe cases an initial double dose may be given if necessary, e.g., to a child of three the first dose might be one and a half tablets (0.75 gramme), followed by three-quarters of a tablet four-hourly.

PARENTERAL.

(a) *Solution.*—M & B 693 solution is intended for use in special cases where the patient cannot retain the oral preparation. In experimental animals the soluble form of the drug has a higher toxicity than the very slightly soluble form given by mouth. This is to be expected in view of the rapid penetration, but smaller doses should be used to produce the same effect. In the light of present knowledge, the dosage for the soluble form should be about half that for tablets, and particular caution should be exercised if this ratio is to be altered.

The recommended route of administration of this solution is by *deep intramuscular injection.* The solution is alkaline, so unless the injection be made slowly and deeply, some reaction at the site of injection may be experienced.

The initial dose in acute conditions is one gramme repeated at suitable intervals, and not more frequently than four-hourly. Half this dosage should be given to children ten years of age, proportionately smaller doses for younger children, and one-quarter this dosage to infants.

Intravenous administration has been employed in extreme cases. When used in this way the dose (usually one gramme) should be diluted with sterile distilled water or sterile normal saline to a total volume of 20 c.c. per gramme, and the injection made very slowly, the rate not exceeding one-tenth of a c.c. per second. It is suggested that the tolerance of the patient to this form of medication be tested by a preliminary injection of 0.33 gramme (1 c.c.), diluted to 7 c.c. with sterile distilled water or saline. Injections may be repeated four-hourly if required.

No precise limit can at present be set to the total quantity administered by injection, but oral administration should be resorted to as soon as the degree of clinical improvement renders this step practicable.

(b) *Suspension.*—Ampoules containing 0.5 gramme in suspension in oil are also available. This preparation is administered only by deep intramuscular injection, and is to be used when a depôt of the drug is required from which absorption will take place more slowly than with other forms of exhibition.

The contents of an ampoule (0.5 gramme) may be given to an adult once or twice daily.

NOTE.—Before the oily suspension is administered, the ampoule should be warmed to 100° F., the contents adequately shaken, and then drawn into a previously warmed syringe fitted with a No. 16 needle, through which the emulsion will pass readily, occasioning a minimum of discomfort to the patient.

Conduct of Cases.

With prompt diagnosis, treatment of the disease with M & B 693 is practicable earlier than when specific serum is used, since the use of the latter entails some delay in determining the type of pneumococcus present, apart from the physical limitations imposed by the availability of the specific variety, and the difficulties in administration, even when the proper serum is available.

Although from the scientific standpoint, it is of importance even with this brand of the drug that every case should be typed, the fact that this drug appears to be effective against all types of pneumococcus justifies its administration from the very moment that the diagnosis is made.

Physicians in whose hands administration of the specific serum has given satisfactory results may wish to supplement their treatment with this brand of the drug by the administration of specific serum. In the present state of knowledge, there appears to be no objection to such a practice. On the other hand, it should be noted that the great majority of cases thus far treated with M & B 693 have not received serum, and the results appear to show that such treatment is altogether satisfactory.

Treatment should be instituted as early as possible, but ordinarily not before a specimen of sputum has been obtained for typing of the pneumococcus, since this investigation later is technically more difficult owing to the capsular changes which set in soon after the drug has been absorbed. Every artifice should be employed to obtain a specimen of sputum promptly, and ambulance attendants should be specially instructed on this point: but, particularly in children, undue time should not be spent waiting for sputum.

Tablets of this drug should be chewed and swallowed with a drink of water or crushed and suspended in a little milk or water. Experimental evidence shows that absorption from the stomach is normally so rapid that administration of the drug by mouth gives entirely adequate results. The injectable preparation is indicated only in exceptional cases where vomiting is so severe and frequent that the drug is not retained in the stomach at all.

As pointed out by Evans and Gaisford, treatment with M & B 693 should always be continued after the initial fall of temperature, whatever intensity of dosage is used, in order to avoid the recurrence of fever, due possibly to a flare-up of activity in a lung not fully resolved, or to a spread of the pneumonic process into previously unaffected areas.

General treatment should follow the lines customarily adopted hitherto in pneumonia. Diet may be based on the usual practice of the physician in charge, but sulphur-containing foods should be omitted. Great care should be taken to avoid flatulence, since the giving of aperients simply to alleviate it is undesirable.

Supplementary Treatment.

Oxygen administration seems to be unnecessary except in cases of marked respiratory distress.

Insomnia rarely becomes a problem owing to the shortened course of the illness, but for the first night or two a hypnotic may be given to allay restlessness or pain.

Aperients should be given sparingly or not at all, since the patients are not usually ill long enough to develop much distention. Further, there is the suggestion of Archer & Discombe (*Lancet,* 1937) that aperients may favour the development of abnormal blood pigments from the too rapid passage of food into the large bowel with subsequent fermentation there. The corollary of this would be to use enemata, though at the best this is a disturbing form of therapy. Should an aperient have to be given, salines and sulphur-containing drugs should be avoided; liquid paraffin, phenolphthalein, or one of the vegetable laxatives are to be preferred.

Simultaneous administration of cough mixtures, other than simple linctus, and analgesics containing amidopyrin, phenacetin, should be avoided. Barbiturates have been given without ill effect.

Careful nursing is of great value, but sponging need be done only to promote the patient's comfort. Application of poultices to the chest wall is generally unnecessary, as is the routine administration of stimulants.

Toxic Reactions to the Drug.

Throughout the whole of the clinical trials of M & B 693 the most careful watch has been kept for symptoms of toxicity in man which have not been discerned, or are not discernible in laboratory animals. Of the following symptoms, one or more may be observed in a single patient, the severity varying considerably: headache, with or without slight nausea; vomiting; general malaise; breathlessness; drug rash or fever; dizziness; cyanosis; lassitude; methæmoglobinæmia.

A striking feature appears to be the relative rarity of these reactions with the possible exception of nausea. Evans and Gaisford were particularly impressed by the absence of any noticeable toxic effects beyond the appearance of cyanosis and methæmoglobinæmia in patients receiving large doses. Nausea may be overcome in many cases by giving five to ten grains of sodium bicarbonate in a little water every two hours, timing its administration so as to precede by some fifteen minutes each dose of the drug.

Other Forms of Pneumococcal Infection.

It is reasonable to suppose that a drug found to be effective in lobar pneumonia may prove of value in less common forms of pneumococcal infection. Reid and Dyke record a case of pneumococcal meningitis in which a rapidly successful outcome is attributed to the action of M & B 693. Robertson also has published a case of pneumococcal meningitis treated with it, in which symptoms disappeared and the cerebro-spinal fluid became sterile within forty-eight hours.

Dyke further reports immediate improvement and uneventful convalescence in a case of pneumococcal septicæmia treated with this drug. These individual cases

are mentioned as an indication that it should be given whenever a pathological condition, e.g., arthritis, peritonitis, salpingitis, etc., is associated with pneumococcal infection.

Mechanism of Action.

The practising physician will quite naturally wish to ask the question: "How does the drug act?" A complete answer on this point cannot yet be given.

The first clue was furnished by Whitby in his paper on the use of the drug in experimental infections. He found that pneumococci continued to multiply in the peritoneal cavity of mice for about four hours after receiving the first dose of the drug, but that "soon after this time the organisms showed degenerative capsular changes. The capsules became swollen and crenated and eventually disappeared."

Striking confirmation of this remarkable effect of the drug upon the capsule of the pneumococcus is to be found in a case of Type III pneumonia reported by Telling and Oliver. After the administration of three grammes of M & B 693 to the patient, the pneumococci were found to be scanty, pleomorphic, and non-capsulated, whereas primary culture yielded a pure atypical growth not agglutinated by Type III or any other serum.

Further, Fleming has demonstrated the high bacteriostatic power of deleucocyted blood from patients treated with this drug. Since it has also been shown that the drug appears in the blood and the urine in the free state and can be recovered from the latter, the cycle appears to be complete, and the mechanism of action of the drug in the light of present knowledge appears to be as follows:—

> Penetration of the drug into the blood of the patient very shortly after administration; conveyance of the drug to the site of the infection in the blood stream; a direct action of the drug on the pneumococcus, preventing its rapid development and causing degenerative changes in it; destruction of the pneumococcus by the leucocytes, the activity of which is not adversely affected by the presence of the drug.

Both "in vitro" and "in vivo" there is a time-lag before the bactericidal effects of the drug are observed. This suggests that the drug is slowly absorbed on the organism with resulting inanition and degenerative changes described above.

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Studies from the Institute of Pathology

CASE V—A2262.

A Patient with Malignant Hypertension.

Clinical History.

The patient was a country police constable aged fifty-seven years. There was no relevant family history and he himself had always been a healthy man with a good appetite and regular habits. Recently, however, he had suffered from headaches and attacks of giddiness, and for the past two months his appetite had been poor, he had lost weight, and suffered from constipation. He had no frequency of micturition by day or night.

On admission to a surgical unit of the Royal Victoria Hospital for investigation he appeared a healthy man, without abnormal pigmentation, anæmia, cyanosis, or œdema. The tongue was heavily coated, and the teeth were carious. The abdomen was free from tenderness, but liver dullness appeared to extend one-half to one inch below the right costal margin. Extending downwards on this side almost to the level of the umbilicus there was a palpable tumour moving with and apart from respiration. On rectal examination the prostate was not enlarged. A fractional test meal showed a very low free acid curve with much mucus and no blood. The respiratory and nervous systems appeared normal. The heart-sounds were regular and closed, the pulse averaged around ninety per minute, and the blood-pressure 234/156. An electrocardiogram showed rounding and inversion of T wave in lead I, with a prominent S wave in lead III, suggesting left ventricular hypertrophy.

Specimens of the night urine were found to contain small amounts of albumen, and the specific gravity was only 1014, while the blood urea was 250 mgm. per cent. Receiving little benefit from a venesection or intravenous glucose salines, he rapidly became worse, the speech mumbling and indistinct, and with deepening coma he died just two weeks after admission.

Post-mortem.

The body is that of a well-developed, muscular, middle-aged man. The subcutaneous tissues are somewhat lax and in dependent parts very slightly œdematous. Gross anæmia and abnormal pigmentation are absent, and only the lymph-glands of both groins are palpable. Rigor mortis is present in the limbs and neck, and post-mortem lividity in the dependent parts.

Body Cavities.—The pleuræ and peritoneum contain no excess of free fluid nor abnormal adhesions. The pericardium, especially in relation to the left auricle and posteriorly, is traversed by delicate fibrinous adhesions. It contains very little exudate, and the walls are not thickened.

Lungs.—The somewhat œdematous and congested lungs are free from consolidation, apical scarring, or enlargement of lymph-glands at the hilum.

Heart.—This weighs thirty ounces. It shows great and disproportionate hypertrophy of the wall of the left ventricle. Here the muscle is firm, free from fatty change or the greyish streaks or dots of fibrosis and without petechial hæmorrhages. It measures one to one and a quarter inches in thickness. There is only slight dilation of the auricle. The mitral valve-ring having come to lie almost as high as the aortic is not dilated, and the slightly-thickened valve-cusps are held by thickened cordæ tendineæ and greatly hypertrophied papillary muscles. The valves are competent, and the hypertrophied coronary vessels free from significant atheroma throughout their course (compare fig. 1).

Liver and Gall-Bladder.—The liver is not enlarged. Escaping from below its inferior edge and hanging down freely in the peritoneal cavity to almost the level of the umbilicus is the gall-bladder with its wall thickened and inelastic, but not congested. Grouped around the entrance of the short cystic duct, and occupying a small pouch above it, are half a dozen large gall-stones which completely prevent the escape of the thin, mucinous white fluid distending the elongated, cucumber-shaped gall-bladder. The common bile-ducts and hepatic ducts are normally patent. On section the liver tissue shows no lesion.

Stomach and Duodenum.—These appear normal.

Small and Large Intestine.—These show no ulceration or mechanical obstruction.

Pancreas.—This is of normal size. The ducts are not dilated, and on section the acinar tissue is normal.

Spleen.—This weighs four ounces. The Malpighian bodies and the trabeculæ are well seen in the rather pale pulp.

Kidneys.—These contain several very small serous cysts, and one rather larger than a golf ball is present in the right kidney. The capsule strips quite readily, leaving a very finely granular, reddish-brown surface, mottled and scarred with small irregular yellowish, or rarely deeper red, areas. On section the cortex is considerably narrowed in an irregular manner, and shows firm whitish-yellow areas of varying size and outline and a few scattered small hæmorrhagic areas. Increased resistance is encountered on section. The larger blood-vessels are prominent. The pelvis is normal, apart from a few small hæmorrhagic or congested areas, and the peri-pelvic fat is not increased.

Suprarenals. — These are normal in size and appearance and free from hæmorrhage.

Ureters, Urinary Bladder, Prostate and Genital Organs.—These appear normal.

Aorta.—In both abdomen and thorax this shows only a slight degree of atheromatous change around the orifices of the smaller branches. The adventitia is not thickened, and the elasticity is fairly well preserved.

Neck Organs.—These are perfectly normal.

Histology.

Kidney.—The changes tend to be rather diffuse. In numerous small wedge-shaped areas situated in the cortex there is considerable increase of connective tissue which distorts the arrangement of glomeruli and tubules. The aggregates

of small mononuclear cells, lymphocytes, or very rarely, plasma cells, present in these areas cannot be traced into the medulla. The few convoluted tubules in such areas often show narrowing of their lumen. Their lining epithelium is shrunken and shows more marked degeneration than that lining the small groups of dilated or normal tubules. These are usually lined by tall columnar epithelium, but sometimes the epithelium is greatly flattened. Many lumina contain albuminous material and a few red blood-cells.

Arterial changes are very marked but vary in character greatly with the size of the vessel involved. All vessels of the same size are not affected to the same degree. Changes in the adventitia, fused as it is with the surrounding tissues, are very difficult to appreciate. The amount of medial muscle varies considerably with the size of the vessel. Comparative measurements of vessel walls are complicated by the considerable fibrous tissue replacement in the media. Not very marked in the interlobar arteries, intimal hyperplasia is well seen in many of the arcuate and interlobular vessels. Here elastic stains demonstrate layer upon layer of elastic tissue separate from the internal elastic membrane and bound together with strands of connective tissue (fig. 2). The change is more marked and involves more vessels than would be expected in a normal kidney from a patient of this age. Mucoid and fatty changes are not excessive.

In the smaller interlobular vessels and in the vasa afferentiæ the lumen is greatly narrowed. Only rarely can elastic fibrils or the connective tissue cells of intimal hyperplasia be distinguished. The picture, more especially in the smaller arterioles, is one of degeneration. The intimal structures are lost and the media is often replaced by a hyaline structureless ring. Sections parellel to the course of such arterioles suggest that the lumen is irregularly narrowed by this swollen hyaline eosinophilic material. A few rather prominent endothelial cells usually line the barely distinguishable triangular or oval lumen. Often the thickened hyaline arteriole is dilated as it enters the glomerulus. In many of the arterioles a part of the hyaline-like material stains a translucent greyish-yellow with eosin, and red with Masson's trichrome stain. This so-called fibrinoid material which in some cases occupies almost the entire wall may contain flecks of fibrin, and not uncommonly is associated with the escape of red blood-cells and fibrin into the disorganised wall. The necrotic area thus comes to appear slightly granular and often more eosinphilic. The change may involve the greater part of the wall but is rarely associated with much reactive change, though sometimes blood has escaped into the surrounding tissue.

In the small wedge-shaped cortical scars there are groups of glomeruli undergoing hyaline change. These have lost cellular detail and show varying stages of degeneration. Some glomeruli show localised areas, central or peripheral, where the capillary loops have undergone hyaline or fibrinoid degeneration, sometimes with necrosis of the walls and the escape of blood-cells into the capsular space (figs. 4 and 5). In a few, the capillary walls have almost disappeared, leaving blood-filled spaces. Other glomeruli show increased cellularity with proliferative changes in the capsular epithelium (fig. 6). The changes are often focal, and only

one lobule of the proliferating tuft may be adherent to the capsule. Thickening of the peri-glomerular tissues is present. Usually evidence of necrotic changes in the vessel walls of these glomeruli is absent. Special stains (Mallory-Heidenhain azo-carmine) show that in the great majority of glomerular tufts the basement membranes are thickened in varying degree, and in the smaller more hyalinised tufts there is an appearance of simplication in the pattern of the capillary loops (fig. 7). In those glomeruli involved in proliferative changes, a similar material appears to infiltrate around the endothelial cells and block some of the capillary lumina.

Adrenal.—Very marked arteriolar changes are present, especially in the loose tissue of the capsule. The vessel lumina are often reduced to mere chinks, the walls extensively hyalinised, or more often showing fibrinoid necrosis with frequently an escape of blood-cells and fibrin which has permeated the vessel wall (fig. 3).

Liver.—The sinusoids round the central vein of the lobule are somewhat dilated, and the related liver trabeculæ cells slightly narrowed, but with very little fatty change. The larger vessels show only moderate intimal degeneration, but a few of the narrowed arterioles show hyaline and very rarely fibrinoid change, but no acute necrosis.

Pancreas.—The acinar and islet tissues show no lesions. Only a few arteries show marked intimal change. The arterioles show very gross narrowing of the lumen, fibrinoid material often replacing almost the entire wall. In a few arterioles more acute necrosis is present with disruption of their walls by fibrin and red cells.

Intestinal Tract.—Representative sections show relatively little hyaline change in the arterioles.

Spleen.—Apart from the presence of some fibrinoid material the hyaline vascular changes are not abnormal for this organ.

Heart.—The muscle fibres show considerable hypertrophy without degenerative change. The connective tissue is not increased; the arteries show little intimal change and no medial fibrosis, and the arterioles practically no hyaline degeneration. There is a little fibrin over the epicardium and a few small mononuclear cells infiltrate the underlying connective tissue.

Lungs.—In one there is a small area of organisation of an alveolar exudate, and both show a terminal passive congestion.

Aorta.—There is a slight degree of early atheromatous change without much deposition of lipoid or hyaline change.

Anatomical Diagnosis.—

Essential hypertension.

Cardiac hypertrophy.

Arteriolo-sclerosis kidney, adrenal, pancreas and liver.

Malignant arteriolo-sclerotic nephritis—uræmia.

Fibrinous pericarditis.

Mucocele of gall-bladder secondary to impacted stones.

Commentary.

This patient illustrates the rapid downhill course often pursued in the terminal stages of malignant hypertension. He had noticed nothing amiss until two months before admission to a surgical unit. If attention had not been focused on the cardio-vascular system by the raised blood-pressure and on the kidney by the finding of a trace of albumen, especially in a urine of low and fixed specific gravity, the complaint of loss of appetite and weight, and constipation, with a palpable abdominal tumour, might have led to an exploratory laparotomy. The probably symptomless tumour resulted from interference with the drainage of the gall-bladder by calculi within it. The passage of bile from the liver to the duodenum was uninterrupted, but mucus secreted by the lining cells distended the gall-bladder and resulted in the production of a cystic tumour.

The fundamental lesion is a vascular one, the high pressure with the resulting degenerative vascular changes leading to deficiency in the nutrition of essential organs. Commonly, these patients have symptoms referable to more than one of three organs, the heart, the nervous system, or the kidney, but later in the disease symptoms referable to one of these often predominate.

In all such subjects an assessment of the efficiency of the heart must be made. The clinician will endeavour to obtain information of any diminution in the amount of exercise which provokes breathlessness, and of any fall in blood-pressure. He will study the neck-veins, try to determine the extent of liver enlargement, examine for œdema in the dependent loose connective tissues, and listen for the creptitations of œdema fluid in the lung alveoli. By palpation, percussion, and X-rays he may determine the outline of the heart, but unless detailed records exist it may be difficult to determine the onset of failure and dilation in the hypertrophied heart. The heart-sounds, especially the rhythm, and the development of soft, functional, systolic, mitral murmurs suggesting the dilation of the valve-ring from loss of muscle tone, are significant. Electrocardiograms may reveal functional damage to the myocardium or the presence of an infarct.

At autopsy on a patient with a blood-pressure of over 150 mm. of mercury, some evidence of hypertrophy of the heart may be expected. When a left ventricular hypertrophy is found unassociated with valvular disease, adherent pericardium, syphilitic aortitis, chronic glomerulo-nephritis, or hyperthyroidism, the changes of primary hypertension should be searched for in the peripheral vessels, even if the blood-pressure has been low or normal for months owing to terminal cardiac failure.

The assessment of minor degrees of left ventricular hypertrophy is difficult. Thickening, especially disproportionate hypertrophy of the left ventricular walls beyond 15 mm. for the left and 5 mm. for the right is considered useful (Russell, 1929). Allowance must be made for the thinning produced by dilation. The weight of the organ is often used. This cannot usefully be correlated with body-weight, and the estimates of Bell and Clawson (1928) from two thousand cases are often taken. In the female, 400 grms. (14 oz.) is the upper normal limit, and 450 grms. (16 oz.) in the male. Weights of 450 grms. (16 oz.) in the female, and 500 grms.

(18 oz.) in the male suggest a post-mortem diagnosis of primary hypertension. However, of two hundred and twenty known hypertensives, eighty had heart-weights under this. When cardiac decompensation has occurred there is dilation of the auricles, more especially of the left, and flaccid valve-rings. Other evidence of a failing heart may be gleaned from the lung capillaries and from dilation of the sinusoids around the central lobular branches of the hepatic veins. An assessment of its duration and degree may be made from the changes in the lung alveolar walls and the degree of degeneration in the liver cells. Fluid in serous cavities and changes in other organs are usually less helpful. In uncomplicated hypertension, forty-nine per cent. of deaths were attributed by Bell and Clawson (1928) to myocardial insufficiency, while in another eleven per cent. the sclerosis of the larger coronary arteries of the overtaxed heart was to blame. Though there is no necessary connection, coronary sclerosis does tend to be rather more frequent and more intense in hypertensive than in non-hypertensive heart disease. There is less correlation with degenerative changes in the basal arteries of the brain, and none with atheroma of the aorta. In the present case, evidence of cardiac failure is slight and quite insufficient to cause the high blood urea or explain the clinical symptoms. The slight fibrinous pericarditis is a terminal event not uncommon in toxæmic states—especially uræmia. It was present in six out of sixteen cases of malignant hypertension described by Klemperer and Otani (1931).

The advent of cerebral symptoms of headache and terminal delirium probably coincided with a rise in the level of toxic products in the body. True uræmic symptoms may be difficult to differentiate from the transient convulsions, the amauroses, headaches and vomiting, auditory disturbances, and mental symptoms of hypertensive encephalopathy. In this the hypertension is frequently raised further before an attack, and there is no necessary associated elevation of the blood non-protein nitrogen. Correlated structural changes are absent, and localised cerebral vascular spasms are most often postulated. It was not possible to examine the brain in this case, but it may be noted that in general arteriolar degenerative changes in the central nervous system do not bear any close relationship to the presence of hypertension.

If the progress of a number of hypertensive patients is carefully followed it will be found that in some the heart remains adequate but the renal function begins to fail. The production of urine during the night tends to approach that of the day. The kidney with arrears of nitrogen products to secrete, and inability to produce a highly concentrated urine, loses its wide power of accommodation to the ingestion of water and urea by wide alterations in specific gravity. Many of these cases will not proceed beyond the stage of renal impairment before dying of intercurrent disease, cardiac failure, or a cerebral mishap. About ten per cent. will proceed to renal decompensation, the specific gravity tending to become fixed well below 1020, the blood urea rising, and the blood urea clearance falling. Traces of albumen or even blood or hyaline casts in the urine are inadequate as evidence either of impairment or decompensation. A few such subjects die from relatively uncomplicated renal failure. These usually show a severe grade of vascular sclerosis and

the loss of many glomerular units and belong to the late-age group of 65-70 years. Histological estimation of renal impairment or decompensation from tubular dilation or hypertrophy, like any estimation of the fraction of functional glomeruli remaining, often presents difficulties.

In all cases, evidence of renal failure or any rapid rise in blood-pressure level or deterioration in the clinical condition, especially in the young hypertensive under fifty years of age, should direct attention to the possibility of the supervention of a malignant phase as in the present case. Though this may often appear to run a rapidly progressive course with an unusually high blood-pressure from the beginning in a relatively young subject, any subdivision of cases is best avoided. Clinically, confirmation may sometimes be obtained by the finding of hypertensive neuro-retinopathy. A swollen, indistinctly outlined and usually reddened optic disc, and white fluffy or "cotton wool" areas in the retina are present. Sometimes the irregular narrowing of the arterial blood columns, the visible walls, the arterio-venous compressions, and the irregular retinal hæmorrhages of the previous benign phase are also present. A study of the arterioles in a biopsy of pectoral muscle is probably not of any diagnostic value.

At autopsy the condition may be suspected from the presence of small irregular hæmorrhagic areas frequently present in the often normally-sized kidney. These are rare in other organs. Histologically, and depending on the duration of the elevated blood pressure, the changes are those of the existing essential hypertension. The diffuse arteriolo-sclerosis practically always involves the kidneys and adrenals, frequently the pancreas, sometimes the liver and brain, and rather rarely the intestinal tract, myocardium, skeletal muscles, or skin. The normal hyaline change in splenic vessels may readily cause confusion. Hyalinization of glomeruli, atrophy of tubules, and sometimes hyalinization of the islets of Langerhans occur. With the supervention of a malignant phase, necrosis of the arteriolar walls associated with the deposition of fibrin and often the escape of blood results. This involves the arterioles of the kidney, not uncommonly those of the suprarenal cortex, and rather rarely those of other organs, chiefly the pancreas. "Fibrinoid degeneration" may be an intermediate phase between hyalinization and arteriolar necrosis, and it may be found with an occasional patch of fibrin in the vessel walls of clinically benign cases where it may represent a terminal event. Evidence for a diffuse "productive endarteritis" of the smaller arteries and larger arterioles significantly more marked than in benign hypertension is not impressive in this case. There is little evidence that this produces an ischæmia in the more peripheral vessels which might determine necrosis of their walls. In reactive changes the frequent age differences must be considered. The proliferative glomerular changes are subordinate to the vascular lesions. Only a fraction of the glomeruli are involved. In chronic glomerulo-nephritis the majority of the surviving glomeruli are involved in the proliferative reaction. Vascular changes, though sometimes comparable, are subordinate.

The recent experimental work of Wilson and Byrom (1939) suggests that necrosis depends on a sudden strain thrown upon the vessels by a rapid rise of blood-

pressure. All the recent renal artery clamp experiments suggest that narrowing of the lumen and partial ischæmia of the kidney will tend to raise the blood-pressure to still greater heights, and so establish a vicious circle as long as the heart remains competent.

SUMMARY.

A case of hypertension is described. The patient's symptoms suddenly became acute. The heart remained compensated, but the progressive renal damage resulted in a fatal uræmia. Hyaline degenerative changes as in benign essential hypertension were found in the arterioles of the kidneys, suprarenals, pancreas, liver, and spleen. The vascular changes of the malignant phase were superimposed. In the kidney, suprarenal and pancreas necrotic arterioles showed fibrin and sometimes red blood-cells in their walls. Other evidence of the active progress of the hypertension and of renal involvement was furnished by proliferative changes in the glomeruli.

The literature is discussed and the useful references are given in "Hypertension and Nephritis," by Arthur M. Fishberg. The paper by Wilson and Byrom is in the *Lancet*, 1939, i, 136.

J. E. M.

THE HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, BELFAST

THE Hospital for Diseases of the Nervous System, Paralysis and Epilepsy, for the last forty-two years a land-mark in Claremont Street, Belfast, has entered upon a new lease of life. The board of management, realising the growing importance of diseases of the nervous system consequent to modern methods of life, has embarked on a scheme of extensions which in time will replace the existing building, and extend far beyond its present boundaries. Fortunately, ground for this scheme was available behind the present building, and a new hospital has been built upon it, planned in such a way that when funds permit the old hospital will be pulled down and new buildings, which will replace it, will be part of the new hospital, and not merely extensions to it. When these new buildings are completed they will be largely devoted to surgical cases of nerve disease, the present new buildings being devoted to medical cases.

The new buildings now nearly completed will give an additional thirty beds to the present accommodation. These will be distributed over small general wards of six to eight beds each, with individual bed-lights, a ward of two beds, and two single-bed private rooms. The wards face south, and all overlook a restful garden, to which "up-patients" will have admission; a sun-balcony, on which beds may be moved in suitable weather, also overlooks the garden, which includes a "summer-house," where patients may rest in showery weather.

The floors of the hospital are on the most modern lines; wood blocks are used in all the wards, and cork-tiles are used in the corridors, so that noise of footsteps will not disturb sleeping patients.

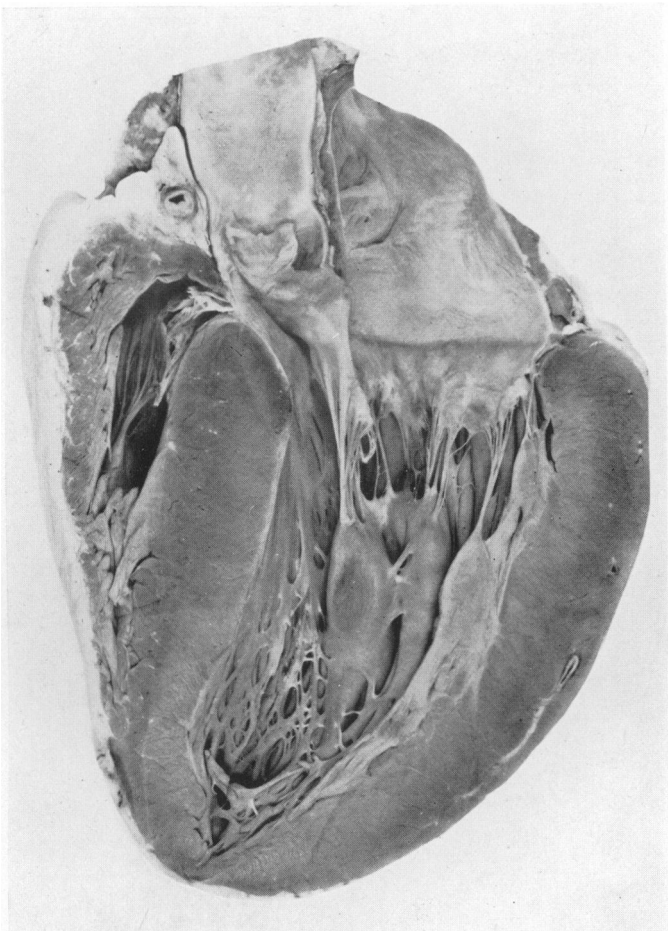

Fig. 1.—A2263.
A greatly hypertrophied heart from a case of essential hypertension showing the onset of decompensation.

Fig. 2.—A2262.
Small arteries and an arteriole showing proliferative changes in the intima. (Verhoeff's elastin stain.)

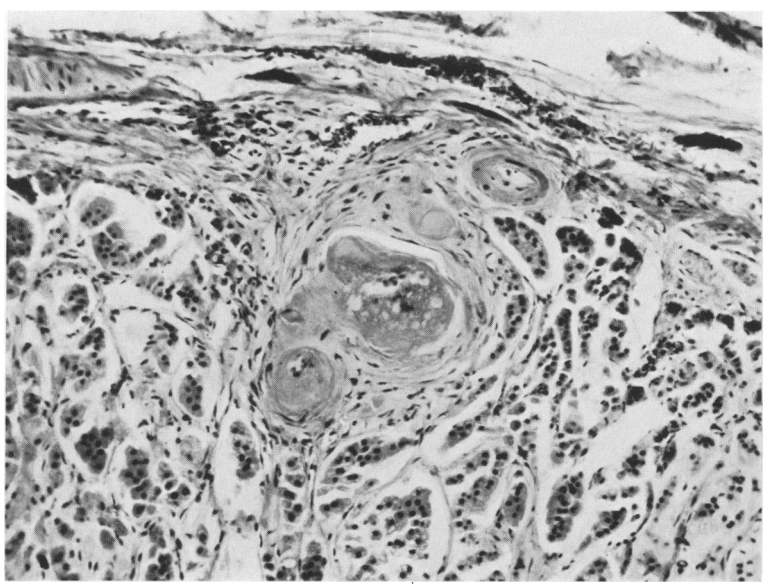

Fig. 3.
Hyalinised and necrotic vessels in the suprarenal cortex.

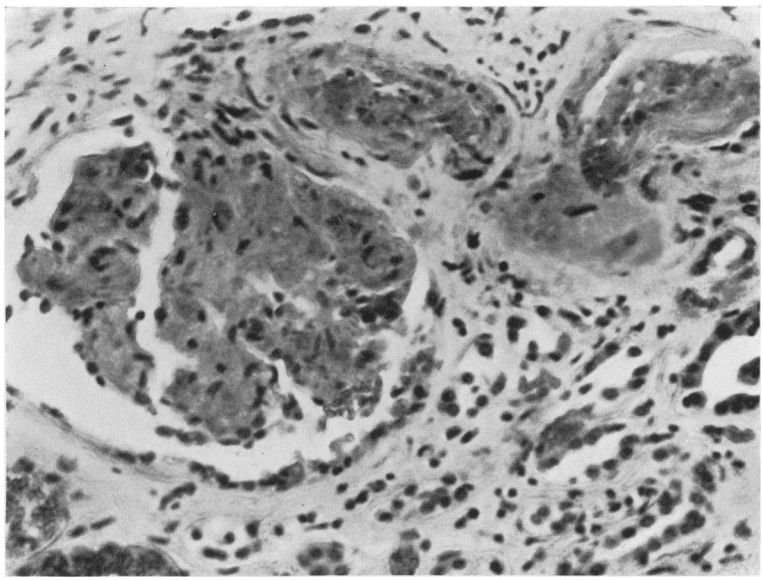

Fig. 4.

A hyalinised vas afferentia showing early necrotic changes. The glomerulus partly hyalinised. Blood is present in the capsular space.

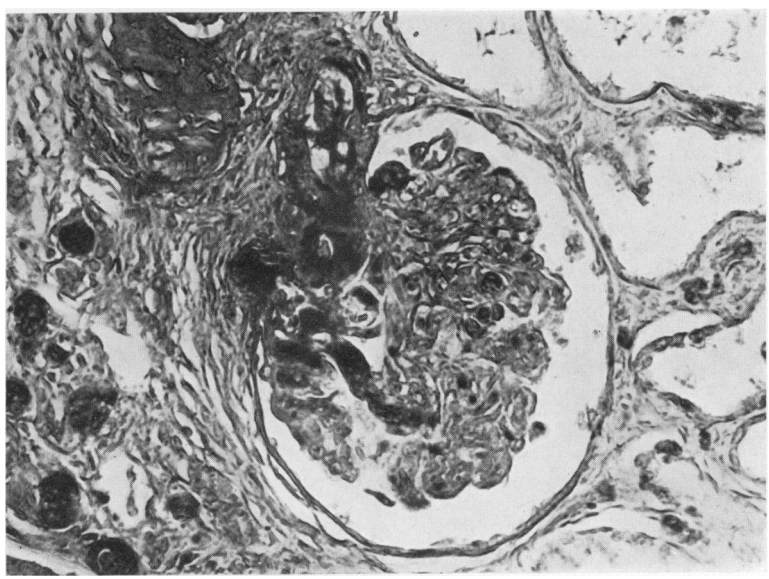

Fig. 5.

A dilated vas afferentia showing fibrin in the thickened wall. (Mallory's phosphotungstic acid.)

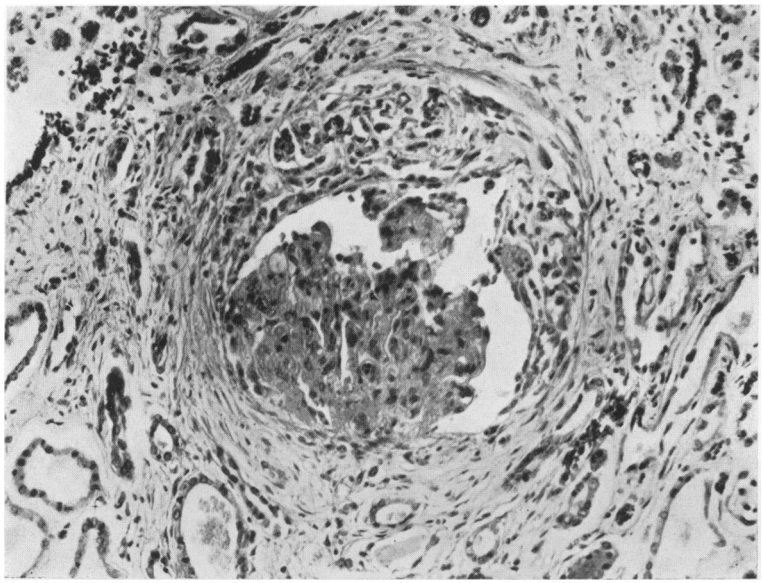

Fig. 6.
Proliferative changes in the capsular epithelium.

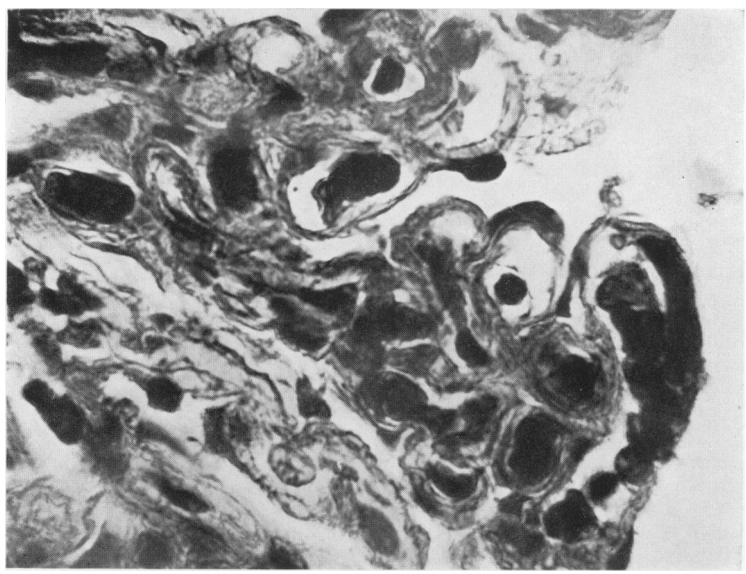

Fig. 7.
A small part of a glomerular lobule showing slight thickening of the basement membrane.

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The floors of the hospital are on the most modern lines; wood blocks are used in all the wards, and cork-tiles are used in the corridors, so that noise of footsteps will not disturb sleeping patients.

The accessory rooms include a large day-room for up-patients, a room which will house an X-ray plant when funds are available for its purchase, a dispensary, and rooms for radiant heat, massage, diathermy, ultra-violet light, galvanic baths, electric treatment, etc. A mortuary, well removed from the wards, with a post-mortem room near-by, and a clinical room fo rthe study of bloods, urines, etc., are also included.

The front of the hospital has a restful appearance, built of Dungannon rustic brick, and pointed with snow-crete. The back of the building is built of Haypark local brick; it extends to Abercorn Street, and here is found the out-patients' entrance. This latter most important department is entirely on the ground level; its floor is composed of terrazzo, and its walls are finished with white pioneer plaster.

The architect for the new hospital, which will cost for the portion now built £10,000, is Mr. Robert Frater, Belfast, in consultation with the visiting physicians, Dr. H. Hilton Stewart and Dr. R. S. Allison; and the contractors are Messrs. William Dowling & Sons, also of Belfast.

With this added accommodation the Claremont Street Hospital, as it is familiarly referred to, will be an asset of great value to the hospital services of Belfast, and should be a valuable training ground for medical students in this particularly difficult branch of medicine. Already it is attracting quite a number of students, and with the additional accommodation increasing numbers will surely follow.

The work of the hospital extends to a Convalescent Home and Epileptic Colony in Killowan, near Lisburn. It has accommodation for about twenty-two patients, and is visited regularly by the members of the honorary medical staff of the hospital.

BRITISH MEDICAL ASSOCIATION NORTHERN IRELAND BRANCH

BECAUSE of certain statements in the Press in the early part of this year, the Branch Council has had under consideration the question of the issue of certificates in the case of illness of school children.

Through the co-operation of the resident magistrate and the Education Authorities, the distinction has now been made clear between the legal value and the expediency of such certificates. A letter explaining the position is being prepared for circulation to members of the branch.

The series of articles on various aspects of medical work which appeared in the "Belfast Telegraph" in the winter has been prepared in booklet form. In order to impress the need for greater co-ordination of the medical services in Northern Ireland on those concerned, this booklet, together with Dr. Kidd's paper, and the British Medical Association's "General Medical Service for the Nation," have been forwarded, with a covering note, to members of the branch, and also to representatives of County and Town Councils, Urban and Rural Councils, Boards of Guardians, and the members of Senate and Commons of the Northern Parliament.

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The time has proved peculiarly suitable to emphasise some of the more urgent points.

This session the meeting of the Branch in Londonderry revives an old custom. It has been arranged for the latter part of April, and is to take the form of a series of short papers, followed by discussion. Mr. Irwin is also showing his film on the Smith-Petersen Nail.

F. M. B. ALLEN
R. W. M. STRAIN } *Hon. Secretaries.*

BELFAST MEDICAL STUDENTS' ASSOCIATION VISIT TO LONDON

FEBRUARY 10th, 11th, and 12th, 1939

THE Committee of the Belfast Medical Students' Association organised, as an innovation this year, a week-end visit to London with the object of giving students an opportunity of seeing something of the medical work there. Such visits are annual events in some of the other provincial universities, and have proved a great success, and certainly during the week-end spent there the party from Queen's enjoyed a most interesting and varied experience. The visit took place in February, and the fact that the England v. Ireland Rugby International was played at Twickenham the same week-end was something more than a mere coincidence! Some thirty students of both sexes, including one or two house surgeons, made up the party, and as all were in their clinical years—third, fourth, and fifth—were well able to appreciate the work of the hospitals.

On arrival in London on Friday towards mid-day, the party divided to go to various hotels, and after lunch reassembled at Broadcasting House. Here we were warmly received by Mr. Ogilvie, our former Vice-Chancellor at Queen's, and were joined by Professor W. W. D. Thomson, Professor Barcroft, and other friends who had heard of our programme. The tour of Broadcasting House was conducted by two guides, and lasted just one hour. We were shown from the basement, where the noiseless air-conditioning apparatus is situated, right to the sand-bagged roof. It is a veritable warren of studios, large and small, and all acoustically perfect; each is furnished and decorated to give the right atmosphere for the subject for which it is used; for instance, the religious services are broadcast from a studio which is like a small chapel with altar and decorations; that for the children's hour has modern decorations, while the serious talks are given from a beautiful study lined with books, and a thoughtful portrait of George Washington looking down. The effects room, where noises from the buzzing of a bee to the roar of a train can be artificially produced, was of great interest. Finally we saw the control room at the top, where the slightest error can bring in forty thousand letters of complaint the following day! A glance into the television room and into some of the delightful rest rooms brought our visit to an end. We were all most impressed, and now feel

that we can see behind the scenes when we listen-in, and are certainly satisfied that our ten shillings a year are well spent.

Leaving Broadcasting House at half-past two, a short walk brought us to the Middlesex Hospital, where most of us felt more at home. Here Mr. Pearce Gould had prepared a splendid variety of entertainment for us. We were received in the board-room by several housemen and students, who, with great kindness and undetectable reluctance, had arranged to give up their afternoon to act as our guides, philosophers, and friends. After several suggestions as to what we might like to see, most of us chose to see the hospital as a whole. Accordingly we started at the top floor, the sixth, and worked down. Each unit is roughly H-shaped, the limbs representing wards and the cross stroke theatres, kitchens, clinical rooms, as compared with the U-shaped units at the Royal Victoria Hospital. The top floor is devoted to women and children, the latter section containing both medical and surgical cases. A feature of the wards is the provision of curtains for each bed. Cases shown to us here included a meningocele in a young infant, thyrotoxicosis in a boy of ten years, and a cavernous hemiangioma in an infant. The fifth floor is devoted to gynæcological cases, and the next three to general medical and surgical cases, some of which were demonstrated. The first floor is perhaps the most interesting; cases of particular interest to the special departments are transferred here. Professor Samson Wright, who occupies the Chair of Physiology, amongst others has cases under observation and treatment in this unit. We were shown a case of adreno-genital virilism in a boy of five years, and a case of aplastic anæmia treated by continuous drip-blood transfusion. Large balconies are an interesting feature of these wards; they overlook the inner courtyard, and are capable of holding several beds each. The ground floor is occupied by offices and special departments—the latter included an elaborate teleradium unit which Dr. Ravan was kind enough to show us. The radium-bomb was built by Metro-Vickers, and can be adjusted to any position—the same applying to the dentist's chair supplied for the patient. An ingenious vacuum safe retains the radium until released by a time clock for a predeterminable period, after which it returns to the safe. X-ray rooms are more numerous than with us in Belfast; we did not have the opportunity of seeing their equipment. The cardiological department is situated in the basement. (Electrocardiographs by Cambridge Instrument Company. X-ray screening by Schall.)

After tea, which was served in the board-room, our hosts, to our pleasant surprise, had more in store for us. We were invited to the beautifully-equipped clinical lecture theatre to hear a few words from Dr. Kekwick about the continuous drip transfusion apparatus. He explained to us the components, function, advantages and optimum rates of flow of the apparatus. A few questions from final-year Queensmen and a word or two of appreciation from Mr. Lusk on our behalf completed a very interesting talk. From here we were taken to the orthopædic department, where Mr. Gray gave us a most interesting clinique on the treatment of dislocation of the limb-joints, laying great stress on the advisability of immediate mobilisation of dislocated joints, provided sufficient stability existed.

Several cases were shown, in which very good results had been obtained in relatively short periods. He also showed a case in which the supraspinatus muscle was torn, and another of circumflex palsy. Mr. M'Connell expressed our gratitude for such an interesting talk.

We left the Middlesex after a most enjoyable and profitable afternoon, with our hosts' assurances that they would take the first opportunity of giving Queen's a chance of repaying their wonderful hospitality.

After this some of us went to Mr. Ogilvie's house, where an interesting presentation of a casket was made to Professor Hummel by his old pupils of the School of Technology, Belfast. In the evening the party was divided into groups and entertained to private dinner parties by several Belfast graduates, notable amongst these were:—Mr. R. Lindsay-Rea, F.R.C.S.; Mr. Robert Kerr, F.R.C.S.; Dr. Jack Freeman, Mr. R. Leslie Dodds, F.R.C.S.; Dr. A. McIlwaine. After dinner the party, together with their hosts, reassembled to enjoy a splendid variety show at the Palladium.

On Saturday morning at ten o'clock we all met at the Royal College of Surgeons, Lincoln's Inn Fields, where Professor Beattie and his staff most kindly entertained us. After a few remarks on the origins and development of the college from barber-surgeon days, our host took us through the specimen rooms, pointing out how the nucleus—some nine or ten thousand exhibits—were from the hand of John Hunter himself. We saw the first tissue graft on record, an experiment in which Hunter had successfully transplanted a human tooth into a cock's comb. Unfortunately we did not have time to inspect the collection of foreign bodies, and in particular, a certain tramcar handle of whose peregrinations we had already been informed. There followed a brief visit to the library, whose curator had generously laid out its choicest treasures, including Hunter's famous letter to Jenner about hedgehog hibernation, advising him, "don't think, try the experiment." And so to the laboratories, which must be ranked as one of the high spots of our trip. Some four or five pieces of research were in progress, and we visited these in turn in small groups. First, a study of the effects upon the blood-sugar or stimulation of the cervical sympathetic. This was in the preliminary stages, and attention was focussed on the comparison to high frequency and simple neon-lamp stimulations—the recording being from the inctitating membrane. Following this, we saw a demonstration of the effects of pressure changes in the aorta on the cardiac depressor nerve, registered via a simple electrode by an oscillograph. Other observers were concerned with the results on respiration of stimulation of the hypothalamus, whose anterior portion contains parasympathetic centres, the posterior being sympathetic. The former centres stimulated, and the latter depressed respiratory movements. It is hoped to correlate these findings with brain surgery in man, in an attempt to explain post-operative respiratory failure and lung collapse. In the above experiments cats were used, with intraperitoneal barbiturate for anæsthetic. In another group thyrotoxicosis was under investigation, by injecting pituitary extract into hypophysectomised rats whose basal metabolic rate was registered in a special thermo-insulated chamber. In

another room the blood-pressure was being registered in rats' tails after operation upon the kidney. This was an attempt to elucidate the problem of essential hypertension. Unfortunately, we could stay no longer, so after a delightful lunch with our hosts, during which Dr. Nelson proposed our vote of thanks, we left, deeply impressed, for Twickenham.

The match has been better described by other pens than ours, but the disappointment of the medical students whose touch-line seats were behind the goal-posts was soon banished when Dr. Sinclair Irwin decided to place the winning try just a few feet from them. With glorious weather, a good try, and a perfect result, the trek back from Twickenham with 66,000 others was hardly noticed. Saturday evening was free for each to choose his own type of entertainment.

On Sunday morning, for those interested (and almost all were present) a very well organised inspection was made of the Hospital for Sick Children, Great Ormond Street. The tour was organised by Mr. Denis Browne, designer of the well-known splint, and we were sorry not to have met him personally, but were well taken care of by the senior house surgeon. We did not spend any time at the old hospital, which now is used as an out-patient department, but went straight away to the new building. It is an eight-storey structure, built with several wings from the central column, which contains the lifts, stairways, theatres, and offices, and each floor is laid out on the same plan. Each floor of a wing contains a complete unit made up of one general ward for six patients and four private wards, together with kitchen and clinical room. One side wall of the wing opens on to a balcony which can accommodate all ten beds. The whole interior is designed on most modern lines, combining beauty with efficiency and a spaciousness which allows of a maximum of light and air, so necessary in Central London. This tends to give the impression that in comparison with the size of the wards there were relatively few beds. In this hospital every modern device has been used; one of the main features being the isolation that each child can have, so that the chances of infection are reduced to a minimum.

The method of calling housemen was quite ingenious. Each houseman has a combination of two numbers from 1 to 12, and he is called by the repeated illumination of his numbers on a dial. In the surgical end we saw mostly genito-urinary cases, together with a few miscellaneous ones. They had recently had several cases of "Wilms tumour," in which nephrectomy following early diagnosis had given better results than one would have expected. Children under five are affected chiefly, and the kidney shows great enlargement. There is usually no hæmaturia. It is essentially a mixed tumour, rapidly growing, and often involves both kidneys, and widespread metastasis is the rule, although cases were recorded which were alive and well two years ofter operation. Another case shown to us was a boy of seven years with a red and tender mass above the inguinal ligament about the junction of its medial third and lateral two-thirds. It was of short duration and appeared as a simple abscess. The X-ray, however, showed it to be tuberculous disease of the os pubis. In the medical end the chief case of interest

was an infant, three days old, with all the symptoms of pyloric stenosis. On operation, however, it was found that the duodenum ended blindly, while the jejunum was rudimentary, without lumen and lying free. The jejunum was excised and the duodenum anastomosed to the ileum. The infant was given continuous drip glucose saline, and it is worthy of note that after fourteen days it had lost only six ounces. Before leaving the hospital we were shown two of the new iron lungs and an oxygen tent.

Leaving the hospital at 12.30, some of us visited the Zoo, where we were particularly interested to see, among other recent arrivals, the Giant Panda. It is extraordinary that in this year of 1939 a new animal should have been discovered in the Himalayas, whose existence had not hitherto been suspected.

How to spend Sunday afternoon in a strange city is always rather a problem, and we are extremely grateful to the Queensmen and their friends who so gallantly came to our rescue and gave us such a grand afternoon. At 2.30 p.m. we all collected at 101 Harley Street, where our hosts, each with his car, were waiting for us; they were Mr. R. Lindsay Rea, Mr. R. Leslie Dodds, Mr. W. M'Kim M'Cullagh, Dr. V. D. Allison, Dr. Turnbull, Mr. Condy, and Mr. Finlayson. We split into groups of three or four, and were driven for two hours or so through some of the most interesting parts of London. As it was Sunday, the problem which London traffic usually presents was solved, and, driving through practically deserted streets, we covered an amazing amount of ground. The tour was short, swift, very instructive and extremely luxurious. We saw the Houses of Parliament, Buckingham Palace, the Bank of England, the Tower, Westminster Abbey, St. Paul's, and so on, and on passing through Hyde Park and Regent's Park the recent hastily-dug trenches presented rather a grim contrast. On our return to Harley Street, in spite of the size of our party, Mrs. Lindsay Rea entertained all of us and a few other Belfast friends to a sumptuous tea. Impromptu entertainment was provided by Mr. Findlayson and Mr. Holley, who let his voice be heard in "Down Where the Praties Grow." Needless to say, the party would not have been complete without a Queen's Fravilio, and this must have shaken Harley Street! Mr. Brian McConnell expressed our appreciation of the wonderful hospitality which was so generously given to us over the week-end, and which added so much to its pleasure. Our time for leaving came all too quickly, and our hosts conducted the entire party to Euston, and were last seen waving their farewells as the 6.35 train steamed away to the North. With this send-off ended a most enjoyable week-end, a happy blending of medical education and amusement.

ULSTER MEDICAL SOCIETY

THE fifth meeting of the session was held in the Whitla Medical Institute on 12th January, 1939. The president, Dr. John McCloy, occupied the chair, and introduced the lecturer for the evening, Mr. T. C. Dodds, of the Institute of Pathology, Edinburgh University. The subject of the lecture was "Colour Photography in Medicine." The lecture was illustrated by a wonderful collection of photographs in natural colours, made from whole mounts and from highly-

magnified microscopic preparations. This lecture is published elsewhere in this issue of the journal.

The sixth meeting of the session was held in the Whitla Institute on 26th January, 1939. Dr. John McCloy occupied the chair. Dr. Douglas Boyd delivered an address: "The Duodenal Circle." This was a clinical study, illustrated by a wide range of X-ray pictures illustrating the many conditions which present symptoms referred to this small circle of only a few inches in diameter. It is hoped to publish this paper in a future number of the journal. A long discussion followed Dr. Boyd's paper, and at least twelve members of the Society took part. The meeting did not conclude until five minutes after eleven o'clock.

The seventh meeting of the session was held on 9th February, 1939, with the president, Dr. McCloy, in the chair. Mr. J. McAllan, B.Sc., M.R.C.V.S., the chief veterinary officer of the Ministry on Agriculture, Stormont, lectured on "Diseases of Animals Communicable to Man." This paper is published eleswhere in this issue of the journal.

The annual laboratory meeting of the Society was held on Thursday, 23rd February, 1939, by kind permission of Professor J. H. Biggart, in the Institute of Pathology of Queen's University. Dr. John McCloy, the president, occupied the chair. A very large exhibition of mounted specimens with accompanying clinical notes was on view, and short instructive discussions took place around them. Radiographs were also exhibited, methods for typing bacillus tuberculosis, and a new method of utilising stored blood for transfusions were also demonstrated. The clinical notes of the more interesting of these pathological specimens will be published in this journal.

The eighth meeting of the session was held in the Whitla Medical Institute on Thursday, 9th March, 1939. Dr. John McCloy, the president, occupied the chair. Two papers were read: one by Miss D. D. Rankin, B.Sc., the orthoptic specialist on the staff of the Ophthalmic Hospital, the Benn Ophthalmic Hospital, and in the Ulster Hospital for Children and Women; the second was by Miss M. L. Hayward, on speech therapy. Miss Hayward is on the staff of the Belfast Hospital for Sick Children.

Dr. Beatrice Lynn, introducing Miss Rankin, said: Recent advances in medical science have involved the co-operation with our profession, in some degree, of workers in other spheres, for example, massage, electrical treatment of various sorts. Perhaps the latest of these accessory workers is the orthoptist.

Orthoptics, or the non-operative treatment of squints, is by no means a new idea. We find its roots deep down in the history of medicine. In the earliest records of medical writings we find squint mentioned; for example, in ancient Egyptian records there is a reference to the subject dating about 1650 B.C.

The treatment reads thus: For turning of the eyes, equal parts of tortoise brain and oriental spices rubbed together. This treatment could hardly be expected to be permanent, but, at any rate, it held the field for some two thousand years, until it was displaced by the mask of Paulus Aegineta, A.D. 625-690. This mask was

worn before the face, and reached its greatest development eight hundred years later, in the time of Bartisch, and no further mention of it is found until its revival in quite recent times.

In 1743 we find the first attempt to explain squint, a French surgeon drawing attention to three important points :—(1) That squint occurred as a result of anisometropia; (2) that occlusion of the good eye was beneficial in squint; (3) the need of equalising the two eyes as far as possible by suitable correcting lenses, and by his insistence upon constant exercise of the bad eye he may be said to have been the first to introduce sound methods of orthoptic training. (In 1801 these views were confirmed by Erasmus Darwin.) Towards the end of the eighteenth century a quack, Chevalier John Taylor introduced the operation of conj clipping for the relief of squint, and this operation was later put upon a scientific basis by the surgeons.

Thus in the early part of the nineteenth century we find two diverging paths of treatment—the operative and the orthoptic.

In 1850, when the operative procedure had reached its golden age, we find prominent surgeons, notably Hayes Walton, describing orthoptics as ingenious but futile, and at the same time equally prominent men like Graefe Donders Paval and Mackenzie working on the cause of squint, and its treatment by exercises.

Perhaps Mackenzie struck the keynote of our present conception of squint when in 1855 he wrote : "The cause of squint should be sought elsewhere than in the muscles of the eye; elsewhere than in the retina; that is to say, in the brain and nerves, organs which preside over the association of the acts of the muscles of the eyes.

And now nearly three-quarters of a century later we find these diverging paths meeting in our modern squint clinics. It is the aim of ophthalmic surgeons to-day to preserve the balance between the operative and the orthoptic treatment—to operate when necessary, and to withhold operation where it would ultimatly be disadvantageous.

Miss Rankin, who is with us to-night, is the first orthoptist to work in Ireland, and she has been invited to come here to-night to tell you how she helps us in our work of endeavouring to maintain the proper balance between operative and non-operative treatment of strabismus.

Dr. F. M. B. Allen, introducing Miss Hayward, said : Speech defects are not modern inventions, for we read : "Moses was slow of speech and of a slow tongue," and Isaiah prophesied that the "tongue of the stammerer shall be ready to speak plainly." Speech defects appear to be increasing, and curative work must be approached with the object of finding the best way of alleviating the afflicted by giving them—(1) the best methods, (2) the best teachers. The latter are "speech therapists," not teachers of elocution, with whom they are often confused. Their subject is a relatively new one, and requires a long course of training in phonetics, neurology, plupiology, and clinical study. Miss Hayward is the first speech therapist to practise in Belfast, anl already her work in the Children's Hospital on

the Falls Road is showing signs of success. She works only under the direction of medical practitioners.

The president and Mrs. McCloy held a reception at the Whitla Medical Institute on the 31st January, 1939. There was a large attendance of fellows and members, their wives and friends. The lecture room had been beautifully decorated for the occasion, and presented an animated appearance. After receiving their guests, the president and company were entertained by musical selections. This part of the programme was much appreciated, and the artist, Mr. James Johnstone, received several encores. Dancing followed, and was joined in by most of those present. Supper was served in the library, and the entertainment concluded about one o'clock, all the guests having spent a most delightful and enjoyable evening.

R. S. ALLISON, *Hon. Editorial Secretary.*

University Square, Belfast.

BRITISH MEDICAL ASSOCIATION
BELFAST DIVISION

A SPECIAL meeting of all doctors within the Belfast Division area was held on 21st February, under the chairmanship of Dr. Eileen Hickey, in connection with the suggested scheme for the protection of the practices of absentee doctors during a national emergency. In addition to members of the British Medical Association, a number of non-members were present.

Dr. Hickey introduced the subject to be considered by the meeting as a carefully thought-out scheme, and emphasised its great importance to all doctors.

Dr. F. M. B. Allen then moved that the scheme should be adopted by the meeting, and that the following should be appointed to constitute the Local Emergency Committee to conduct the scheme :—

Dr. S. P. Rea and Dr. S. M. McComb, nominated by the Executive Committee of the Belfast Division.

Dr. David Gray and Dr. S. E. A. Acheson, nominated by the Insurance Practitioners' Committee.

Dr. H. A. Warnock, nominated by the Medical Superintendent Officer of Health.

Dr. Brice R. Clarke and Dr. D. M. B. Lothian, representing non-teaching hospitals in the area.

Dr. Robert Marshall and Dr. A. Dempsey, representing the teaching hospitals.

His motion was seconded by Dr. Bennett, and agreed to unanimously.

Many members took part in the discussion which followed. It was shown that during the last war the need for some method of protecting the practices of those on active service had become obvious, and from that time a scheme had been evolving, which, after much thought and discussion, had reached the form of the model scheme now being considered.

In case of panel practice, it adequately protected the absentee practitioner, fifty per cent. of his income from insurance practice being paid to him, while the other

half would be distributed among the acting practitioners, in proportion to the number of his patients who were temporarily attached to their lists. New panel patients would remain on the temporary list of the acting practitioner of their choice during the period of emergency and for an agreed period afterwards, after which they had the right to apply to any practitioner for acceptance on his ordinary list. It was stated that the Local Health Insurance Authorities would co-operate in every way to facilitate the scheme, and would undertake the clerical work entailed. It was hoped that they might also use their powers to prevent unfair attempts to encroach on the practices of those on active service.

The scheme also dealt with private practice, acting practitioners making regular returns of attendances, visits, etc., to a bureau set up by the Local Emergency Committee, the latter collecting the fees, and dividing the receipts equally between the absentee and the acting doctor. It was the feeling of the meeting that while the scheme would work smoothly in the case of insured persons, in the case of private patients this would be more difficult, and a few of those at home might use their opportunities of adding to their practices in an unscrupulous and unethical way. Nevertheless, though it might not be completely effective, a doctor who remained outside the scheme would be very much at a disadvantage.

In accordance with the model scheme, the Local Emergency Committee was then empowered by the meeting to approach each practitioner in the Belfast Division area with a view to signing the form of agreement embodied in the medel scheme, in which he agreed to the terms and conditions of the latter. Dr. Hickey having again emphasised that every doctor should subscribe to the scheme, both for his own sake and that of the profession as a whole, the meeting terminated.

J. C. C. CRAWFORD, *Hon. Secretary.*

360 Lisburn Road, Belfast.

BRITISH MEDICAL ASSOCIATION
NORTH-EAST ULSTER DIVISION

THE annual social meeting was held in the Temperance Cafe, Coleraine, on Monday, 9th January. The chairman (Dr. J. M. Hunter) and Mrs. Hunter entertained a large company of members and their friends to tea. Dr. W. Colquhoun, of Dunmurry, delivered a most interesting address on "Mountaineering Here and There," illustrated by lantern slides. A vote of thanks to the lecturer was heartily carried, as was a similar vote to the chairman and Mrs. Hunter, and this concluded a most enjoyable function.

A meeting was held in the Temperance Cafe, Coleraine, on Monday, 20th February, 1939. Before reading the minutes of the previous meeting, the secretary drew attention to the fact that these minutes were written on the last page of the book used since the inauguration of the Division. The first entry was dated 7th January, 1903, when a meeting was held in Ballymoney to form a division of the

British Medical Association. Dr. S. Boyd was unanimously called to the chair, and Dr. Huey, Dr. Creery, and Dr. J. C. Martin were elected vice-presidents. Dr. J. C. Martin was appointed hon. secretary.

After routine business, arrangements were made to settle details regarding the annual dinner and the annual golf match. The former was provisionally fixed for Saturday, 15th April.

The chairman, Dr. J. Hunter, Portrush, then called on Dr. Eileen Hickey, of Belfast, to read a paper on "A Few Interesting Cases and Some Pitfalls in Diagnosis." Dr. Hickey delivered a most interesting address, and a good discussion followed. The usual silver collection for medical charities was taken, and the meeting closed.

G. BATEMAN, *Hon. Secretary.*

Hanover Place, Coleraine.

BRITISH MEDICAL ASSOCIATION
TYRONE DIVISION

THE annual meeting of the above Division was held in the County Hospital, Omagh, on Wednesday, 25th January, 1939, at 4 p.m. The chair was taken by Dr. Gillespie. Those present were:—Drs. Watson, O'Brien, Henry, Johnston, Maybin, Lagan, Warnock, Leary, McVicker, Chambers, Lyle (L. A.), Eaton, Martin (hon. secretary).

The secretary informed the members that he had sent a telegram of sympathy to Lady Johnstone on learning of the death of Sir Robert Johnstone, and read a letter from Lady Johnstone.

Votes of sympathy were passed in silence to the following members:—Drs. Margaret M. Nelson and Herbert Nelson, on the death of their father; and John Gormley, Abbey Place, Omagh, on the death of his father, who for many years held the position of Clerk to the Omagh Board of Guardians, and who gave his services and assistance so willingly to those members of the profession practising in the Omagh Union. The secretary was instructed to write these letters of sympathy.

The minutes of the last meeting were read and signed by the chairman.

The following officers for the year 1939-40 were elected:—Chairman, Dr. Eaton; vice-chairman, Dr. McNeill; secretary, Dr. Martin; treasurer, Dr. L. A. Lyle; representatives on branch, Dr. Spence and Dr. Gillespie; representative on Representative Council, Dr. W. Lyle; Executive Committee, Dr. Chambers, Dr. Johnston, Dr. Leary, Dr. Lagan, Dr. Warnock, Dr. Gillespie, Dr. McVicker, together with the former.

Dr. Eaton then took the chair, and received a warm welcome from the members present.

The secretary informed the members that he had received the necessary agreements for the protection of practices, and as a number of members had not been present at the meeting summoning all medical practitioners to attend, on the 5th October last, when the scheme was considered and adopted, it was agreed that

the secretary send a notice to all practitioners together with the agreement form, requesting them to read the agreement over carefully, and if unable to attend a meeting to be held at a future date, to write the hon. secretary, stating their views.

The treasurer then submitted his financial report for the year ending 31st December, 1938, which had been audited by the auditor, Dr. Eaton; this showed a credit balance of £2. 16s. 9d., the total amount of unpaid accounts being £1. 0s. 7d. This was accepted by those present.

The following meetings were arranged for 1939 :—Special lecture by Dr. F. Kane, Medical Superintendent, Purdysburn Fever Hospital; suggested dates are the 8th or 15th March. Visit of inspection of the new wing to the Mental Hospital, by kind invitation of Dr. J. M. Johnston, Medical Superintendent. Other lectures to be arranged by the secretary.

The question of school certificates was again discussed; half of the members were against issuing school certificates, as they claimed that there was nothing in the Act (Educational) to compel the parent or guardian of the child to produce medical evidence for non-attendance at school as the result of illness, and it was further stated by the leader of this section, Dr. Gillespie, that medical certificates are not used as evidence for the prosecution, and are only accepted out of courtesy. Another section, led by Dr. Lagan, thought of the hardships brought to parents as the result of refusal of these certificates, and after a long discussion it was agreed to write the Regional Authority at Omagh, stating that in our opinion the demand for school certificates should come from the Regional Authority, and not, as is the practice, from the parent or guardian of the child, and inviting them to meet our committee for the purpose of discussing the whole question of school certification.

There being no further business the meeting adjourned, the members having been entertained to tea by the matron, Miss Snodgrass.

JOHN R. MARTIN, *Hon. Secretary.*

Clogher, Co. Tyrone.

REVIEWS

WHITLA'S DICTIONARY OF TREATMENT. Eighth Edition. By R. S. Allison, M.D., F.R.C.P.(Lond.), and C. A. Calvert, F.R.C.S.I. 1938. London : Bailliere, Tindall & Cox. Pp. 1,286. Price 30s. net.

WE welcome the eighth edition of Whitla's Dictionary of Treatment. This textbook, first published in 1891, served many generations of medical practitioners in every part of the world as a trusted and reliable guide to the treatment of disease. Dr. Allison, Mr. Calvert, and their collaborators have in this edition entirely rewritten Sir William Whitla's masterpiece, and have produced a work, so practical, modern and thorough, covering the whole field of medicine and surgery, that the new edition will prove invaluable to those engaged in general practice, and to senior students.

The original structure of the book, in dictionary form, has been retained. Dr. Allison has improved the method of presentation by the introduction of a short clinical description of each disease, which leads naturally to the principles and details involved in its treatment. The technique of procedures employed by medical men in their daily routine is fully described, such as intramuscular and intravenous medication, venisection, paracentius, lumbar puncture, etc. Many

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of Sir William's original prescriptions and clinical aphorisms are preserved, which remind the reader from time to time of the remarkable personality of the original creator of the Dictionary of Treatment.

Dr. Allison keeps before the reader all through the book the importance of a suitable dietary in the treatment of disease, an aspect of therapeutics too often neglected in textbooks of treatment. The article on diet is a model of its kind, and the method of calculation of a diet of known caloric value is fully and lucidly described. In every disease where diet is of special importance, as in diabetes, ulcerative colitis, typhoid fever, etc., suitable diets are given in detail. Dr. Allison's classification of various conditions, such as nephritis, follows the line of recent research, and we note with approval that essential hypertension is definitely removed from the nephritic group, and treated as a distinct entity.

The method of investigation of patients with such presenting symptoms as dyspepsia, contsipation, diarrhœa, headache, vertigo, etc., is described, and the importance of accurate diagnosis before the institution of haphazard treatment is stressed.

One of the most useful sections in this book is that dealing with the psychoneuroses. In every practice these unfortunate people present a difficult problem, too often avoided and shunned by the medical practitioner. If the methods suggested by Dr. Allison are followed, the problems presented by many of these patients can be unravelled, teaching them to live in closer harmony with their environment.

The general practitioner will find practical and helpful advice in every section, whether he turns to articles dealing with such emergencies as hæmoptisis and hæmatemisis, of acute illnesses as coronary thrombosis, lobar pneumonia, and acute anterior poleomylitis; of the more chronic forms of disease such as the cardiac case, the various types of paralysis, the neuro-syphilitic, etc.

The sections dealing with surgical problems which lie within the scope of the medical practitioner have been written with the painstaking care and accuracy so characteristic a feature in all the work of Mr. C. A. Calvert. The article dealing with the important subject of head injury, its immediate treatment, and the indications for operative and conservative treatment, will prove of immense value to the medical man in his anxious watch over such a case. The section dealing with fractures gives a comprehensive survey of the general aspects of treatment, and a detailed account of the treatment of fractures of special bones. The article on appendicitis and its treatment in cases seen at various intervals after the onset is most helpful and lucid. These few examples taken at random demonstrate the assistance these sections may be to the practitioner far from skilled surgical assistance.

Mr. C. H. G. Macafee is responsible for the articles on midwifery and gynæcology. The conduct of normal labour in every stage is considered in full detail, and the advice given in dealing with emergencies and complications is full of practical wisdom. The difficult subject of hormone therapy and menstrual disorders is clearly and critically discussed. The description of Hormbrook's exercises for prolapse is well worthy of study. A sane review is given of the vexed question of contraception. In a word, for the general practitioner in whose practice obstetrics and gynæcology figure largely, these sections of the Dictionary will prove of the greatest value.

Dr. Ivan H. McCaw deals with the treatment of diseases of the skin, and gives alternate treatments for each condition; Mr. J. A. Corkey gives a lucid account of the treatment of diseases of the eye, his articles on cataract and concomitant squint with orthoptic treatment therapy being specially noteworthy.

Dr. F. M. B. Allen's account of the feeding of infants and the care of the premature infant is detailed, and full of wise advice.

Dr. Brice R. Clarke considers the treatment of pulmonary tuberculosis from every aspect, and his article is one of the best and most helpful sections in the book.

Mr. J. S. Loughridge, in his article on inflammation, deals with the indications for the use of the sulphanilamide group; and Dr. P. A. Clearkin discusses the main tropical diseases, and their recent and accepted methods of treatment. Other sections dealing with diseases of the ear, nose, and throat, by Dr. J. R. Wheeler; with genito-urinary diseases, by Mr. C. J. A. Woodside; with venereal disease, by Dr. H. E. Hall, will be found of practical value.

The excellent index, compiled by Dr. C. M. Ottley, is full, and reference to the subject matter in the text is thus expedited.

The Dictionary would be rendered still more valuable by the addition of a few diagrams; the lack of these is especially noticeable in the article on fractures. A fuller reference in the form of foot-notes to the authorities quoted would be an addition appreciated by those readers who desire to consult the original papers.

In conclusion, we congratulate Dr. Allison and Mr. Calvert, and their collaborators in maintaining the high traditions established in the past by the Dictionary of Treatment, and in preserving the associations of this work with the Belfast Medical School, an association which has endured for almost half a century.

THE PHARMACOLOGY AND THERAPEUTICS OF THE MATERIA MEDICA. Fifteenth Edition. By Walter J. Dilling, M.B., Professor of Pharmacology and Therapeutics, Liverpool University. Price 10s. 6d. net. Pp. 600. Cassell & Co., Ltd. 1939.

THIS book, which in former editions was known as "Materia Medica and Therapeutics," has now reached the fifteenth edition, and its title has been changed in order to emphasise the increasing importance of pharmacology. The book has been well produced, and the subject matter is well arranged, concise, and up to date. A brief account of such recent work as the uses of mandelic acid salts, zinc protamine insulin, benzedrine, prostigmine, ovarian hormones, vitamin B, etc., is now included. It would have increased the usefulness of the book to the general practitioner if, when proprietary drugs are mentiond, the B.P., B.P.C., or ordinary equivalent name had been indicated, or at any rate some indication given that such drugs are proprietary.

The practitioner will find this handy-sized volume useful not only for refreshing his memory on general descriptions of drugs, but also for its valuable section on general therapeutics and pharmacology.

The book can be thoroughly recommended to the medical student also, as one of the best textbooks on the subject.

STUDENTS' HANDBOOK OF SURGICAL OPERATIONS. By Sir Frederick Treves. Revised by Cecil P. G. Wakeley, D.Sc., F.R.C.S. Sixth Edition. 1939. London : Cassell & Co., Ltd. Pp. 563. Figs. 246. 12s. 6d. net.

THERE are two factors which tend to make any book of this kind a source of abhorrence to the student. The first of these is that the student must try to acquire its data without having either the time or opportunities to see its dictates practised; secondly, at this stage of his career the student's knowledge of anatomy is minimal. These two factors render operative surgery a far more nauseous subject to assimilate than its companion clinical surgery. But Mr. Wakeley has overcome both of these difficulties, and has made an interesting and readable book.

At first sight it is alarming in the wide field of surgery it covers. However, more familiar procedures are found to be treated with the same meticulous care that characterises the whole book. In this respect the author has gone too far, in that he describes the position af assistants and the direction of various incisions to suit himself; a right-handed worker. Various workers would modify these directions to their own comfort; the left-handed man must reverse them.

The anatomical descriptions are short and exact. If they could be improved in any way it would be towards more purely anatomical diagrams. The diagrams are for the most part excellent, but in some instances a certain amount of cross-reference has to be conducted in following the text.

The student going up for his "final" will find this book admirably suited to his requirements. He must not expect it to be a "grind" in operative surgery; it contains all that the student requires, and will stimulate his interest in a field of work in which there is more scope for study after qualification.

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The student going up for his "final" will find this book admirably suited to his requirements. He must not expect it to be a "grind" in operative surgery; it contains all that the student requires, and will stimulate his interest in a field of work in which there is more scope for study after qualification.

The excellent index, compiled by Dr. C. M. Ottley, is full, and reference to the subject matter in the text is thus expedited.

The Dictionary would be rendered still more valuable by the addition of a few diagrams; the lack of these is especially noticeable in the article on fractures. A fuller reference in the form of foot-notes to the authorities quoted would be an addition appreciated by those readers who desire to consult the original papers.

In conclusion, we congratulate Dr. Allison and Mr. Calvert, and their collaborators in maintaining the high traditions established in the past by the Dictionary of Treatment, and in preserving the associations of this work with the Belfast Medical School, an association which has endured for almost half a century.

THE PHARMACOLOGY AND THERAPEUTICS OF THE MATERIA MEDICA. Fifteenth Edition. By Walter J. Dilling, M.B., Professor of Pharmacology and Therapeutics, Liverpool University. Price 10s. 6d. net. Pp. 600. Cassell & Co., Ltd. 1939.

THIS book, which in former editions was known as "Materia Medica and Therapeutics," has now reached the fifteenth edition, and its title has been changed in order to emphasise the increasing importance of pharmacology. The book has been well produced, and the subject matter is well arranged, concise, and up to date. A brief account of such recent work as the uses of mandelic acid salts, zinc protamine insulin, benzedrine, prostigmine, ovarian hormones, vitamin B, etc., is now included. It would have increased the usefulness of the book to the general practitioner if, when proprietary drugs are mentiond, the B.P., B.P.C., or ordinary equivalent name had been indicated, or at any rate some indication given that such drugs are proprietary.

The practitioner will find this handy-sized volume useful not only for refreshing his memory on general descriptions of drugs, but also for its valuable section on general therapeutics and pharmacology.

The book can be thoroughly recommended to the medical student also, as one of the best textbooks on the subject.

STUDENTS' HANDBOOK OF SURGICAL OPERATIONS. By Sir Frederick Treves. Revised by Cecil P. G. Wakeley, D.Sc., F.R.C.S. Sixth Edition. 1939. London : Cassell & Co., Ltd. Pp. 563. Figs. 246. 12s. 6d. net.

THERE are two factors which tend to make any book of this kind a source of abhorrence to the student. The first of these is that the student must try to acquire its data without having either the time or opportunities to see its dictates practised; secondly, at this stage of his career the student's knowledge of anatomy is minimal. These two factors render operative surgery a far more nauseous subject to assimilate than its companion clinical surgery. But Mr. Wakeley has overcome both of these difficulties, and has made an interesting and readable book.

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The convincing logic of his views and the precision with which they are expressed make one feel that the book should be in the hands of every teaching physician and every professor of physiology. It speaks volumes for the sane discriminating insight of the author that he can combine an address written as far back as 1920 with his present-day utterances. What he wrote in 1920 is as inspiring to-day as it was when he wrote it. The views put forward are as urgently in need of recognition to-day as they were when he delivered the address eighteen years ago. To quote one sentence alone: "The daily routine of the practitioner and the work of the special investigator . . . stand apart. You cannot deal with masses of patients by using refined methods; repeatedly it has been tried, it always breaks down. The chief weapons of the general practitioner are to-day, and will remain, his own unaided senses; these are supplemented by a few simple devices."

In his second lecture he deplores, with much justification the "plethora of pseudo-scientific publications under the weight of which our library tables groan," and comments further that "records of imperfect and actually unsound work find an almost open path to the printing press; reports of purely repetitive work have reached an extraordinary and most undesirable magnitude."

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TEXTBOOK OF MEDICINE. Edited by J. J. Conybeare, D.M.Oxon., F.R.C.P. Fourth Edition. 1939. Edinburgh: E. & S. Livingstone. Pp. 1,112.

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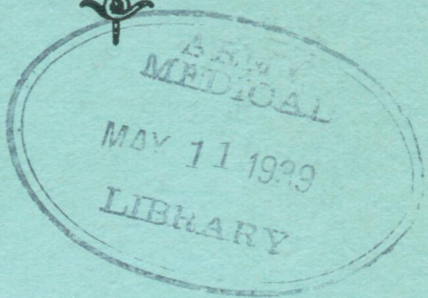

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