

JANUARY, 1933

THE ULSTER MEDICAL JOURNAL



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The Ulster Medical Journal

VOL. II

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Supplement to Volume II:

THE CAMPBELL ORATION, *by* John S. Campbell, M.D.

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FORTHCOMING MEDICAL MEETINGS, 1933

January	5	Ulster Medical Society	-	-	-	-	8.30 p.m.
„	12	British Medical Association, Ulster Branch	-	-	-	-	4.15 p.m.
„	19	Ulster Medical Society	-	-	-	-	8.30 p.m.
February	2	Ulster Medical Society	-	-	-	-	8.30 p.m.
„	16	Ulster Medical Society	-	-	-	-	8.30 p.m.
March	2	Ulster Medical Society	-	-	-	-	8.30 p.m.
		Laboratory Meeting	-	-	-	-	8.30 p.m.
„	16	Ulster Medical Society	-	-	-	-	8.30 p.m.

THE CAMPBELL ORATION

THE Campbell Oration will be delivered on 19th January, 1933, at 8.30 p.m., in the Medical Institute, Belfast. The orator will be Dr. John S. Campbell, and the subject "Streptococci."

POST-GRADUATE CLASSES ROYAL VICTORIA HOSPITAL, BELFAST

THE annual post-graduate classes for general practitioners will be held during 1933 on Wednesday afternoons, at 4 o'clock, throughout the year. The complete resources of the hospital will be utilised for the clinical part of the course, and all the members of the staff will take part in the lectures and discussions. The first meeting of the class will be on Wednesday, 25th January. The full syllabus of the course may be had from the honorary secretary of the Medical Staff, Royal Victoria Hospital, Belfast.

APPOINTMENTS

PROFESSOR ANDREW FULLERTON, C.B., C.M.G., F.R.C.S.I., has been appointed honorary consulting-surgeon to the Army in Northern Ireland.

Mr. C. H. G. Macafee, F.R.C.S., has been appointed honorary assistant gynaecologist to the Royal Victoria Hospital, Belfast.

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? For your convenience a proposal form is attached, which, if filled in and sent to the Honorary Secretary, 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, for which a banker's order form is attached for your convenience.

We remain,

Yours faithfully,

C. G. LOWRY, *President.*

J. A. SMYTH, *Hon. Secretary.*

F. M. B. ALLEN, *Hon. Treasurer.*

To DR. J. A. SMYTH,
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PUBLISHED QUARTERLY ON BEHALF OF THE ULSTER MEDICAL SOCIETY

Vol. II

1st JANUARY, 1933

No. 1

EDITORIAL

THE year 1933 will be a notable one in the medical history of Ireland, as during this year the annual meeting of the British Medical Association will be held in the city of Dublin. It would seem, then, a fit and proper thing to consider the contributions which Irish physicians and surgeons have made to the advancement of medical science. These are many, and all are of fundamental importance. They include the work of such men as William Stokes, who laid the foundations of modern cardiology; Robert Graves, whose name is associated with that condition of the thyroid gland known as Graves' disease, and who revolutionised the teaching of medicine by the introduction of clinical clerkships for students; Dominic Corrigan, whose name will ever be associated with that clinical entity known as Corrigan's pulse; Abraham Colles, whose name is still attached to a certain form of fracture of the lower end of the radius; Henry MacCormac, a pioneer in the open-air treatment of tuberculosis; and in more recent times, Robert McCarrison, who placed the etiology and treatment of disorders of the thyroid gland on an unassailable scientific basis. A short account of the work of these men, and of others less well known, has been prepared for publication in THE ULSTER MEDICAL JOURNAL, so that our readers may be enabled to receive their English and Scottish medical brethren with the knowledge and pride that Ireland in the past, as now, has made her contributions to the advancement not only of the science and practice of medicine and surgery, but to the advancement of the profession as a whole.

The Problem of Uterine Cancer

By C. G. LOWRY, M.D., F.R.C.S.I., F.C.O.G.

Presidential Address, Ulster Medical Society,

SESSION 1932-33

PAINSTAKING analyses of the cancer death-rate have been made over the last few years in England, Scotland, Ireland, and America. These show beyond question that there is a definite increase in the number of deaths from cancer. Three opposing views are held to account for this increase—(a) that the incidence of cancer is becoming greater, (b) that the incidence of the disease is merely the result of more acute diagnostic methods, and (c) that as cancer is more particularly a disease of advancing years, and the probability of life has increased during the last decade, the increase in the cancer death-rate may be the result of the increase in the number of elderly people in the population.

It would be a difficult task, in the light of our present knowledge, to decide which of these views is the correct one. It is, however, clear that the problem of cancer is of vital importance to the community, and in deciding the subject of my presidential address I have been constrained to take for it cancer, with particular reference to its incidence in the uterus. Cancer of this organ forms a very large proportion of all cancer deaths, and in Northern Ireland it forms 13.5 per cent. in females. The untreated case has but a few months to live, and I shall therefore confine my address to the methods of treatment open to the surgeon when confronted with a patient suffering from this disease.

There are two lines of treatment to-day for the woman suffering from cancer of the cervix: operation and radiation.

The modern operation for cancer of the cervix was introduced by Wertheim in Vienna in 1898, but it gained no considerable foothold in this country until Wertheim read his paper on the treatment of cancer of the cervix at the British Medical Association in Leicester, in 1905. The early attempts to eradicate the disease consisted in removal of the cervix, either by caustics, cautery, or the knife. As surgery developed, this was followed by removal of the entire uterus, with nearly one hundred per cent. of fatal recurrences. The Wertheim operation, which is based on an exact anatomical and pathological conception, consists of the removal of the uterus, tubes, ovaries, parametrium, the upper third of the vagina, and the enucleation of the pelvic glands. The difference between the ordinary total hysterectomy and the Wertheim operation is comparable to the difference between a simple excision of the breast and its modern radical removal with pectoral muscles, deep fascia, and thorough clearance of the axillary glands. A simple excision of the breast for cancer would not be considered justifiable surgery to-day, yet I am afraid that many cancerous uteri are still removed by a technique that is absolutely inadequate to afford even a slender chance of the total eradication of the cancer.

Three factors militate against the Wertheim operation :—

First, it is a difficult operation which requires prolonged practice and exact anatomical knowledge, absolutely first-class anæsthesia, and good assistants.

Second, it is attended, even in the most skilful hands, with high primary mortality. Bonney states that the risk of the operation lies less in the operation itself as in the poor average condition of the patients; and I think this is a statement that would be subscribed to by most operating gynecologists. Apart from the technical difficulties and risks of the operation, these patients as a group form a class of bad risks not met with in any other condition. Carried out by operators skilled in its performance, the primary mortality ranges from eight to eighteen per cent., and the ten-year cures are approximately about one in three of the patients operated on and one in five of those seen.

Third, rarely more than fifty per cent. of the patients presenting themselves are operable by this means. Bonney regarded sixty-three per cent. of his 450 cases as operable. Amongst 1,500 cases recently reported in Vienna, forty-seven per cent. were adjudged operable. Our operability rate is hardly even as good as Vienna; only two out of every five, or forty per cent., presenting themselves at the out-patient department of the Royal Victoria Hospital can be regarded as operable, and many of these are not good risks for operation. Strange as it may seem, more recent years have shown a definite retrogression in the type of case presenting. Whether it is that publicity about the cancer problem has defeated its own ends and created a cancerphobia, or whether patients have the mistaken idea that radium can at any stage of the disease work a miracle, are questions I do not attempt to answer, but the fact remains that the cases presenting for treatment year by year form a very discouraging group.

It is a tragic commentary on early diagnosis—taking the average hospital and private cases—that fully fifty per cent. of sufferers from cancer of the cervix, a cancer accessible to touch and vision, are inoperable when they seek, or are referred to, the gynecologist.

Radiotherapy scores over operation in two particulars—a very low primary mortality, and secondly, the fifty per cent. who have nothing to hope for from surgery can be helped very materially by radium. Up to ten per cent. cures, even in this latter hitherto hopeless category, are claimed by some operators, and all but four per cent. can be alleviated and their lives prolonged. The low primary mortality with radium is a great factor in its favour—between hospital and private cases I have treated over one hundred cases with only one death, whereas the average mortality rate of all operators with the Wertheim operation is 17.3 per cent., and the more advanced the case the higher the rate. The low primary mortality rate for radium is common to all clinics: I have seen no mortality rate recorded over two per cent.

Acute controversy exists between advocates of operation and those who have become converted to or have always used radium. Up to 1925 I treated all my operable cases by Wertheim's operation, but since then I have only performed the Wertheim operation on early cases and good risks; all the doubtful cases and the

inoperable cases, with two exceptions, have been treated by radiation. Gray Ward of New York, and Arthur Curtis of Chicago, both very accomplished operators, have abandoned the Wertheim operation in favour of radium, for both late and early cases. Victor Bonney is the outstanding advocate of operation, and while his end-results can compare with any of those obtained by radium, he has never been able to get his primary mortality rate below eight per cent. If one can command an adequate amount of radium, it is probably the procedure of choice; at the same time there are cases when the experienced operator can legitimately consider operation—these are early cases who are good risks. Occasionally I have been disappointed with radium. When a case could have been treated by a Wertheim, it is very mortifying a year afterwards, when radium has failed, to reflect that a Wertheim would have been feasible. Furthermore, a highly-strung, nervous patient who is under treatment for three times at intervals of two to three weeks with radium, suffers a good deal of mental strain, and as these patients must be under observation monthly for the first year, every two months for the second year, and every quarter for the third year, they never get a chance of forgetting from what they have been suffering.

In no other department of surgery is a knowledge of medicine more important than in the care of a patient with a cancerous cervix—a thorough physical examination, investigation of the blood picture, the elimination of sepsis, both local and oral, blood transfusion if necessary, are all adjuncts in the treatment.

I have been particularly struck with the high incidence of dental sepsis amongst cancerous out-patients—practically all our patients have to seek the services of the dentist; and many are indebted to Sir Thomas Houston's department for blood transfusions before we attempt to commence treatment by radium. Our results have considerably improved since these precautions have been adopted.

When the end-results from all clinics, operative and radiological, are collected and averaged, the five-year absolute cures only reach twenty to twenty-five per cent. This unfavourable picture is to some extent due to the limit of our skill and knowledge in dealing with cancer, but the outstanding reason is the high percentage of cases which are far advanced before treatment is instituted.

It is an undeniable fact that the percentage of good end-results varies inversely with the extent of the growth. We divide these cancers into four classes according to their extent :—

1. Where the disease is limited to the cervix.
2. Where the disease has extended to the vaginal wall or uterine body.
3. Where the disease has extended to the parametrium or paracervical tissues.
4. Where the disease has produced fixation or has involved adjacent organs, for example, bladder, rectum, ureters, or regional glands.

Now, the relative curability in Class 1 is seventy-five to ninety per cent., Class 2 thirty-five to fifty per cent., Class 3 ten to twenty-five per cent., and Class 4 *nil*.

About twenty per cent. of the total number presenting themselves belong to the first two groups, and these show about sixty per cent. of all the absolute cures,

while about eighty per cent. are in Classes 3 and 4 when they reach the gynæcologist. This accounts for the fact that the total cure rate of cancers of the cervix uteri is under twenty-five per cent., and more nearly twenty per cent., of those seen.

My own experience of operative treatment accords well with that of other surgeons, but my results with radium treatment are frankly disappointing. The main factor responsible for this is the very advanced type of case treated. Prior to my visit to Gray Ward's clinic in New York, every case which was not suitable for a Wertheim I attempted to treat with radium, no matter how hopeless or advanced. In other words, I had not the experience to recognise the limitations of radiation. There was also considerable difficulty in getting the patients to re-attend for their second or third treatments. For example, a patient would have one application, her hæmorrhage ceased, and instead of reporting in three weeks as instructed, in spite of a post card or message, one might not see her for three months or until the hæmorrhage recurred. We obviate this now by giving the treatments at shorter intervals, and in many cases not allowing the patients home until their course is completed. In former times very few inoperable cases were admitted to the wards, and so did not swell the cancer admissions; an occasional case was brought in for examination under anæsthesia if it were of doubtful operability. As radium became available practically every case was brought into the ward, and if there was any chance of benefit, no matter how remote, treatment was given a trial. We still treat many apparently hopeless cases, and benefit a few, but considering how many of the cases are in Classes 3 and 4, a low recovery rate is inevitable.

He would be a bold man who would attempt to speak dogmatically on etiology in any phase of the cancer problem, but there are certain outstanding facts about cancer in general, and cancer of the cervix in particular, which may be stated.

It is generally accepted that cancer does not occur in healthy tissues, and that frequently its onset is preceded by a period of chronic irritation. While a direct hereditary tendency cannot be proved, the work of Maud Slye on mice at the Sprague Memorial Institute in Chicago shows that strains of mice can be produced which show a hundred per cent. vulnerability to new growths following chemical irritation. She has further proved that the tendency to resist cancer is also transmitted. Her work, which involved the experimental investigation of ninety thousand pedigreed mice, is too long to quote, but her experiments, published at various times in detail in the *Journal of Cancer Research*, will be found well worthy of perusal.

Modern opinion has been inclined to discount the importance of a family history of cancer. The work of Miss Slye and H. Gideon Wells indicates that the pendulum has swung too far in this direction.

Individuals must vary in their susceptibility to the cause or causes of cancer, whatever they may be. W. J. Mayo says: "In no other way can we explain why ninety per cent. of people escape and ten per cent. die of it; it is as logical to accept the hypothesis that ninety per cent. of people have a greater resistance to cancer, as to attempt to force an explanation why only ten per cent. of people come in contact with the hypothetical causative agent."

If we accept the view that unhealthy tissues and chronic irritations are common precursors of cancer, it is obvious that the cervix of the parous woman is frequently both unhealthy and irritated.

Small lacerations of the cervix can occur even in normal labours; much more marked ones may occur in instrumental deliveries, and especially in those cases, still all too common, where forceps have been applied prematurely. A patient left with a laceration almost invariably develops an erosion and ectropion with a mild infection, which in its turn favours the occurrence of a discharge, the discharge provides a chronic irritant which is often enhanced by the use of irritating douches, so that the stage is now set.

If Handley's view is correct, that cancer is a product of lymphstasis, all the conditions are present in a chronically inflamed lacerated cervix to favour it. We know that erosion of the cervix is a frequent pre-cancerous condition. This is an adenomatous overgrowth which Handley maintains is the characteristic product of local lymphatic obstruction. Charlton in the *American Journal of Obstetrics and Gynæcology*, vol. 21, page 16, makes the following rather rhetorical statement :

"Let every chronically infected cervix be approached not as a cervical catarrh, not as a hypertrophy, not as a laceration, but as unhealthy, irritated tissue which may be the prologue of an epithelial drama whose curtain may ring down on a malignant death." His language has an emotional timbre that does not accord with our Northern simplicity of speech, but his statement undoubtedly embodies a great truth. A great majority of cervical cancers occur in parous women; in fact, cancer of the cervix in a nulliparous woman is a rarity. These nulliparous patients all gave a history of a chronic discharge pointing to an old-standing endocervicitis, which in one case was undoubtedly gonococcal in origin. The great majority of cancers of the cervix occur amongst the very poor. No social class is exempt, but the incidence amongst the poorer classes is certainly high. This observation is common to all clinicians in this country. It is also an undoubted fact that these patients are usually in a low state of health—it may be argued it is the result of the cancer, but I am doubtful if this is the complete explanation. So experienced an observer as Victor Bonney states ("*Lancet*," 8th February, 1930): "Very few women develop cancer of the cervix until their general condition from other causes has considerably deteriorated." This is in accord with my own experience.

Most authors and textbooks dismiss the etiology with the mention of multiparity leading to cervical injuries and chronic infections—this is certainly true as far as it goes—but I think the influence of inefficient obstetrics on the incidence of cancer of the cervix should be more emphasised. Holland, as is well known, has the lowest maternal mortality rate in Europe. Most of the normal midwifery is done by midwives, who of course do not apply forceps, and the abnormal cases are almost all delivered in hospital by specialists. Now, I think it will be agreed that a low maternal mortality rate goes hand in hand with a low morbidity and traumatism rate. The incidence of cancer generally is higher in Holland than in any country in Europe; in fact, it shares with Denmark and Switzerland the unenviable position of the highest cancer mortality rate in Europe. But when we come to analyse the

organ distribution, we find in spite of this high incidence of the disease, that Holland has a very much lower incidence of cancer of the uterus than England and Wales.

In Japan, where there is a higher birth rate and a higher maternal mortality rate, there is also a markedly raised incidence rate of cancer of the cervix, America, with a higher maternal mortality rate than this country, and, except in a few selected centres, very indifferent obstetric services, has an extremely high incidence of cancer of the cervix—twenty-five per cent. of all cancers in the female in U.S.A. are uterine in situation. So that Holland, with an excellent obstetric service, has a low incidence of cancer of the cervix in spite of a high incidence of the disease generally. Japan, with a poor obstetric service, has a high cervical cancer rate, and so has America; England, with a rather better service than America or Japan, but with a decidedly less efficient one than Holland, comes in the mid-position between these countries as regards incidence of cancer of the cervix.

F. R. Smith, of New York, in a paper published in the "American Journal of Obstetrics and Gynæcology" in January, 1931, reviewed the etiological factors in cancer of the cervix. In an attempt to fix any special factors concerned, Smith carried out a laborious investigation. A series of cases of carcinoma of the cervix was compared with a practically equal number of patients who had escaped the disease, and an attempt was made to discover wherein the two series differed, with the hope of finding possible etiological factors. Only patients who had had two or more pregnancies, and had reached the cancer age, were used for the control group. Knowing cancer of the cervix to be a disease of the poor, the control group was selected from patients in the out-patient clinics and wards of the charitable hospitals. In all, 428 patients were personally interviewed, 226 cancerous and 202 non-cancerous. The two series were compared with reference to the number of labours, the number of *instrumental* deliveries, the occurrence of dry labours, the use of douches, and the presence of untreated cervical lacerations as manifested by leucorrhœa. Smith found that the importance of child-bearing as an etiological factor increased with the number of pregnancies and the number of instrumental labours. Dry labour showed an astounding difference—sixty per cent. for the cancer group and only twenty per cent. for the controls. The presence of cervical lesions as manifested by leucorrhœa was very frequent in the cancer group, and, most striking of all, the large numbers of the cancerous patients who had used lysol douches for a prolonged period—forty-nine per cent. of the cancerous patients compared with eighteen per cent. of the non-cancerous. Lysol is a saponified product of coal tar containing cresol, which in turn comes from beech tar by distillation. Since 1914, when Yamagiwa and Itchikawa succeeded in producing papillomata in rabbits' ears by repeated applications of tar, tars and oils are found in universal employment in the experimental production of cancer. I do not for a moment submit that prolonged lysol douching unassociated with other factors can produce cancer of the cervix, but I do say that an antiseptic which is found to be associated with cancer in forty-nine per cent. of 226 cases should not be prescribed as a routine douche. Prolonged douching by any agent is a useless and often

harmful procedure, but if it is necessary, a choice should be made of some less irritating agent.

As regards the prophylaxis of cancer of the cervix, I would put good midwifery first, which, while it cannot totally eliminate damage to the cervix, will certainly minimise its frequency and severity; second, avoidance of infection; and finally, rational treatment of erosions, and of the infected and lacerated cervix. A frequent symptom which brings these patients to the doctor is leucorrhœal discharge. Too often they are simply told to douche, and not infrequently, with lysol. Lysol has marked irritating properties to some vaginal mucous membranes, and may actually increase the discharge. Too often the patient goes on increasing the strength of the douche, until she is using the solution in dilutions far beyond what was recommended, and may even do so for years. I pride myself that on passing a speculum I can tell a patient who is using lysol as infallibly as if the label were stuck on her cervix. My students, past and present, will confirm the statement that I have condemned its use for years, and Smith's observation only confirms me in my opinion.

The length of time the tissues are irritated before becoming cancerous is usually a matter of years, although we occasionally see a cancer of the cervix after a single birth which has only occurred two or three years previously. In the life of a mouse the irritant must usually be applied for about one-sixth of the normal span of life, an interval which corresponds to ten or fifteen years in the life of man. This point is of interest when taken together with the clinical fact that a man usually has to work from seven to fifteen years around certain dyes or oils or tar before he succumbs to cancer. As Wells says the suggestion to be derived from these observations is that when a cancer is found in a patient about forty-five years of age, it is probable the process of irritation or whatever it was that gave rise to the lesion, came into existence from ten to fifteen years before.

To a more general aspect of the subject I should like to refer before closing this section, that is, the possibility of there being an infectious element. I have been struck on several occasions in analysing the history of a patient by the fact that some time previously, often ten or fifteen years, she had been in close contact for a fairly prolonged period with a patient suffering from cancer who had a profuse discharge. I shall only give you one instance, although I have six equally striking. I saw a single girl of 24 at the Ulster Hospital in the year 1919 with an inoperable cancer of the cervix. Analysis of her history revealed that as a girl of 15, nine years previously, she had been in constant attendance on her mother, who died of cancer of the œsophagus, and who for the last few weeks of her life regurgitated a great deal of her food. This girl slept in the same bed as her mother, and was her sole attendant. She had always suffered from leucorrhœa. The possibility of systemic infection fastening on a *locus minoris resistentiæ* cannot fail to occur to one. This case set me to investigate others, and while one must be careful in inquiring about cancerous antecedents, I have convinced myself that the patient with an offensive discharge may possibly be a source of danger. There can be no dispute that these discharges are oftentimes treated in all too casual a manner. I have seen some

gross examples, and will give you two of them. I was asked by a medical man to see a woman on whom I had operated in the Royal Victoria Hospital four years previously, and who was dying of a recurrence. She was living in a small house, and was one of eleven occupants. There was no bathroom in the house. A married daughter who had a family was looking after her and doing the cooking. Considering the amount of the discharge, and the limited sanitary accommodation in the house, one cannot escape the feeling that had the patient been suffering from typhoid instead of malignant disease, it would not have been long until there had been a severe outbreak of enteric. Again I was called to see, in a small street, one of two single women who kept a small shop and lived above it. The patient was dying from a cancer of the body of the uterus, and had a most profuse, offensive discharge. I put on a pair of gloves, but before I could interfere her sister dashed forward and removed a soaked diaper. At this moment a bell in the shop rang, and, giving her fingers a perfunctory wipe on her apron, she ran downstairs to attend to the customer! Again the thought arises: had that patient had typhoid and not cancer, how long would it have been before that street would have been stricken with a typhoid epidemic? No one would handle a syphilitic, tuberculous, or leperous discharge without taking the greatest possible pains to preserve oneself from infection, and I feel sure that the cancerous discharge should be treated with equal respect. Amongst the poorer classes whose homes do not lend themselves to proper hygienic and sanitary precautions, I think it would be a step forward if inoperable discharging cancers could be removed and segregated in properly-equipped institutions.

Too frequently the first observed symptoms in cancer of the uterus represent not the onset, but often a comparatively advanced stage. Until ulceration, abrasion, or slight trauma causes hæmorrhage, or until the necrotic changes, which sooner or later set in, manifest themselves by a discharge, the growth may go on silently and insidiously. It is imperative, therefore, that the slightest deviation from the normal either in the line of hæmorrhage or discharge, especially in the multiparous woman of 35 or over, should be carefully investigated. Even in the fourth decade of the twentieth century, too many women with the seemingly trivial symptoms of a sanguineous discharge or a thin leucorrhœa, are treated on medicinal lines or with douches, instead of in the first instance being subjected to a thorough pelvic examination. It cannot be too emphatically said that there is no medicinal or glandular treatment for metrorrhagia. The manufacturers, distributors, and advertisers of the various glandular preparations assume a heavy responsibility by the extravagant claims they make for their preparations, and the practitioner whose critical faculty is not acute may easily be misled by their so-called literature. Every case demands rigorous examination to ascertain the cause, and, if there is any doubt, examination under anæsthesia, curettage, or excision of a portion of tissue for examination are urgently called for. Graves truly says: "The life of a patient with cancer of the cervix depends on early detection of the disease." It follows it is never safe to neglect even apparently trifling symptoms, as by the time *any* symptoms are apparent the disease on examination may prove to be well established. Since cancer of the cervix is accessible to touch and vision, a mistaken diagnosis is

unlikely if an examination is undertaken. The tragedy occurs when examination as a routine procedure is omitted. It is well to approach every case of irregular hæmorrhage, especially if the patient has reached middle life, with this query in one's mind—*can this be a cancer of the uterus?* In women past the menopause the merest staining or spotting, in the great majority of cases, is due to cancer. A polypus or senile vaginitis or endometritis may account for a few, but in my experience, hæmorrhage in a patient after the climacteric must be viewed with the gravest suspicion : it should be regarded as cancerous in origin until indubitably proved otherwise. Usually the earliest symptom is hæmorrhage, slight in amount and irregular in occurrence. When occurring after intercourse or exertion it is especially significant. Hæmorrhage may follow intercourse in cases of bad erosion or mucous polypus, but its occurrence always demands examination. In early cancer, menstruation is not necessarily altered either in amount or frequency. The next symptom to appear is a discharge, and sometimes its appearance precedes the bleeding. It is usually thinner than the ordinary leucorrhœa, not infrequently it is slightly brownish in colour, and in the early stages has no offensive odour. Pain is *never* an early symptom of the disease. When it is present it probably means that the cellular tissue around the cervix is already to some extent involved. Cancerous infiltration probably causes pain at first by blocking the lymphatic circulation of the affected areas. The pain is felt chiefly in the lower part of the back, and is subject to exacerbations; it is not relieved by lying down, and is often worse at night than during the day.

Loss of weight, cachexia, pain, enlargement of inguinal glands, and offensive leucorrhœal discharge are valueless in the diagnosis of cancer of the uterus—death has set its seal on those in whom these symptoms are apparent.

Digital examination reveals friable tissue which bleeds freely on palpation—there is no more easily elicited sign in all clinical gynæcology and nothing more valuable than this "*bleeding on examination.*" Patients may sometimes be unwilling to submit to examination, but the medical man's duty is to explain the necessity for it, and he should decline absolutely to be responsible for a case where examination is refused. To prescribe a drug like Ergot, a glandular preparation, or a douche, to a patient with irregular hæmorrhage, even though slight in amount, is a grave dereliction of duty, and especially in the middle-aged or elderly patient.

The cervix should next be examined with the speculum in a good light. In well-established cases the merest novice cannot fail to detect the disease—the friability of the tissues and the free bleeding, excited even by swabbing with cotton-wool, are distinctive. But an occasional case comes under observation before surface ulceration has occurred, and in this type diagnosis may present considerable difficulty. These non-ulcerated patches bear a certain resemblance to a cervical erosion. To the touch an erosion feels smooth and velvety, while a cancer is slightly roughened or distinctly nodular, the tissues of the erosion are firm, and not friable, and although an erosion sometimes bleeds from one or two points after swabbing with cotton-wool, the amount is slight; in the case of cancer the bleeding is free and generally distributed over the suspicious area.

On the whole, examination with finger is more valuable than with the speculum, but the speculum is useful in detecting a bleeding polypus, which in an irregular cervix may quite easily escape detection on digital examination. In doubtful cases there should be no hesitation in excising a portion for microscopic examination—it is not often necessary, but is occasionally of great value. “In a statistical study of matter obtained in Graves’s clinic, Pemberton and Smith found that recourse to the microscope was necessary for the establishment of a diagnosis in only 2.39 per cent. of their cases of cancer of the cervix”—(Curtis).

A special word of warning is necessary as regards cancer of the endocervix. Here the portio vaginalis may appear quite smooth, but is usually increased in size. *Bimanual* examination will provoke a discharge and blood from the cervical canal; and in the case of a multipara there is usually no difficulty in passing a small loop of a curette into the cervical canal and withdrawing a fragment for examination. These cases can be missed, however, and it is of great importance that they should not, because the parametrium and regional lymph-glands are attacked earlier in this type of the disease than in cancer affecting the vaginal portion of the cervix.

REVIEW

THE PHYSICAL MECHANISM OF THE HUMAN MIND. By A. G. Douglas, M.B., B.Ch. 1932. Edinburgh : E. & S. Livingstone. pp. 251 + ix ; figures 24. Price 15s. net.

It has been said that psychology has been made an unnecessarily difficult subject by so much introduction of what might be called “psychological jargon,” and in the opening chapter of this book the author goes a step further and says : “There is remarkable unanimity of opinion that psychology has so far failed to attain the status of a science.” Whether one agrees or disagrees with either of these two statements, opinion must be unanimous that a thorough understanding of the physiological reactions of the central nervous system is essential before one begins to build theories either physiological or psychological. With such an object in view, no better book could be chosen for study than this well-arranged volume by Dr. Douglas. It begins with an introductory chapter on mind and matter, then passes to a detailed description of the various forms of nerve-cells, and to a lucid account of the principles of nerve-action. Psychoneural correlation is then discussed, the author taking the mind of a child for investigation to illustrate the points raised. A clear account is then given of primitive reactions, conditioned reflexes, space-time perception, habit, instinct, emotion, etc., and concludes with a chapter on the limitation of mind. The book as a whole is well written; it is illustrated by numerous well-chosen diagrams, and may be recommended to any medical man interested in this important subject.

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Acute Appendicitis : A Review of Cases

By C. J. A. WOODSIDE, M.B., F.R.C.S.I.

from the Royal Victoria Hospital, Belfast

THE most serious feature of this disease is that the mortality is not diminishing to an extent commensurate with our experience of it. The Registrar-General's returns for Northern Ireland show an average of ninety-five deaths yearly from this cause during the ten-year period, 1920-9. In 1930 it caused eighty-six deaths in the Six Counties, and this despite a declining population. These figures do not include deaths ascribed to peritonitis and intestinal obstruction, some of which were undoubtedly appendicular in origin.

A few months ago, in an address which received much publicity, both in the medical and lay press, Sir James Berry suggested that surgical interference was responsible for much of the mortality. Naturally there was a good deal of opposition to this view on the part of surgeons, but it also received some support.

There are, however, no reliable statistics as to what the mortality was in pre-surgical days, since biopsy alone can establish the diagnosis with certainty, and it seems probable that the disease has become more common. Naturally, since surgical intervention became the recognised method of dealing with the lesion, it is hard to find details of a series of unselected cases deliberately treated on conservative lines. A group of sixty-eight cases were so treated at St. Thomas's Hospital a few years ago; of these seventeen, i.e., twenty-five per cent., went wrong inasmuch as they developed abscesses or other complications, and 4.4 per cent. died. On the other hand, with early cases and with cases where gross peritoneal infection has not occurred, the death-rate is well under one per cent., and such are seldom more than a fortnight in hospital or nursing-home, and often much less. These facts are not in dispute, and it was chiefly with the object of discovering the factors that account for the difference between cases that are well in two to three weeks after an easy convalescence, and those that die or suffer prolonged illness, that I have collected the records of 390 consecutive personal cases.

Most of these operations were performed in the Royal Victoria Hospital, and I have to thank the senior members of the staff, particularly Mr. Mitchell and Mr. Stevenson, for my opportunities. I have only included acute cases operated upon within twenty-four hours of admission. The view expressed when the Association of Surgeons met here eighteen months ago was, that every case of appendicitis should be operated upon immediately it was diagnosed, unless a mass were present. I think perhaps this was too sweeping a statement, although I practised it until two to three years ago, but have modified it since.

In my series of cases twenty-five died, but in justice to myself I must say that I have included all deaths that could be attributed to the condition, however indirectly; it includes some hopelessly ill on admission with advanced peritonitis or abscess, who were given the remote chance of drainage. I feel that unless I present all the facts without reference to my desire to have a low death-rate, that

this paper would be valueless. My chief object is to establish why these deaths occurred, and to suggest if possible how they might have been prevented.

The first problem was to group the cases. It was obvious that the most important distinction was into those where gross peritoneal infection was absent, and those where it was present, for I think it will be agreed that infection is the chief cause of death and prolonged disability. These two classes I have further subdivided into groups according to the visible pathology, not only of the appendix as a whole, but after slitting it open and examining the mucous membrane, as it is only by so doing that in many cases the real nature of the lesion becomes apparent. For some time past I have been indebted to Professor Young for the histological examination of the specimens and his keen interest in the subject.

The first group with which I have to deal comprises those cases where no gross visible pathology was present in the appendix, though clinically they were regarded as acute cases, or at least so suspicious as to justify exploration. There were fourteen such. I do not include cases that had other definite lesions simulating acute appendicitis and demanding surgical interference in any case. This negative group is important, as naturally the criticism of unnecessary surgery is directed towards such cases, or rather towards the perpetrator. They can be described under three heads:—First, ileo-cæcal adenitis exacerbations, of which do at times make differential diagnosis impossible with certainty. Seven were of this nature, and in five there was no feature to distinguish the attack from appendicitis. In the remaining two glands were strongly suspected. I do not regard exploration of the ileo-cæcal angle in these cases as bad surgery. The attacks are probably due to a fresh flood of infection from the drainage area, of which the appendix is an important part, and so its removal is quite logical—although interference with the glands is not (none in this series was calcified). In addition, enlarged glands are not infrequent when the appendix is obviously diseased, so it is only by biopsy that its condition can be ascertained. In thirty-four out of 221 cases in which the mesentery was examined and a record kept, glands were present to a pathological extent, that is, 15.8 per cent.

The remaining seven cases were either errors in diagnosis, or else due to appendicular colic, the source of irritation having been discharged prior to operation. In all these cases, as in all where gross peritoneal infection was absent, the terminal ileum, and in females the uterus and adnexa, were examined. The ureter was also examined in these particular patients. In such cases one is always uneasy lest some other cause for the attack may have been overlooked, and I can only stress the necessity for careful routine examination in all cases, since appendectomy will not necessarily relieve ureteral colic or other unrelated conditions.

All these recovered rapidly, and in none did subsequent examination of the ureter, etc., reveal another cause for the attack. The only one histologically examined showed marked sub-mucous fibrosis, and I conclude that a temporary colic explained the majority. More than half had had previous attacks, and sooner or later were certain to be operated on. None were more than fifteen days in hospital.

The next group is a small one of five who had foreign bodies in the appendix—there was one case each of whipworm, threadworm, tapeworm, wood, and metal

splinters. My only comment is on the comparative rarity in this country of parasites in the appendix; they seem much commoner abroad. None had had previous attacks; all left hospital inside a fortnight, except one who developed paratyphoid.

Before discussing the next group of obstructed and inflammatory types, I must remind you that this important distinction was first made over twenty years ago by that very keen observer and sound surgeon, the late Mr. Robert Campbell; the importance of this pioneer work is only receiving of late years due recognition outside this school. I must also add that another distinguished surgeon of our school, Mr. S. T. Irwin, about fifteen years ago employed a classification very similar to the one I am adopting—I can only say that I can find no better method used since then.

The obstructed group I regard as by far the most important, as it is the commonest and most dangerous variety. I include in this only cases where mechanical interference with emptying was present and obvious. The vast majority showed very striking changes in the mucous membrane, varying from congestion or injection to œdema and acute inflammation, or ulceration beyond the point of obstruction, in contrast with the normal mucous membrane proximal to it.

Obstructions of a hollow tube may be most simply divided into three classes:—Cases where the lumen is occluded—in this case by fæcal masses; cases where the lumen is narrowed by changes in the wall, here strictures; and cases where conditions outside the wall obstruct—kinks, twist, and bands. Very frequently a combination of two or more of these causes was present. When the anatomy of the appendix is considered—a long, narrow tube blind at one end, with a mesentery of varying length and a rich deposit of lymphoid tissue in its wall liable to inflammation in its earlier years, and likely to be replaced by fibrous tissue in consequence, it is not surprising that mechanical effects are readily produced. Histologically these organs almost always show excessive sub-mucous fibrosis, apart from the congestive or inflammatory changes distal to the obstruction. When there has been a history of repeated attacks, the source of this is obvious; but I believe that many of the forgotten minor gastric attacks of childhood are probably associated with inflammation of the lymphoid tissue of the appendix. Such organs enter adult life handicapped by diminished elasticity. If to this be added chronic constipation, and appendicular stasis, in common with the rest of the lower alimentary tract, and the accumulation of solid fæces in the lumen with stercoral ulceration resulting, it is easy to account for strictures, often visible to the naked eye as annular bands of fibrous tissue.

Add to this constriction by bands, sometimes congenital, sometimes acquired from previous attacks, or kinks produced by similar conditions in the mesentery, often in themselves sufficient to occlude the lumen, and it takes little imagination to appreciate the sequence of events which leads to an acute attack of what we call appendicitis.

The further progress differs in no way from obstruction in any other tubular organ, except that in a closed tube the process is more rapid. The sequence is engorgement of veins, back pressure in capillaries, increased exudate and increase of contents distal to the obstruction, with the added burden of infection which soon

occurs in this area of stasis teeming with potentially pathogenic micro-organisms. Soon or late, according to the completeness of obstruction, if relief does not take place, arterial blockage and gangrene must ensue, first in the mucosa which bears the brunt of the pressure, then in the succeeding coats.

This at least is the common picture; in other cases the whole organ beyond the obstruction rapidly becomes gangrenous, especially when the constricting force has involved the mesentery. Until gangrene actually ensues, gross peritoneal infection is very rare. In many of these cases there is marked local peritoneal reaction, due no doubt to seepage of infective material through the wall, but it is a relatively slow process. Walling-off has time to occur, and protective mechanisms, particularly the omentum, have a favourable opportunity.

There were 126 simple obstructed appendices in the series, that is to say, neither gangrene nor perforation had occurred prior to operation. Fifty-seven—that is, almost half—had had one or more previous attacks; sixty-six were operated upon within twenty-four hours, and ninety-one within forty-eight hours of the onset of symptoms. One death occurred in a youth of 19, the subject of active pulmonary tuberculosis and a bad heart. He was less than twenty-four hours ill at the time of operation, but an obstructed appendix was on the point of perforation. He died four days later from cardiac failure. Of the remaining cases, 105—i.e., eighty-four per cent.—were discharged within fourteen days. Only four were over three weeks in hospital—one because of broncho-pneumonia, and three because of wound sepsis.

The mortality in this group is .8 per cent., and although many were bad cases, this death-rate is higher than it should be. Barring the misfortune of having to deal with such a very bad operative risk as the fatal case was, a long series could probably be presented without any mortality or serious complications.

Without operation, no doubt a large proportion would have recovered, inasmuch as they would not have died, but my figures show that of all obstructed cases at least fifty per cent. go on to gangrene, perforation, abscess, or peritonitis, so sixty-three would presumably have reached these danger zones. In the remainder obstruction is overcome, and a damaged appendix liable to recurrent attacks, or to act as a reflex cause of abdominal symptoms, is left as the legacy. In a few, no doubt, the lumen becomes obliterated and harmless atrophy ensues.

The next group consists of inflammatory lesions. I have included all cases where there was general inflammation of the organ without demonstrable obstruction. In the majority I was quite unable to make out any clear distinction between the symptomatology in this and the obstructed group, such as Mr. Robert Campbell described. Possibly the fact that children under twelve constituted a considerable proportion of his cases may have accounted for this. The presence in children of a large amount of lymphoid tissue in the organ, liable to catarrhal and other infections in common with that of the pharynx, would make this type more likely to occur in them. The fairly frequent history of an antecedent cold or sore throat in such cases supports this view. Actually, however, from the history of these cases I suspect that obstruction was really the preceding cause of the pathology in many. It must be remembered that in removing the organ, part of the base is necessarily left, and

in particular the junction area with the cæcum, where a valve and probably a sphincter exist. This is a likely point of lodgment of fæcal masses and obstruction. Unless one excises this area proof is wanting.

There were fifty-six such cases, thirty less than twenty-four hours ill and forty under forty-eight hours; twenty-five had had previous attacks; one died, a man of 45, on the fourth day, from pulmonary embolism, as established by post-mortem examination. As all operations carry this risk, it has no particular bearing on this subject; forty-four—i.e., eighty per cent.—left hospital within fourteen days, and only three were more than three weeks in hospital on account of delayed healing of wounds.

Without operation the true inflammatory case will generally subside, unless complicated by obstruction. I have come to the conclusion that this type of case is comparatively rare, much rarer than my figures indicate, for the reasons I have given, and that diagnosis cannot be based on history and physical signs with certainty. Not long since I diagnosed with considerable confidence a case as inflammatory, only to find at operation a perfectly typical obstructed appendix on the point of bursting.

A series of twenty-seven I have called indeterminate, where congestion, extensive ecchymosis, or thickening, were present. These probably represented cases in the process of resolution, or chronic cases which had become sub-acute. All were discharged within three weeks; sixteen had had previous attacks. This completes a total of 228 cases in which the peritoneum escaped serious invasion, although many were severely ill and had considerable local peritoneal reaction.

The death-rate was .8 per cent.; eighty-two per cent. were less than fourteen days and ninety-seven per cent. less than three weeks in hospital; fifty-one per cent. were operated upon within twenty-four hours, and seventy per cent. within forty-eight hours.

In the next group I have included all that had gangrene of the appendix without actual perforation. As I have already indicated, the vast majority of these are obstructive in origin; they varied from localised gangrene of the mucous membrane to gangrene of the whole organ. In nearly all could be demonstrated gangrene distal to an obstruction, and, according to the stage, confined to the mucosa, or involving succeeding external coats. The line of demarcation was usually very striking.

It might be asked, Could involvement of mesenteric vessels produce this condition? Anastomosis is relatively good in the appendix, and emboli and thrombosis rare in the age period commonly affected—only very marked twists of the mesentery would produce it, and only rarely does one find this, except with concomitant kinking of the organ itself. Thrombosis certainly frequently occurs as a result of progressive inflammatory changes, but it is a secondary result and not causative.

In a few cases localised patches due to pressure of irregular fæcoliths were present. These often perforate rapidly.

If gangrene has been sudden in onset, there is often a considerable degree of peritonitis with little walling-off, but on the whole, severe peritoneal infection is delayed until actual perforation supervenes.

In thirty-nine—i.e., more than half—of these cases gangrene had occurred within twenty-four hours of onset, emphasising the rapidity with which obstruction can lead to serious consequences and the danger of delay. Fifty-eight of the sixty-four were less than forty-eight hours ill, eighteen had had previous attacks; forty—i.e., sixty-two per cent.—were discharged within fourteen days; and fifty-eight within three weeks. There were two deaths—a mortality of 3.1 per cent. Gangrene alone, although giving a much higher death-rate, is the intermediate stage between the clean and the seriously soiled peritoneum. It is only when it has persisted too long that gross peritoneal invasion occurs. A man of 33 and a woman of 37, ill respectively three and four days, died. Both had a considerable degree of peritonitis. The first had a retro-cæcal obstructed gangrenous appendix, the second in addition a very inflamed and friable cæcum. One died in four, and the other in eight days, from peritonitis and toxæmia.

Probably these represented a type of case that should be left alone in the hope that they may localise more completely, since operation may disseminate infection, and encroach on the resistance of a patient already severely tried.

Conservative treatment has its place here, but it must be emphasised that delay has allowed such cases to become very seriously ill, and the surgeon is confronted with a most difficult problem, since by this time the patient, his friends, and his doctor are greatly alarmed and often press for operation. Whether he operates or not, he knows that the outcome may be fatal, and that in either case he will bear the responsibility. I know of no guide as to procedure except experience in this type of case.

Perforated appendices constitute the next group. Most of these were definitely the end results of obstruction, followed by gangrene, and often there was complete disintegration of the part distal to the obstruction. In some there was a localised perforation at the site of an annular ulcer, presumably due to fæcal impaction, and in a few there was a perforation with little surrounding change. Whether these latter were due to rupture of an ulcer, an intramural abscess, or to a penetrating foreign body, I cannot say. Naturally, in all peritoneal infection was present, sometimes localised by surrounding omentum, but often without adequate walling-off.

Sixty-five cases, sixteen per cent. of the total 390, were of this variety; that is to say, a serious abdominal catastrophe had taken place. Fourteen were operated upon within twenty-four hours of onset, again a warning of how rapidly a simple condition can become a very grave one; and twenty-three were operated upon on the second day of illness, so that more than half perforated within forty-eight hours; fifteen had had previous attacks. The death-rate was 9.2 per cent., and only twenty-one—that is, thirty-two per cent.—were discharged within fourteen days; twenty-two—i.e., 33.6 per cent.—were more than three weeks in hospital; six died, one a third-day case, three four-day cases, the others seven and fourteen days ill respectively. Their ages ranged from 7 to 35; only one had had previous attacks.

All but one of these fatal cases were obviously seriously ill at the time of operation, and had evidence of peritonitis. The exception had been severely burnt a week before, and died twenty-five days after operation from pneumonia and empyema, and post-mortem examination showed residual pus in the right iliac fossa and sub-

phrenic regions; one died of toxæmia and peritonitis six days after operation; one twenty-one days afterwards from paralytic ileus, despite jejunostomy; one, a woman five and a half months pregnant at the time of operation, died at the end of two months from exhaustion, having developed a fæcal fistula; one made a good recovery, then developed paratyphoid, and two months later was readmitted with intestinal obstruction, and died after jejunostomy had been performed by another surgeon. The last one also appeared to make a good recovery, but was readmitted, and died forty-three days later from pylephlebitis and liver abscess.

Again it must be considered if operation was a contributory cause of death, but as most of them died of late complications attributable to sepsis already present, I do not think so.

More than half were over fourteen days in hospital, and one-third more than three weeks on account of wound infections.

Some, no doubt, will have ventrial hernias, and some, persistent abdominal discomfort as reminders. In only one of the survivors did a fæcal fistula persist for some months, and that a very slight one. A few had temporary fæcal discharges. Possibly the use of corrugated rubber drains instead of tubes has some relation to the infrequency of this complication, which seems much less common than it used to be.

It is tragic to consider that six young lives were sacrificed—in every case because of delayed operation. For the remainder, long periods of convalescence ensued instead of the usual ten to fourteen days.

I do not deny that even of these cases a number recover without operation, and that they may recover with very little trace of adhesions, but they do run very grave risks both of immediate and late results of peritoneal infection, and I can scarcely imagine anyone willing to subject any part of the peritoneal cavity to a fæcal bath when early operation would prevent it, however opposed to surgery he might be.

The next group is those cases where a frank abscess was present. Of all cases treated conservatively, a considerable proportion will develop collections of pus. It is a common belief, I think, that this is a safe conclusion to an appendicular attack. My experience does not support this view.

Of twenty-one cases, six died, that is, 28.2 per cent. The minimal surgical procedure—simple drainage—was carried out in these. Admittedly some of them were bad subjects on account of age or preceding illness, and the additional burden of combating appendicitis was too great a strain on myocardium and general resistance. Surgery cannot remedy the systemic effects of sepsis which have already occurred; it cannot always prevent burrowings of pus into various remote areas of the peritoneum or even pleura. Appendicular abscess always carries grave risks.

Of the deaths, two were in women of 50 and 70 respectively, who developed appendicitis during convalescence from pneumonia. They had large abscesses, which were drained, but death occurred twelve and thirteen days later from toxæmia and cardiac failure. One, an imbecile child of 15, five days ill, died within twenty-four hours of drainage, from profound toxæmia.

A man of 25 died from gangrene of a large portion of ileum, due to mesenteric

thrombosis. The abscess lay behind his mesentery; he had been fourteen days ill. A rapid resection was performed, but paralytic ileus followed. A man of 28, fourteen days ill, died in thirteen days from paralytic ileus. Finally, a youth of 19, and almost moribund, died on the day of admission after a small incision to evacuate pus, under local anæsthesia.

Only three were discharged from hospital in fourteen days, that is, fourteen per cent.

I may have been unfortunate in encountering so many cases of abscess extremely ill, but I am more convinced than ever that no case should run its course to this development, by choice.

My last group is peritonitis. I have reserved for this only the gravest cases, where the process was spread throughout the whole peritoneum, since many of the perforated cases had, as already indicated, spreading peritonitis. Out of twelve such cases, nine died; five of these were fulminant cases less than twenty-four hours ill. Diagnosis was only established at operation or post-mortem in four, as the abdominal picture was that of peritonitis of uncertain etiology. In three the appendix had perforated, in one it was completely gangrenous, and in one full of pus but intact. Two died within twenty-four hours, two survived four and five days respectively, and one, a girl of 15, in whom only a suprapubic drain was inserted, on account of extreme illness, survived fifteen days. Post-mortem revealed a perforated appendix and general peritonitis. Of the remaining four, one was thirty-six hours ill, and made a good recovery, but when convalescent developed pneumonia, and died thirty-six days after operation.

The others were three, seven, and eleven days ill before admission, and extremely ill at the time of operation. A suprapubic drain was inserted in one, who died in a few hours; post-mortem revealed a perforated appendix. In both the others the abdomen was full of pus; they died in thirteen and twenty-six days; perforated appendices were present in each.

Thus out of 162 cases with gross peritoneal sepsis, i.e., gangrenous or worse, 14.1 per cent. died, sixty-one per cent. were more than fourteen days in hospital, as contrasted with seventeen per cent. of the clean group. It is interesting to note that only twenty-five per cent. of this group had had previous attacks, as compared with forty-seven per cent. of the clean cases, suggesting that some degree of protection is conferred by attacks of the milder variety.

Of the twenty-five cases that died, twenty-three had gross peritoneal infection, and eighteen were three or more days ill; the exceptions being the fulminant cases and two already described. The average age was 31 years; sixteen were males and nine females.

I must conclude that delay is undoubtedly the most important factor in the death-rate for acute appendicular disease, and in the gravity of the illness. Surgery probably is ill-advised in some of these delayed cases, but that does not in any way alter this statement. The profession, and the public for the most part, recognise that appendicitis demands immediate operation, yet 103 out of 390, over twenty-six per cent., were three or more days ill, and eighty-four others were not admitted until the second day.

The two factors chiefly responsible for delay seem to be—(a) home treatment, and (b) difficulties in diagnosis.

As to the first of these, it is the usual practice with the lay public when attacked by abdominal pain to apportion blame to a fancied dietetic indiscretion or a chill. The remedies they employ are aperients and poultices. In many cases even appendicular attacks recover with or despite these measures, but sometimes symptoms persist, and it is only at the end of two or three days that medical advice is sought.

I think that the profession has a part to play even in this matter. The public must be taught, not how to diagnose appendicitis, but simply how to act in the presence of abdominal pain, so that they do not injure themselves. It is neither practical nor desirable that a doctor should be sent for every time a "bellyache" occurs, but if it were impressed upon mothers that neither aperients nor anything else should be given by mouth in such cases until the patient is better, or on medical advice, and that an enema is safer than purgatives, a step forward would have been taken. Very severe pain or symptoms lasting more than six hours demand medical advice. This conditioning, if I may use the word, of children, will bear fruit in later life. After all, appendicitis and other grave abdominal lesions begin as colic, or pains, in no way different from those of minor gastro-intestinal disturbances.

Difficulty in diagnosis can be the only other explanation. I think the surgeon is liable to underestimate these difficulties, since more often he sees the finished product, the fully developed case.

The general practitioner sees the early stages, and apart from history may have little or nothing to guide him. History is of the greatest importance—briefly, pain, usually of sudden onset, colicky in type, epigastric, umbilical, generalised or right-sided, succeeded generally by nausea, or vomiting, and tending to settle in the right side, is only too familiar. But there are variations. Several doctors have told me that they regarded pain beginning in the right side as definitely against the diagnosis of appendicitis, yet 109 of my cases give this as the point of origin. I think this figure is rather high, as probably they concentrate on the pain present at the time of examination, and forget that it started elsewhere, but I have gone carefully into this point since, and a number have been very definite about it. I think that this fallacy may have arisen from emphasis laid on the fact that *chronic* right-sided pain is seldom appendicular in origin.

Nausea and vomiting are important but not inevitable occurrences; in my series vomiting was present 248 times, and nausea alone fifty-five times. In all except eight cases they succeeded pain. These eight exceptions where vomiting occurred before pain were all bad obstructive cases, and two died. Black vomit was present twice, and both cases were fatal.

An absence of increased temperature and pulse-rate is another common source of difficulty—neither may be raised at all even in gangrenous, or rapidly perforating, cases, probably because of the mechanical nature of the lesion and rapid progress to gangrene before systemic absorption of toxins has occurred. The doctrine that a falling temperature and a rising pulse-rate are suggestive of gangrene is true, but gangrene can and does occur in the absence of either increased temperature or

pulse-rate. Actually fifteen of the gangrenous cases (sixty-four) were afebrile at the time of operation, and in fifteen the pulse was below 84. Four had neither increase of temperature nor pulse-rate.

In the perforated group (sixty-five), nine were afebrile, and in seven the pulse was below 84. In four there was no rise of either temperature or pulse-rate.

Even in the abscess group (twenty-one), six were afebrile, although all but one had an increased pulse-rate.

In the whole series only twelve cases had a temperature above 102°F., and of these, three had foreign bodies in the appendix.

In my experience, tenderness is always present sooner or later. Careful examination may be required to elicit it, as it may only be found on rectal examination if the appendix is pelvic in position, and sometimes in regions other than the usual. I might add that over-enthusiastic palpation can elicit tenderness of its own making.

Once resistance or rigidity are present, the probability of peritoneal irritation is so strong that surgical interference is indicated.

I do not wish to complicate the problem by referring to other clinical evidence, as I have rarely found it of much practical value. The majority conform to an easily recognised picture, and the treatment is operation, but the fact remains that many cases in their early stages are not sufficiently definite for diagnosis. In these I think that the proper attitude to adopt is masterly inactivity, that is, bed, no aperients, no food nor drink, no morphia; enemata (not always without risk, however) may be given. If after twelve to eighteen hours of onset, symptoms have not subsided, or if local tenderness or other signs be present, further delay is not justifiable. Should symptoms and signs have subsided, all will probably be well, although further observation is necessary.

I have no desire to preach an alarmist doctrine, but all things have a simple beginning. It is only when our attitude to abdominal pain of an acute type becomes more questioning, when we consider the possibility in every case of its being the herald of some catastrophe demanding surgical interference, that we shall see no longer the late appendix, intestinal obstruction, and other neglected abdominal emergencies. At the root of the matter is our inherent desire to do something to relieve the patient at once; in a word, to treat and diagnose before diagnosis can be made in actual fact. The public endows the doctor with miraculous powers in time of trouble, expects an explanation of illness on the spot and treatment accordingly. It takes courage to admit ignorance, to withhold relief; still more to alter an expressed opinion.

Sometimes, too, economic circumstances, business reasons, and a natural dread of operation, are used as pleas to induce delay in the hope that the attack will pass. I can recall several cases in which I was persuaded to delay operation for reasons that seemed all-important to the patient, with almost disastrous results—three were doctors or their relatives.

Prophecy has no place in the treatment of appendicitis; it is perhaps a good gamble that any given case will recover without operation, but it remains, and always will remain, a gamble. Delay alone can decide the result, but in the wake of this follows disaster and death.

Headaches of Nasal Origin

By SLOAN M. BOLTON, M.B., B.CH., D.P.H.

OF all the symptoms ailing individuals complain of, headache is undoubtedly one of the most common, and also one of the most protean in its causation, character, and significance.

Any patient suffering from a headache sufficiently severe to cause our advice to be sought should be thoroughly examined. Such a case will amply repay careful investigation. Simply to order a sedative is not a credit to the highest conception of modern medicine. In most cases, gastro-intestinal or gynaecological disorders, errors of refraction and septic foci, especially teeth, will not be overlooked, but comparatively seldom is the condition of the nose given the consideration it deserves.

In this paper I propose to deal with the main types of headache which have nasal disease as a causative factor. As nasal and para-nasal defects are very common, so also are nasal and sinus headaches much more common than generally realised. Especially is this so in damp climates. In climates such as ours, attacks of "cold in the head" are prevalent. This results in a hypertrophied condition of the soft parts in the nose and occasional bony changes. This hyperplasia, together with the narrowing of the ostia of the air sinuses, or pressure on the adjacent nervous structure, is the underlying factor in nasal headaches. Regarding climatic influence, I have noticed the incidence of nasal sinus trouble and headaches of nasal origin is higher in Ireland than in the drier areas of London and South of England. Sinus disease is the most usual and most important cause of these headaches. It should be noted that the amount of discharge from a sinus, or the absence of visible discharge, is no indication of the severity of the infection. I propose to take each sinus in turn and describe the type of headache which most commonly occurs in each case.

DISEASE OF THE MAXILLARY ANTRUM.—The pain is less typical than of any of the other sinus infections. Owing to the position of the ostium, the antrum does not drain satisfactorily, and the headache is therefore of a toxic nature.

In acute empyema there is pain over the antrum, which may radiate to the teeth, to the side of the head, or to the eye. It is often neuralgic in character, and is usually intermittent whenever there is any discharge.

In chronic maxillary sinusitis with a thickened lining membrane and pus, marked pain is rare, but there may be discomfort over the affected antrum. The same side of the head may ache, or supraorbital neuralgia may be present. If pus is not present, there are no subjective symptoms.

FRONTAL SINUS DISEASE.—The headache produced by frontal sinus infection is the most typical of all the para-nasal sinus affections. The pain is most intense immediately above the eye, and may radiate over the whole side of the head. It may vary from a dull ache to the most excruciating headache. It has a very definite periodic character which is pathognomonic of acute frontal sinus inflammation, and is of considerable assistance in differentiating the condition from neuralgia

of the supraorbital nerve. It commences in the morning soon after the patient gets out of bed, becomes progressively worse towards midday, and subsides gradually during the afternoon. At night the patient is free from pain. During the exacerbation the sinus is tender on palpation, but afterwards the tenderness disappears to a large extent. The fact that the pain is generally confined to one side of the head, and when severe may be accompanied by vomiting and some interference with vision on the affected side, occasionally leads to a mistaken diagnosis of migraine. The typical battlemented spectra of migraine are absent.

FRONTAL VACUUM HEADACHE.—This condition was first described by Sluder, and aroused great controversy in oto-rhino-laryngological circles, as many authorities contend such a condition does not exist. It is caused by closure of the inlet to the frontal sinus. It is generally produced by a hyperplasia of the covering mucous membrane and of the subjacent bone of the middle turbinate and anterior ethmoidal cell region. There is often an accompanying deflection of the septum. Owing to the duct being closed, the air in the sinus becomes absorbed, and consequently a partial vacuum is produced, which results in secondary passive congestion of the lining membrane. A dull frontal headache ensues, which is aggravated by movements of the eyeballs or on use of the eyes for close work. Marked tenderness will be found on pressing over Ewing's point. This is the thinnest part of the floor of the sinus, and is under the inner end of the eyebrow medial and posterior to the fovea trochlearis. It is therefore in close relationship to the pulley of the superior oblique muscle, and this accounts for the pain being intensified by eye movements. The marked tenderness on pressing over Ewing's area is found only in this and in suppurative frontal sinusitis. It is known as Ewing's sign. The tenderness is more marked than that of the frontal nerve, as it crosses the superciliary ridge.

ANTERIOR ETHMOIDAL DISEASE.—As a rule, the headache due to this condition is not acute, but more in the nature of a dull ache, and is generally in the parietal area. If there is severe suppuration, the pain may extend to the temporal area.

ANTERIOR ETHMOIDAL NERVE NEURALGIA.—Sluder was the first to describe this condition. The anterior ethmoidal nerve enters the upper anterior limit of the nose through the small ethmoidal sulcus of the nasal bone. At this point it lies very superficial. Inflammation or pressure in this area is likely to affect the nerve and produce headache. The pain, which is not intense, is generally most marked between the eyebrows, and as a rule does not radiate to any great extent. Patients often complain during the attack that the wearing of eyeglasses is uncomfortable. They do not associate this with the use of the eyes, as is usually the case with vacuum frontal headache, but with the pressure of the bridge of the glasses upon the painful area at the root of the nose.

POSTERIOR ETHMOIDAL AND SPHENOIDAL DISEASE.—The pain due to this group of sinuses is fairly typical. There is a history of frequently recurring headache, which is most often localised in the occipital area. It is not acute, and has more the character of pressure.

SPHENO PALATINE GANGLION NEUROSIS.—This is another very interesting condition which was first described by Sluder. The sensory nerve supply of the nasal

mucous membrane is furnished mainly by the maxillary division of the trigeminus, through the branches rising from the sphenopalatine ganglion. This ganglion is situated close to the outer nasal wall and to the posterior end of the middle turbinate. It usually lies two to four millimetres from the nasal mucosa. As it lies close to the posterior ethmoidal and sphenoidal cells, it is reasonable to suppose that the ganglion can become involved by extension of any inflammatory process from the nose proper. Any inflammation of the ganglion results in a group of nervous phenomena. In the prodromal stage there may be coryza and sneezing accompanied by nasal congestion. This is shortly followed by pain at the root of the nose, in the pharynx, the eye, upper jaw, and teeth, radiating to the temple, ear, occiput, neck, and even to the fingers. Redness and swelling of the external nose may occur. Diagnosis can generally be made by these symptoms, although it is uncommon for a patient to manifest them all. If cocaineizing the ganglion controls the symptoms, the diagnosis is confirmed. A few years ago a Continental oto-rhino-laryngologist put forth a somewhat similar explanation of the nervous mechanism by which Sluder explains many of the neurological symptoms originating from the sphenopalatine ganglion. He adopted the theory or doctrine called centrotherapy, by the practice of which he hoped to relieve pain in the head, and all types of pain generally, simply by a light cauterisation of the mucous membrane of the middle turbinate and middle and inferior meati, followed by massage of the mucous membrane with a special ball-like applicator. He attracted a great deal of attention. The daily press reported on it, and many people flocked to him in the hope of getting relief from various painful afflictions. Ramon Castroviejo, in 1929, ran a series of five hundred cases, using the same technique. He came to the conclusion that in many cases the pain was relieved, that it was a powerful suggestive method of treatment, but of practically no value in organic disease.

MIGRAINOUS HEADACHE.—To mention migraine in this paper may seem out of place. I do not intend to refer to the various theories regarding its etiology, but to mention very briefly nasal disease as an exciting cause of the attack. I recognise the exciting causes are various, and differ in individual cases. Eye-strain, mental or physical fatigue, prolonged anxiety and worry, errors of diet, excessive consumption of alcohol, etc., are frequently referred to, but very seldom is the nasal factor considered. In the last seven cases of migraine referred to me I have made a very careful nasal examination. These patients all had the typical migraine history including the visual disturbances. Each had a small error of refraction, and reported that some relief was experienced when this was corrected. In two of the cases I could not discover any nasal defect. Two of the remaining five had hypertrophic rhinitis. The middle turbinates were not enlarged, the inferior slightly. One gave a history of occasional watery discharge. In the case of these two patients I cauterised the inferior turbinates and ordered a nasal spray. I have examined them several times since and repeated the cautery. One states there is no change, while the other reports some improvement, but nothing marked. With the remaining three patients the results were much more satisfactory. In each case the middle turbinate was pressing against the septum and the septum was deviated. The

deviation was not very marked, except in one case, where the middle turbinate was greatly enlarged. This patient gave a history of post-nasal discharge, which I discovered was from the posterior group of cells, while the other two reported a watery discharge, seldom noticed except during the attacks. In the case of the patient with the very enlarged middle turbinate, I performed a turbinectomy. In another I fractured the turbinate, and in the remaining case merely cauterised the turbinate. All were ordered a nasal spray. In each case the frequency of the attacks has been greatly reduced and the severity considerably diminished. The patient whose turbinate I fractured has had the most gratifying result. Instead of having an attack once or twice weekly, there is now an interval of about six weeks. In this case, application of the cautery when the attack is coming on seems to have an influence in checking it. This is doubly satisfactory to me, as this patient is my secretary. In this case and the case of the patient who had a turbinectomy performed, I propose to do a sub-mucous resection at a later date.

In conclusion, I wish to repeat that in investigating the cause of headache, the more usual sources having been excluded, the nose should be thoroughly examined, as in many cases it will prove to be the source of trouble, even when there are no obvious signs of nasal disease.

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REVIEW

THE STUDENTS' CATECHISM SERIES. Edinburgh : E. & S. Livingstone.
1s. 6d. net, each part.

It is unfortunate that the medical student must ever keep before him the exigencies of the examination, but while this state of affairs exists, there will always be a demand for such help as the question-and-answer type of book supplies. Messrs. Livingstone's Catechism Series is well known and is kept up to date. New editions are constantly being published, and amongst recent issues are Anatomy, Forensic Medicine, Chemistry, and Materia Medica. The latter issue is of particular importance, as it is based on the latest edition (1932) of the British Pharmacopœia.

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REVIEW

THE STUDENTS' CATECHISM SERIES. Edinburgh : E. & S. Livingstone.
1s. 6d. net, each part.

It is unfortunate that the medical student must ever keep before him the exigencies of the examination, but while this state of affairs exists, there will always be a demand for such help as the question-and-answer type of book supplies. Messrs. Livingstone's Catechism Series is well known and is kept up to date. New editions are constantly being published, and amongst recent issues are Anatomy, Forensic Medicine, Chemistry, and Materia Medica. The latter issue is of particular importance, as it is based on the latest edition (1932) of the British Pharmacopœia.

The Diagnosis and Treatment of Addison's (Pernicious) Anæmia.

By J. T. LEWIS, B.SC., M.D., M.R.C.P.(LOND.)

A Post-Graduate Lecture delivered at
the Royal Victoria Hospital, Belfast

THE pathology of Addison's (pernicious) anæmia has long been obscure. Certain important facts, however, have been discovered concerning it, and it now seems possible to link these into a sequence to provide an hypothesis on which to explain it. The first of these arose from the work of Cohnheim and Pepper in 1870. They showed that the seat of the disease is the bone marrow, and that relapses, with increasing anæmia, are associated with great activity in the marrow. This is exactly the opposite to that which occurs in other forms of anæmia, e.g., in secondary anæmia increased activity of the bone marrow is associated with clinical improvement.

No satisfactory explanation of these phenomena was given until Zadek and Peebody investigated living bone marrow. They showed that during remissions, when the patient is clinically well, the marrow is apparently normal. They also showed that during a relapse there is great activity in the marrow, but that the red cells produced are abnormal. These red cells are larger and of a less mature type than normal red cells. When these large immature cells reach the blood-stream, they are unable to withstand the wear and tear of the circulation, and are destroyed by the reticulo-endothelial cells in the spleen, liver, etc.

According to this pathological outlook the first point in the diagnosis of Addison's anæmia must be evidence of an increase in size of the red cells. The disease is essentially a megalocytic anæmia, but it is also a hæmolytic anæmia, i.e., a disease due to increased destruction of the blood. The hæmolysis is the result of weakness and immaturity of the cells, and is not due to any hypothetical "toxin" acting on normal red cells. The second essential point in the diagnosis is the evidence of hæmolysis. This is shown by the presence of urobilin in the urine, by the icteric tinge in the patient's skin, and by the invariably positive Van den Bergh reaction. The latter is always of the indirect type which indicates a hæmolytic jaundice.

A positive indirect Van den Bergh reaction with a negative direct reaction is of the utmost importance. It appears to be invariable in untreated cases of Addison's anæmia, and it is present before any striking degree of anæmia occurs, e.g., with hæmoglobin at eighty per cent. and red cells at 4,000,000 p.c.m. In an obscure anæmia it is the most valuable single test that can be used, and, in my opinion, it is more useful than an examination of a stained blood-film.

In discussing the etiology of Addison's anæmia, it is necessary to consider the changes in the gastric secretions. It is well known that complete *achylia gastrica*, i.e, absence of hydrochloric acid and of the gastric ferments, is

practically always found in the disease. Hurst was the first to lay stress on the significant fact that the achlorhydria may antedate the development of the anæmia for years. He also drew attention to the fact that the disease may arise in individuals who have developed achlorhydria either as the result of previous gastric disease or of gastrectomy. He also drew attention to the fact that the achlorhydria is a familial condition, and this may explain the tendency of the disease to run in families. The connection between this condition and Addison's anæmia is clearly shown by the experiments performed by Castle in 1928-9. This worker found that if meat be digested for an hour in a normal human stomach, then withdrawn and fed to patients suffering from Addison's anæmia, a rapid remission of the disease is induced with a return of the blood-picture to normal. Meat digested in the stomach of a patient suffering from the anæmia, or digested artificially *in vitro*, has no such effect. It appears, therefore, that during the normal gastric digestion of protein, some substance is liberated from the gastric mucosa which is necessary to maintain the normal blood formation. This substance has been named by Castle "the intrinsic factor."

In a more recent paper Castle suggests that normal hæmopoiesis depends on a reaction between the "intrinsic factor" and an "extrinsic factor" (probably vitamin B₁₂) supplied by the food. Certain other forms of anæmia may depend on the lack of this extrinsic factor. This hæmopoietic principle is probably stored in the liver, distributed by the blood-stream to the bone marrow as required, and possibly excreted by the kidney. This account of the distribution of the substance offers an explanation for the known facts that liver, stomach, and (to a much less degree) kidney are potent substances in the treatment of the disease. It is also believed that the remarkable remission which sometimes follows a transfusion of normal blood, cannot be due simply to the volume of blood supplied, but that it is due to a sudden stimulus to the patient's bone marrow, the stimulus depending on the "anti-anæmic" principle in the normal blood.

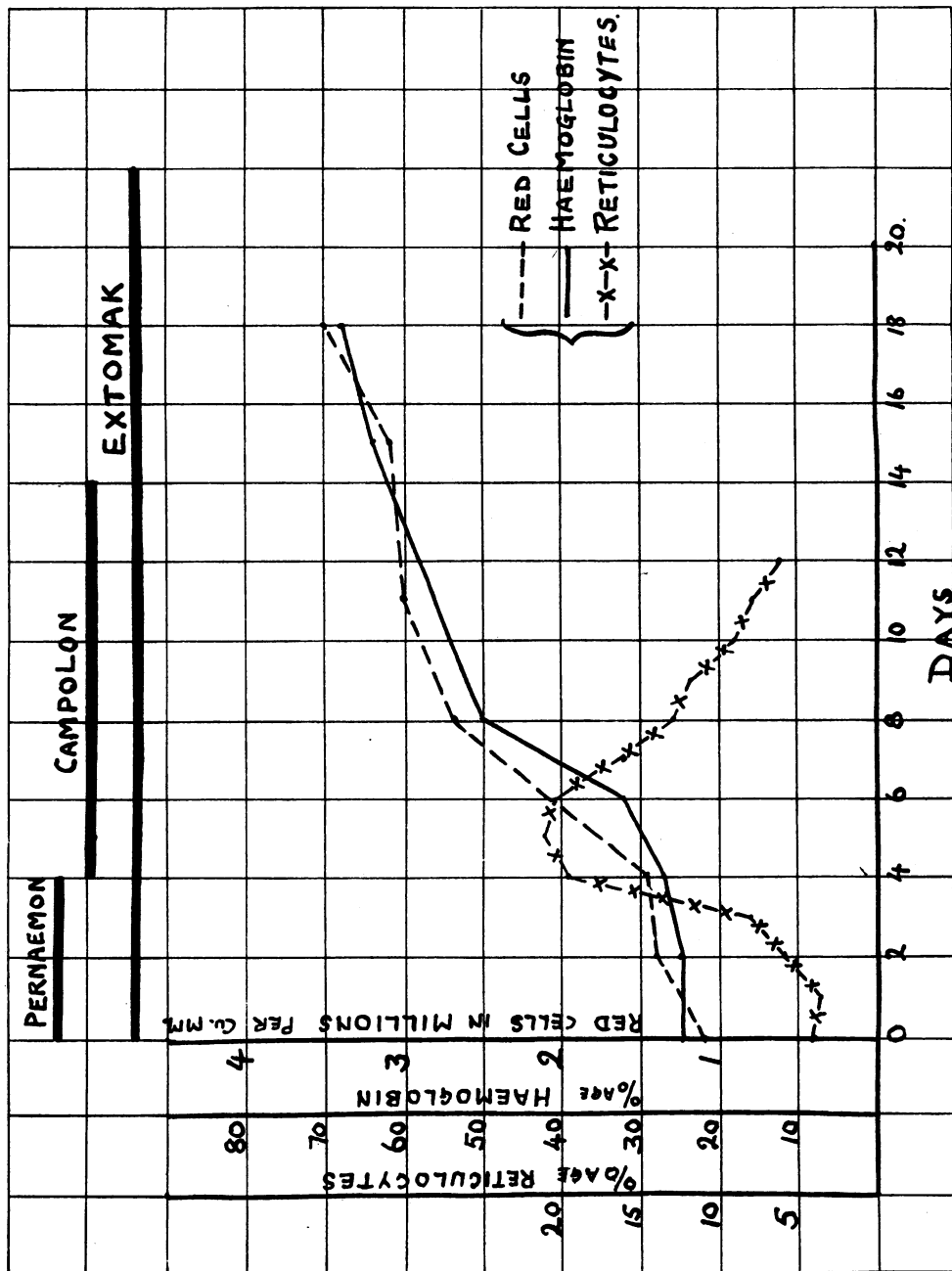
This conception of the etiology and pathology of Addison's anæmia draws attention to three essential features in its diagnosis :

- (1) The increased size of the red cells, shown by a colour-index of unity or more, by the presence of megalocytosis in a film, the Price-Jones curves or the halometer.
- (2) The hæmolysis shown by the Van den Bergh reaction, and by the presence of urobilin in the urine.
- (3) The *achylia gastrica* shown by the fractional test-meal.

In addition to these features, there are certain other abnormalities found in the examination of the blood.

(1) The leucocytes are reduced in number, and there is commonly a relative lymphocytosis. The polymorphonuclear cells show hyper-segmentation of the nuclei. This latter point may be very helpful in diagnosis. It occurs in practically no other condition.

- (2) Changes occur in the staining reactions of the red cells. When the film is



The effects of liver therapy in Addison's anemia are shown in the above figure. The patient received "Pernaemon" intravenously, "Campolon" intramuscularly, and "Extomak" by the mouth.

stained by the ordinary Leishman method many of the larger red cells are stained a faint blue tint (polychromatophilia). These are probably very young cells, and when present in large numbers a remission may be expected.

(3) Two types of nucleated red cells are present—the normablast, not of diagnostic significance, and the megaloblast, which is highly suggestive of Addison's anæmia. A third type of red cell, the reticulocyte, is of value from the therapeutic aspect. If a vital stain is used on blood, e.g., brilliant cresyl blue, certain of the red cells will be seen to contain a fine blue-stained reticulum. These are the reticulocytes. They are very young cells which have just entered the circulation. They constitute less than one per cent. of the total red cells in the healthy adult. Their numbers are rapidly increased after a hæmorrhage, and they are therefore a valuable indication of the activity of the bone marrow. These cells are usually increased to two or three per cent. during a relapse in Addison's anæmia. A rapid rise in the reticulocyte count is the first response to successful treatment, and is the method by which the activity of any preparation used in treatment is tested.

THE CLINICAL DIAGNOSIS OF ADDISON'S ANÆMIA.—It is not necessary to describe in detail the features of a well-developed case of this disease. But it may be useful to direct attention to some early symptoms and signs which should raise suspicion of its onset.

The history of a sore tongue or sore mouth is of the greatest importance. It is probably better to regard it as a symptom associated with achlorhydria, as it may occur in patients who have no abnormality in their blood, or who are suffering from an anæmia quite distinct from the Addison type. Any symptom which is suggestive of achlorhydria is of value, and it should be remembered that all true cases of achlorhydria are potential cases of Addison's anæmia. The tongue is invariably clean, and often red. The papillæ have disappeared from its edges, and the resultant glazed appearance gradually spreads over the whole organ (Hunter's glossitis).

A history of frequent attacks of diarrhœa, without obvious cause, and not associated with blood or mucus in the stools, is a common early symptom. But this condition is probably due to the achlorhydria, and not to the anæmia. These patients should have a fractional test-meal, and a careful examination of the blood carried out.

Tingling, or "pins and needles" in the hands and feet, are the earliest symptoms of subacute combined degeneration of the cord, and may antedate the appearance of any marked degree of anæmia. Any case presenting these symptoms calls for complete blood and gastric analysis, as the nervous manifestations are most likely to benefit by liver treatment if the disease is diagnosed early.

It is usually stated that loss of weight is not common in Addison's anæmia. This is incorrect. I have seen repeatedly loss of weight, strength, and appetite occurring early in the disease. If gastric symptoms are also present, the differential diagnosis from carcinoma of the stomach may be difficult. A careful examination of the blood and of the gastric contents will usually make the diagnosis clear. But if doubt still remains, then the response to a course of potent liver extract will settle the question. A reticulocyte response to adequate liver treatment does not occur in carcinoma,

whereas it is practically invariable in Addison's anæmia. Loss of weight, and a history of undue fatigue, may be the earliest symptoms. And later, the ordinary manifestations of anæmia appear, e.g., dyspnœa, palpitation, slight œdema, icteric colour, etc.

TREATMENT.—Liver and stomach tissues are the essentials in treatment; but it must not be forgotten that certain other remedies have their place. Rest in bed must be enforced if the hæmoglobin is below fifty per cent. If this is not done the response to liver may be slow and irregular. Hydrochloric acid was formerly recommended, because it was thought that the disease was due to an infection of the upper digestive tract. This opinion is no longer held. In spite of this view, however, many patients benefit by the administration of thirty to sixty minims of dilute hydrochloric acid at meal-time. It usually cures the diarrhœa and other digestive symptoms. The administration of iron with liver is thought by some physicians to be useful. I believe that its administration is beneficial in those cases in which the hæmoglobin lags behind the rise in red cells, after liver treatment alone. Arsenic is no longer used.

Certain types of cases benefit by blood transfusion. In cases where the red-cell count is less than one million per c.m.m., death may occur before liver therapy can become effective. A blood transfusion in such a case may tide the patient over a critical period. In other cases which improve only slowly with liver therapy, a blood transfusion may initiate a rapid remission. It should be noted, however, that intravenous liver therapy may often be employed successfully, instead of blood transfusion.

It was formerly the custom to open treatment by an attack on all possible sources of sepsis. But while sepsis may slow the response to liver therapy, no extensive operation should be permitted until the blood has reached a moderately satisfactory state.

LIVER THERAPY.—From experiments on dogs Robscheit and Whipple showed that recovery from an artificially produced anæmia occurred most rapidly on a diet rich in liver. Minot and Murphy applied this observation to the treatment of Addison's anæmia, and reported rapid improvement in their patients. The value of this method of treatment was afterwards confirmed by many observers, and liver now is recognised as essential in the treatment of the disease.

The quantity of liver prescribed varies with different patients. But as a general rule, half a pound of liver per day is sufficient, although occasionally a patient will be found who requires one pound at the outset. The amount of liver required by the patient after the blood has been restored to normal is a difficult problem. No hard and fast rules can be laid down. Some patients require a quarter of a pound of liver once or twice a week, while others require a similar amount each day. The quantity must be found for each patient, but usually half a pound three times a week will suffice.

There is no doubt that raw liver, or its juice, is preferable to the cooked material, although light cooking is thought not to impair seriously its efficiency. Grilling the liver is almost certainly harmful to the active principle.

Raw liver can be given in a variety of ways, of which the following are examples :—

(1) Mince half a pound of fresh liver, and add one to two small cupfuls of water with a little salt. Pound the mixture thoroughly, and allow it to stand for an hour or so. Squeeze through a fine sieve or muslin bag. The extract thus obtained may be flavoured with sauce, orange juice, or marmite. It may be warmed to blood heat. The addition of marmite probably increases the potency of the extract, in addition to giving it an agreeable flavour. Indeed, the use of marmite alone has been recommended by Goodall in the treatment of Addison's anæmia.

(2) A similar method to the above is to mince the liver, and add to it the juice of two oranges and one glass of port wine. Filter through gauze and make up to eight ounces with water.

(3) Raw minced liver mixed with marmite may be made into palatable sandwiches.

There are many other methods of preparing liver, but I have found the first method, described above, to produce an extract which is highly efficient and not difficult to take.

Large numbers of liver extracts are now on the market, and are available in a convenient form for oral, intramuscular, and intravenous administration. Amongst those that can be administered by the mouth are Burroughs Wellcome's, Parke Davis', Boots, British Drug Houses' powdered extracts, and Evans' liquid Hepatex. They are usually prescribed in amounts equivalent to half a pound of fresh liver daily.

The intramuscular route is employed in severe cases where a rapid liver effect is desirable. Among such preparations may be mentioned Evans' Hepatex I.M. or Bayer's Campolon, in 2 cc. ampoules. As a rule one ampoule daily for one to two weeks is sufficient, with liver given orally. It has been suggested that for a maintenance dose one to two ampoules per week would obviate the necessity for eating liver.

Intravenous preparations should be reserved for very severe cases where life depends on a rapid remission. The best known preparations are "Hepatex P.A.F." and "Pernæmon." Both these preparations are obtainable in 5 cc. ampoules. Intravenous liver therapy will often excite a reticulocyte response in forty-eight hours. The oral method commonly requires three to four days, or even a week, to produce similar results.

The ingestion of hog's stomach has been shown to be as potent as liver in producing a remission in Addison's anæmia. Many commercial preparations are on the market and in general use. The amount required is the equivalent of 100 grams of fresh stomach daily. The best known of these preparations are Ventriculin (P.D. & Co.), Gaster Siccata (B.D.H.), Gastrexo (Evans), Byno Eugastrol (A. & H.), and Extomak (Bengers). The last is a useful preparation. It is given in doses of about 30 grams daily.

Brain has been recommended by Ungley in the treatment of Addison's anæmia, but it is said to be less potent than liver.

The first change in the blood, in response to liver or stomach therapy, is a rapid rise in the reticulocytes from about two per cent. to twenty, thirty, or even forty per cent., the amount of the rise being inversely proportionate to the degree of anæmia. The time of the onset of the rise depends on the route by which the liver is administered, being earliest with intravenous therapy, and latest with oral therapy. If no response has occurred in twelve to fourteen days, it is probable that the diagnosis is incorrect. During the second week the reticulocyte count returns to normal.

An increase in the red-cell count, and in the hæmoglobin percentage, follows the reticulocyte rise. This increase is rapid at the onset, but becomes slower when it approaches normal figures.

The rise in the hæmoglobin percentage often lags behind the rise in the red cell count, and the colour index falls. For example—

At onset : Hb.—25 per cent. ; red cells—1,000,000 ; C.I.—1.2.

After four weeks : Hb.—52 per cent. ; red cells—3,600,000 ; C.I.—0.7.

There is a rapid fall in the bilirubin content of the serum, and the Van den Bergh reaction becomes negative. This suggests that the formation of immature, easily hæmolyzed cells by the bone marrow is checked by liver treatment.

The leucocyte count returns to normal both quantitatively and qualitatively, and the hypersegmentation of the nuclei in the polymorphonuclear cells disappears. It is not unusual to find a temporary eosinophilia in patients taking raw liver.

Investigations have been carried out on the effect of liver diet in cases of secondary anæmia. The results were estimated both by the reticulocyte response and by the general blood improvement. It has been shown that it is only in secondary anæmia following hæmorrhage that any real benefit is to be expected. It is also stated that fresh liver is superior to extracts, and that liver and iron act better than liver alone. In splenic anæmia, chronic microcytic anæmia, Hodgkin's disease, leukæmia, etc., liver therapy is useless.

Subacute combined degeneration of the cord is a disease so closely associated with Addison's anæmia that it was naturally expected liver therapy would prove of real benefit. These hopes have been to a certain extent realised, but the following points must be remembered :—

(1) Fresh liver, or juice, is probably more effective than extracts.

(2) The liver must be taken in full amounts for a much longer period than is necessary to ensure complete blood recovery. Baker, Bordley, and Longcope have reported their results in a series of cases, and they show that improvement was noted in thirty-one per cent. of cases treated for less than six months, and in fifty-nine per cent. of cases treated for more than ten months.

(3) The signs and symptoms which improve most markedly are those related to disturbances of cutaneous and muscular sensibility, e.g., tingling, slight ataxia, etc. If advanced changes in the cord have occurred, great benefit is not to be expected. This emphasises the importance of early diagnosis.

The Origin of the Eosinophil Granule

By J. HENRY BIGGART, M.D.

Queen's University, Belfast; and Johns Hopkins University, Baltimore, Md., U.S.A.

THE eosinophil cell of the blood is usually packed with large spheroidal granules. These measure from 0.25 to 0.5 microns in diameter, and average over two hundred per cell. Their number and size vary somewhat in disease, and in a film from a patient with asthma some of the cells only contained from eighty to a hundred granules. In spite of their relatively large size and number, the origin of these granules is still debated.

There are those who see in them phagocytosed particles of hæmoglobin, protein material absorbed from the intestine, glycogen, etc., whilst others refuse to regard the eosinophil leucocyte as an individual type of cell, but consider it a metamorphosed basophil or neutrophil.

Theories concerning their origin fall naturally into three groups:—

- (1) That the granule is of extrinsic origin.
- (2) That the granule is of intrinsic origin.
- (3) That the granule is an altered neutrophil or basophil granule.

The following paper is a short résumé of these theories in the light of some observations on the development of the cell (1).

THEORIES OF EXTRINSIC ORIGIN.

Weidenreich (2), Badertscher (3), Barbano (4), and Brown (5), are supporters of the extrinsic origin of the granules. Ringoen (6) and Downey (7) believe in the intrinsic origin of the granules in the cells of the marrow, and their extrinsic origin in the foci of local eosinophilia in the tissues. All are united in believing that the chief extrinsic source of the granule is hæmoglobin or its disintegration products, a theory first promulgated by Weidenreich. His view is based on the following evidence:—(1) The eosinophil granules when examined in fresh blood have a yellowish tinge; (2) these granules, like the red-blood cells, have an affinity for acid stains; (3) there is some relationship between the destruction of red cells and the formation of eosinophils. Thus Weidenreich observed the formation of eosinophil cells in the mesentery of the rabbit following the injection of guinea-pig's blood intra-peritoneally.

It is scarcely necessary to refute the first two arguments. Like affinity for stains is a notoriously weak argument, and indeed it is possible to stain red cells and eosinophil granules differently, for example, by eosin-orange or acid-fuchsin-orange mixtures. His third argument is based not only on the experiment quoted, but also on the frequent observation of the aggregation of eosinophils round blood extravasated into the tissues. By injection of other non-hæmoglobiniferous substances into the peritoneal cavity, it has been possible to show that the collection of eosinophil cells in the parietal peritoneum following the injection of blood is dependent not necessarily upon the presence of red cells and hæmoglobin, but rather upon

the presence of a foreign protein. Thus similar results can be obtained by the injection of horse-serum, casein, peptone, etc. In animals in which a hæmorrhage has been produced, cells which resemble eosinophils may be found in the neighbourhood of the extravasation and in the lymph-glands draining the injected area. On close inspection, however, these cells are found to be mononuclear, and their granules, which are in fact phagocytosed particles of red cells, to vary much in size and shape. If true eosinophils are present in the same section, they can be easily differentiated. In addition, there is the fact that eosinophil leucocytes are to be found in the non-hæmoglobiniferous blood of invertebrates, and that many reactions, such as phenophilia, are given by the eosinophil granule but not by the red cells.

Other views concerning the extrinsic origin of the granule are :—(1) That they are protein material absorbed from the intestine (Rous, 8); (2) that they are composed of glycogen (Habershon, 9); (3) that they are reserve albuminoid material (Jolly, 10).

Rous bases his theory on the observation that the thoracic lymph of a dog on a high protein diet contains more eosinophil cells than normal. Examination of the intestinal mucosa will show that a local infiltration with eosinophils occurs as the result of the ingestion of food, but this appears to be due to chemiotactic stimuli withdrawing these cells from the blood, rather than to an absorption of protein from the intestine, with its subsequent crystalloid precipitation in the protoplasm of the forerunner of the eosinophil cell, as Rous suggests. It is of interest in this connection that Berger (11) found an eosinophilia in infants following the ingestion of a foreign protein, and the eosinophilia following the taking of a raw liver diet over some weeks is now well known.

Habershon's hypothesis has already been controverted by Barnicot (12), though it is worthy of note that in untreated cases of diabetes glycogen granules can, not infrequently, be demonstrated in the circulating leucocytes.

Whilst most of the evidence available would support a protein basis for the granules, it is impossible to see how these could form an appreciable amount of reserve material.

The neutrophil origin of the eosinophil is supported by various authors. Thus Adams (13) writes : "The eosinophils are polymorphonuclears changed to suit the biochemistry of an organism that has to deal with foreign proteins"; and Gruner (14) states his belief that the neutrophils in an inflammatory area take up specific bodies and convert them into eosinophil substance. Similar views have been expressed by Brown (5) and Mosny, Dumont, and Saint-Girons (15). Observations since the eosinophil was first described by Ehrlich render any such theory untenable : the disappearance of the eosinophils from inflamed areas, their diminution in the blood during toxæmia and infections, the distinctive morphology of the eosinophil nucleus—all go to disprove a neutrophilic metamorphosis. The mere fact that a neutrophil cell with eosinophil granulations—the pseudo-eosinophil of the guinea-pig, for example—can be separated by its chemical and tinctorial reactions from the true eosinophil, seems to show an essential difference in the function and nature of

these two types of cells. Table 1 shows some of the differences between these two types of cells.

TABLE 1.

<i>Reaction</i>			<i>Eosinophil</i>		<i>Neutrophil</i>
Peroxidase	...	...	±	...	+
Oxidase	...	...	+	...	+
Phenolase	...	...	+	...	—
Ionizable Iron	...	...	+	...	—
Pyrrhol	...	...	+	...	—
Orthophenylenediamine	...	...	+	...	—
Furfurol	...	...	+	...	—

THEORIES OF INTRINSIC ORIGIN.

1. Ranvier regarded them as granules of internal secretion.
2. Jolly supports the theory that they are altered mitochondria.
3. Downey states that they are true endogenous products of the cytoplasm.

Ranvier (16) evidently considered them comparable to the zymogen granules of the glandular organs of the body. Against this one must take into consideration the facts that in normal conditions the number of granules varies little, and that there is no evident discharge of the granules from the cell. The eosinophil carried away by the lymph stream after having performed its functions in the tissues is in no way appreciably different from that found in the blood or marrow.

Whilst Jolly's (10) idea may be correct, there is little positive evidence to support it, the chief point in its favour being the fact that there are few, if any, mitochondria in the mature cell.

My own observations on the eosinophil are in partial agreement with those of Downey. When the marrow is stimulated to produce eosinophils by repeated injections of protein, it is possible to find eosinophil leucocytes at all stages of maturity. Not only do they develop by mitotic division in pre-existing myelocytes, but also from the non-granular myeloblast. In these latter there first appear one or two small vacuoles in the cytoplasm. In the centre of each vacuole appears a small basophil dot, which gradually enlarges. As it enlarges, its staining reactions change from basophilic through azurophilic to eosinophilic. The processes of vacuolation, basophil granulation, and the ripening of the basophil granules go on side by side in the same cell until the protoplasm is filled with bright refractile granules giving the typical reactions of the mature eosinophil leucocyte. The basophilia of the cytoplasm of the myeloblast gradually fades away until in the mature cell it cannot be demonstrated. As the number of granules increases the nucleus gradually assumes the characteristics of that of the mature cell.

The only apparent interpretation of such histological changes is that the eosinophil granule is a product secreted by the cell cytoplasm in response to appropriate stimuli.

SUMMARY.

The various hypotheses as to the origin of the eosinophil granule are discussed. The conclusion is reached that the eosinophil granule is of endogenous origin, first appearing in the parent myeloid cell.

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Four Cases of Plasma-Cell Tumour

By G. P. McCULLAGH, M.D., B.SC., D.P.H.,

From the Department of Pathology, Queen's University; and the Royal Victoria Hospital, Belfast

PLASMA-CELL TUMOURS, or plasmacytomata, are not common tumours. Nevertheless, they are interesting from three points of view. In the first place, they are liable to be confused with round-cell sarcomata, and it is important that they should be distinguished, since the plasmacytoma are comparatively sensitive to radium, and the prognosis is accordingly better. Secondly, they are composed almost exclusively of a cell type which is probably not present in healthy tissues, although it is commonly observed in association with other cellular elements in chronic inflammatory processes such as syphilis. Thirdly, transitions can be traced from a lesion which presents the general characteristics of a chronic inflammatory or granulomatous lesion to a sarcomatous formation. Four examples of these growths have been examined during this year, and they represent three of the varieties of the plasmacytoma so well that I should like to record them.

The origin of the plasma cell has been the subject of much controversy, from which two theories have emerged: firstly that it is a descendant of the lymphocyte, and secondly that it is derived from the fixed tissue elements, such as connective

SUMMARY.

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PLASMA-CELL TUMOURS, or plasmacytomata, are not common tumours. Nevertheless, they are interesting from three points of view. In the first place, they are liable to be confused with round-cell sarcomata, and it is important that they should be distinguished, since the plasmacytoma are comparatively sensitive to radium, and the prognosis is accordingly better. Secondly, they are composed almost exclusively of a cell type which is probably not present in healthy tissues, although it is commonly observed in association with other cellular elements in chronic inflammatory processes such as syphilis. Thirdly, transitions can be traced from a lesion which presents the general characteristics of a chronic inflammatory or granulomatous lesion to a sarcomatous formation. Four examples of these growths have been examined during this year, and they represent three of the varieties of the plasmacytoma so well that I should like to record them.

The origin of the plasma cell has been the subject of much controversy, from which two theories have emerged: firstly that it is a descendant of the lymphocyte, and secondly that it is derived from the fixed tissue elements, such as connective

tissue and endothelial cells. The former view is that more generally held. Morphologically, it presents an abundant cytoplasm together with a large eccentrically-placed nucleus, within which the chromatin tends to be arranged in a "cartwheel" fashion. Frequently a clear zone suggestive of vacuolation is seen around the nucleus. A specific staining reaction is obtained with Unna-Pappenheim's pryonin methyl-green method, the cytoplasm becoming a diffuse pink whilst the nucleus is green. Frequently a pink-stained nucleolus is observed within the latter. The cells vary considerably in dimension, and Ewing (1928) gives their average size as 8-12 microns.

Plasma-cell tumours are classified as intramedullary or extramedullary, accordingly as they arise within the medullary cavity of the osseous system or elsewhere. Furthermore, two varieties of the intramedullary group can be recognised—a diffuse or multiple type and a solitary type. The former is the commonest variety of multiple myeloma, a condition described by Ewing (1928) as "a specific malignant tumour of the bone-marrow arising probably from a single cell type, and characterised chiefly by multiple foci of origin, a uniform and specific structure composed of plasma-cells or their derivatives, rare metastases, albumosuria, and a fatal termination." The plasma-cell tumours of this type vary greatly in their microscopic appearance, being soft or firm, translucent or opaque, and white, grey, or red, according to the degree of vascularity. Microscopically they consist of masses of plasma-cells, little or no stroma, and thin, delicate-walled blood-vessels. Owing to their tendency to erode the bone, spontaneous fractures are frequent. Progressive anæmia, due to destruction of the hæmopoietic elements, is also a prominent clinical feature. Cappell (1929) describes a case in which multiple nodules occurred in the vertebræ, ribs, and upper third of the femur. In addition, collections of plasma-cells were found in the hepatic sinusoids and splenic pulp. He directed attention to the striking localisation of the disease to the sites of normal hæmopoiesis, and suggests, therefore, that the abnormal cells are derived from the normal myeloid elements. The occurrence of metastases as already mentioned, is rare, but Cappell records another case in which, in addition to tumour masses in the ribs, vertebræ, and femur, secondary nodules were present beneath the capsule of the liver.

Case 1.—INTRAMEDULLARY PLASMACYTOMA OF MULTIPLE TYPE.

A woman, aged 67, was first seen in August, 1932. She complained of pain and weakness in both legs following an attack of "influenza" two months previously. Clinical examination revealed nothing of note, and the general condition was good in view of the patient's age. X-ray examination demonstrated multiple areas of rarefaction in the skull, vertebræ, iliac bones, upper third of femur and shafts of humerus, radius and fibula. The ribs and clavicles, in addition to areas of rarefaction, showed distortion of their outline by tumour-like masses. A portion of one such mass was removed from the clavicle and examined microscopically. The tissue is filled with a very cellular formation which consists entirely of plasma-cells giving the typical reaction with Pappenheim's stain.

Several cases of the solitary type of intramedullary plasmacytoma are recorded in the recent literature. Stewart and Taylor (1932) describe one occurring in the upper third of the humerus, Shaw (1923) an almost identical one in the middle third of

the humerus, and Rogers (1929) in the middle third of the femur. All three present the characters of frankly malignant tumours, but all have the common characteristic of being amenable to surgical removal. Stewart and Taylor's case was treated by forequarter amputation, and after eight years there is no sign of recurrence or metastases. Shaw's case was cured by amputation and bone-grafting, and Roger's by curettage and subsequent insertion of radium. Both patients were reported in good health after the lapse of one and three years respectively. Numerous similar cases are recorded, but no example of this type is included in the present series.

The importance of this variety seems to lie in the fact that it may be mistaken clinically for a highly-malignant endosteal sarcoma, and the necessity for a biopsy before radical surgical treatment is adopted is clearly indicated.

The literature relating to the extramedullary plasmacytomata has been extensively reviewed by Blacklock and Macartney (1932) in Great Britain, and by Claiborn and Ferris (1931) in America. From the observations of these writers, it would appear that the sites of election for these tumours are pre-eminently the mouth, naso-pharynx, and larynx. Two sub-types are again recognised—(a) plasma-cell granuloma, easily removed surgically and showing but little tendency to recur, provided that a sufficiently extensive operation be carried out in the initial stage, and (b) plasma-cell sarcoma, which is frankly malignant. Histologically the two types differ from each other in the amount of stroma formation and in the number of mitotic figures observed. The granulomatous lesion comprises an abundant fibrous stroma richly infiltrated by plasma-cells. This formation differs from that characteristic of syphilis in that lymphocytes and mononuclear leucocytes are absent or scanty, but sometimes it cannot be readily distinguished from a hard chancre without the aid of a Wassermann reaction. The plasma-cell sarcoma is a very cellular tumour with delicate, thin-walled vessels, but little stroma and a notably frequent occurrence of mitotic figures and cells possessing two nuclei. Tumours of the latter variety occurring in the mouth, naso-pharynx, and larynx are generally multiple, locally recurrent, tend to infiltrate the surrounding tissue, and may even erode the bony structures. None the less, their degree of malignancy does not appear to be very high, and in only a few of the cases cited by the above writers has the invasion of the cervical lymph-nodes by masses of plasma-cells been established. One case recorded by Rössle (1926) appears to be at variance with the conception that generalised tumour formation is rare. In this case, found at an autopsy performed on a man aged 54, the tumour filled the naso-pharynx and had invaded the sphenoidal sinus. In addition, masses of the growth were found in all the cervical lymph-nodes, sternum, ribs, and skull.

Nevertheless, the advisability of differentiating even the more malignant plasmacytomata from the round-cell sarcomata, with which they have until recently been classified, seems to be clearly established.

THREE CASES OF EXTRAMEDULLARY PLASMACYTOMA.

Case 2—Granulomatous Type.—A middle-aged woman, first seen in December, 1931, complained of a slowly-growing mass between the lower incisor teeth for two to three months. The tumour, which was about the size of a cherry and freely

movable, was removed and examined microscopically. It consisted of a granulo-matous lesion richly infiltrated by plasma-cells.

Case 3—Sarcomatous Type.—A woman aged 51, first seen in December, 1930, had a tumour the size of a plum growing from the side of the lower jaw between gum and cheek. The growth was pinkish-grey in colour, and did not involve either skin or mucous membrane of the cheek. It was treated by excision and curettage followed by radium. The patient has returned four times for further insertions of radium, and on two other occasions there has been considerable hæmorrhage from the part. The growth is now about the size of a walnut, and is exceedingly friable. There is no involvement of the cervical glands, and the general condition is excellent. Microscopically the tumour is composed almost entirely of plasma-cells. Mitotic figures and cells possessing two nuclei are numerous.

Case 4—Sarcomatous Type.—A woman aged 62, first seen in August, 1932, exhibited a large red œdematous swelling involving the left anterior pillar of the fauces and left side of the palate. She stated that it had commenced three weeks previously. There was a shallow, smooth-edged ulcer the size of a threepenny piece on the left anterior faucial pillar near the root of the tonsil. The cervical glands were not enlarged. The patient complained of slight pain and difficulty in swallowing. The general condition was excellent. Thirty milligrams of radium were inserted for forty-eight hours. Three weeks later the swelling had completely disappeared, and the ulcer was reduced to half its original size. Two months later the throat was quite normal. Microscopically the tumour presents the character of a highly-cellular plasma-cell tumour, and bears a close resemblance to the histological appearances noted in connection with Case 3.

TREATMENT OF PLASMA-CELL TUMOURS.

Treatment of the solitary type of intramedullary plasmacytoma consists, where possible, in curettage followed by radium. Where the growth is more extensive, local amputation followed by bone-grafting or even amputation of a limb may be necessary. Unfortunately, there is no effective form of treatment for the diffuse intramedullary variety.

Treatment of the extramedullary type, briefly, is surgical removal of the tumour where possible, together with a considerable wedge of normal tissue. Removal by the snare or by simply cutting through the base of even the histologically benign type involves the risk of recurrence in a more active form. Blacklock and Macartney (1932) advise that in those cases wherein the growth occurs in close proximity to bone, the tissues should be excised right down to the bony surface, which should then be curetted. In one case (Stewart and Taylor, 1932) a pedunculated tumour was removed by the snare, but in addition the diathermy knife was applied to the base. Although these growths appear to vary considerably in their susceptibility to radium, the sum total of experience would seem to indicate that the result of radium treatment is distinctly encouraging. Rosenwasser (1930) describes a nasal tumour of considerable size, completely occluding the middle meatus, which, after a single application of radium, followed by a course of deep X-ray therapy, has shrunk to such a size that the patient is relieved of almost all symptoms. Claiborn and Ferris

(1931) record a somewhat similar tumour which was first removed surgically and, recurring after a short time, was successfully treated by radium. It is interesting to note in the present series (Cases 3 and 4), the difference in response to radium of two growths which histologically are very similar. Generally it would seem if the situation of the growth is such that it does not readily permit of removal of a wedge of normal tissue together with the tumour, surgical interference should be abandoned in favour of radium.

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IRISH MASTERS OF MEDICINE

No. 1—HENRY MACCORMAC, M.D.

SPEAKING at the annual meeting of the British Medical Association held in Belfast in 1909, the President, Sir William Whitla, claimed for Dr. MacCormac a place amongst the immortals because of his pioneer work on the prevention and treatment of tuberculosis. MacCormac was born at Fairlaw, County Armagh, in 1800. He was a student of medicine in Dublin, Paris, and Edinburgh, and in 1824 obtained the degree of M.D. of Edinburgh University. He settled in Belfast, and became a physician in the General Hospital in 1828; then, as a reward for the excellence of his work, he was appointed to the Chair of Medicine in Queen's College, Belfast, in 1836. His reputation was at first gained by his work on the treatment of cholera, during the great epidemics of 1828 and 1834; but the work which will keep his memory for ever green is associated with the treatment of tuberculosis. He published a work in 1855 entitled "The Nature, Treatment, and Prevention of Pulmonary Consumption, and Incidentally of Scrofula," in London, Paris, and Leipzig, which for the first time claimed phthisis and surgical tuberculosis to be one and the same disease. In this work he dwelt, with almost painful repetition, on the

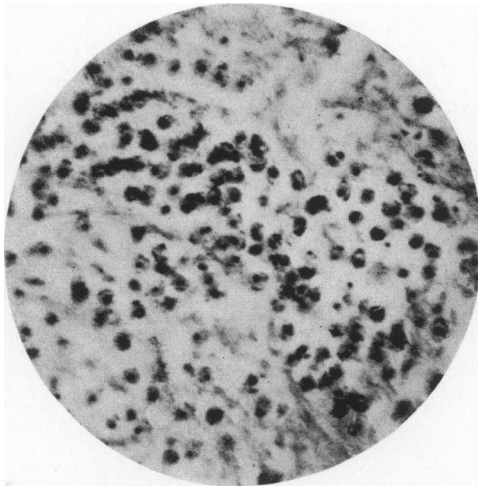


FIGURE 1

CASE 1. Plasmacytoma of Diffuse Intramedullary type.
Pure plasma cell growth. X 300 (Unna Pappenheim)

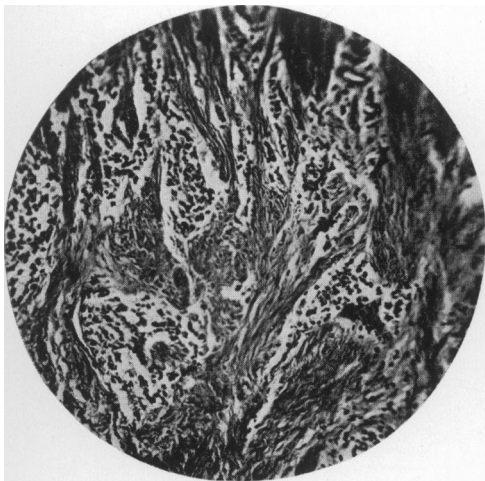


FIGURE 2

CASE 2. Extramedullary Plasmagranuloma. Granulomatous lesion infiltrated by collections of plasma cells.
X 100 (Hæmatoxylin and Eosin)

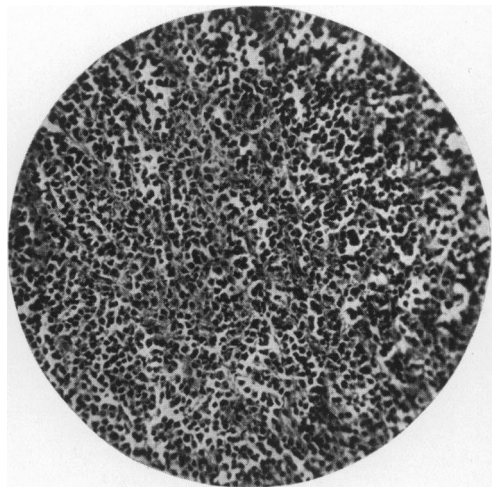


FIGURE 3

CASE 3. Extramedullary Plasmasarcoma. Very cellular growth, composed of plasma cells and fine stroma. X 100
(Hæmatoxylin and Eosin)

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influence of impure or rebreathed air as a predisposing and as a vital cause of tuberculosis. And further, he advocates, also for the first time, the open-air treatment of both the medical and surgical varieties of this disease. It is unfortunately necessary to emphasise MacCormac's claims to priority in this matter, since these have been somewhat overlooked by the prominence given to the valuable work of Hermann Brehmer. This worker, in 1856, i.e., a year *after* the publication of MacCormac's treatise, published a work which contained the same views as those advanced by MacCormac. Brehmer's work gained a much wider circulation than that of MacCormac, and as a result it is generally, though erroneously, thought that Brehmer was the originator of the open-air treatment of tuberculosis. In MacCormac's work it is stated: "For a long period of years I have with an increasing fullness of conviction discerned the undesirable results flowing from an ill-renewed atmosphere. I am perhaps the only physician of my time and standing, possibly the only one, who is intimately and entirely convinced that consumption is not only when taken early very often removable, but, what is of still greater importance, that with proper means and appliances, it is in every single instance preventable."

For prevention he claims that bedroom windows should be kept open day and night, and as much time as possible should be spent in the open air. For those already suffering from the disease he insists upon a ceaseless and unlimited supply, day and night, winter and summer, of pure fresh air, in the room of the sufferer, and that the patient should spend as much time in the open air as the season and weather permit. He further emphasises the importance of a liberal supply of highly nutritious food.

These words, taken from MacCormac's work of 1855, may be taken as containing every vital essential of the most modern methods for the treatment of tuberculosis.

So strong was MacCormac's belief in the value of open air, that on occasion he figured in the police court, having been summoned by angry patients for smashing, with his walking-stick, the panes of glass in the windows of sick-rooms when he found them "hermetically sealed."

He often complained of the thorny path of the innovator. As he described it: "To cleanse the Augean stable was a very trifle compared with the difficulties encountered by him who would unmask a single prejudice, supersede a single habit, however hurtful and pernicious to his kind."

MacCormac was widely travelled. Before settling in Belfast, he visited the Cape of Good Hope, and journeyed overland to Sierra Leone in order to study the habits and customs of the native tribes. He crossed the Atlantic twice and made extensive tours throughout North America. He was deeply versed in classical foreign literature, and had a knowledge of at least twenty languages. He died on 26th May, 1886.

—R. H. H.

No. 2—ROBERT GRAVES, M.D.

ROBERT GRAVES, whose descendants still live in the County Armagh, is one of the most illustrious physicians in the long history of medicine. He was born in 1795,

and after an uneventful boyhood travelled to Dublin, where he acquired all the medical learning that city in the early nineteenth century afforded. He graduated M.D. of Dublin University in 1818. He then spent three years travelling abroad, studying in Edinburgh, London, and some of the Continental medical schools. At the end of this period he was appointed to the Meath Street Dispensary, Dublin, where he began a series of changes in the teaching of medical students which earned for him a worldwide reputation.

When Graves settled in Dublin, clinical investigation and clinical teaching could scarcely be said to exist. Students were not regularly called upon to investigate cases for themselves, nor did they receive instruction in the methods of clinical diagnosis. Indeed, at this period it was possible for a student to obtain a medical degree without any practice in the diagnosis or treatment of disease, or even in the writing of prescriptions. In his introductory address to students at the Meath Street Dispensary in 1821, he said :

“Often have I regretted that under the present system, experience is only to be acquired at a considerable expense of human life. There is, indeed, no concealing the truth—the melancholy truth—that numbers of lives are annually lost in consequence of maltreatment. The victims selected for this sacrifice at the shrine of experience generally belong to the poorer classes of society, and their immolation is never long delayed when a successful candidate for a dispensary commences the discharge of his duty. The rich, however, do not always escape; nor is the possession of wealth in every instance a safeguard against the blunders of inexperience.”

The plan that Graves adopted in medical teaching consisted in giving to advanced students charge over particular patients, requiring them to report the “origin, progress, and present state of their diseases.” At the bedside these reports were verified or corrected by Graves himself, and then, in the lecture-room, he discussed with the class the diagnosis, prognosis, and treatment of the cases. The pupil in charge prescribed for these patients, and his prescriptions were revised as Graves thought fit.

The system of clinical clerkships in vogue in all teaching hospitals to-day, not only in Ireland, but in England and Scotland, is based on methods introduced by Graves, and it is a lasting memorial to his abilities as an innovator and as a teacher. The advantages of the system are obvious; the student is obliged to give reasons for every diagnosis which he makes, for every plan of treatment which he suggests, and he early becomes accustomed to making careful clinical observations and notes.

Although Graves did much for the advancement of medical education, the work on which his reputation stands is his “Clinical Lectures on the Practice of Medicine,” which he published in 1843. This work gained for him an international reputation, and was translated into several foreign languages. The introduction by Trousseau to the French edition shows the high reputation which Graves had acquired. He writes :

“I have constantly read, and re-read, the work of Graves, and I have been inspired by it in my teaching. The lectures on scarlatina, paralysis, pulmonary affections, cough, headaches, have acquired a European reputation. When he inculcated the necessity of giving nourishment in long-continued fevers, the Dublin physician,

single-handed, assailed an opinion which appeared to be justified by the practice of all ages. Had he rendered no other service than that of completely reversing medical practice upon this point, Graves would by that act alone have acquired an indefensible claim to our gratitude. Graves is, in my acceptance of the term, a perfect clinical teacher; an attentive observer, a profound philosopher, an ingenious artist, and an able therapist, he commends to our admiration the art whose domain he enlarges, and the practice of which he renders more useful and more fertile."

These lectures contain many ideas new to the period in which they were written. Attention, for the first time, is drawn to the "pinhole pupil" of pontine hæmorrhage, and to the use of the watch in timing a pulse; while the old lowering or anti-phlogistic treatment of fevers is rejected. Early descriptions of angio-neurotic œdema and scleroderma are given, and there is such an accurate account of exophthalmic goitre that the disease since then has been known as Graves' disease. He died of cancer of the liver in 1853.

—R. H. H.

No. 3—SIR DOMINIC JOHN CORRIGAN.

SIR DOMINIC CORRIGAN, although a graduate of Edinburgh University, was an Irishman by birth, having been born in Dublin on 1st December, 1802. It was, too, in Ireland he lived and practised, and where, as a physician to the Meath Street Dispensary, Dublin, he made the series of clinical observations which gained for him a worldwide reputation. His first important paper, published in the Dublin Medical Transactions of 1830, five years after obtaining his degree, was entitled "On the Motions and Sounds of the Heart." This paper embodies experimental investigations on the hearts of fishes and reptiles, and shows the clear and deliberate reasoning of a well-stored scientific mind. At this time he was greatly influenced in his work by reading "The Lives of British Physicians, from Linacre to Gooch." He afterwards stated that this book showed him that "there is but one road to excellence and success in our profession, and that is by steady study and hard labour."

But the paper which contains the observations for which he is most noted was published in the Edinburgh Medical and Surgical Journal in 1832. It is entitled "Permanent Patency of the Mouth of the Aorta," and it opens with the following statement: "The disease to which the above name is given has not, as far as I am aware, been described in any of the works on diseases of the heart. The object of the present paper is to supply that deficiency. The disease is not uncommon. It supplies a considerable proportion of cases of deranged action of the heart, and it deserves attention from its peculiar signs, its progress, and its treatment. The pathological essence of the disease consists in inefficiency of the valvular apparatus at the mouth of the aorta, in consequence of which the blood sent into the mouth regurgitates into the ventricle. This regurgitation, and the signs by which it is denoted, are not necessarily connected with one particular change of structure in the valvular apparatus." Corrigan draws attention in this paper to the peculiar quality of the pulse in cases of aortic incompetency—a full pulse followed by almost complete

collapse. It has since been known as the "waterhammer pulse," but to all Irishmen it will ever be known by the name given to it when first described: "Corrigan's pulse." He also describes in this paper the strong visible pulsation in the arteries of the head and neck, which bound into position with each beat of the heart, and become prominent below the skin.

Corrigan's activities were not confined to the study of the heart. His contributions to our knowledge of fevers is a noteworthy one, and he insists on what at his time was considered a radical view, that typhoid and typhus fever were distinct entities. He also found time to act as vice-chancellor of the Senate of the Queen's University of Ireland, and to act as a member of the General Medical Council. In both of these positions he did much to raise the standard of medical education not only in Ireland, but throughout England and Scotland.

Sir Dominic Corrigan died from an attack of "paralysis" on 1st February, 1880.

—R. H. H.

Curious Advertisements of Old Ulster Physicians

By SAMUEL SIMMS, M.D., B.SC., D.P.H., M.R.C.P.I.

I RECENTLY discovered some curious medical advertisements, which were published in the columns of "The Northern Star," a newspaper which was issued in Belfast from 1792 till 1797. These illustrate a feature of medical practice in the eighteenth century which has now become entirely obsolete, but which was quite common at that date. The first was published in the issue of March 14—19, 1796:

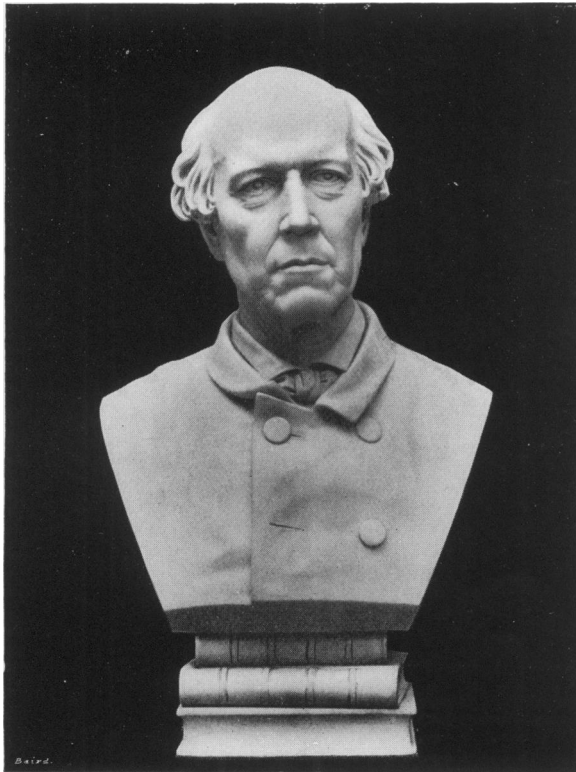
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Surgeon, Apothecary,
and Practitioner of Midwifery,
THOMAS STREET, ARMAGH,

who served an apprenticeship to one of the first of his profession in the City of Dublin, and attended at the different courses of Lectures in that College on Anatomy, Midwifery, Physics, and Chemistry, etc., and served Surgeon in the King's Navy last War, attended the Royal Hospitals of Plymouth, Portsmouth, and Navy Hospital of Dublin, etc. From 13 years' extensive practice, as above, he has a perfect knowledge of the methods of all the Physicians and Surgeons of Dublin, an accurate knowledge of various Medicines, etc. There is no case can turn up to him that will be new, either as to knowledge or method of cure. The success that has attended his practice universally in a circle of 20 miles round Armagh for 8 years is too well known to require comment. He has discovered a method by which he has cured perfectly some thousands of the Scurvy, Evil, and Leprosy, Diseases hitherto looked upon incurable, unless in the palliative way, by inward medicines that require no confinement, even in the extremest cold, and never fail producing the effect when their use are continued in proportion to the Disease, even those who have them hereditary. Sold in pots from 2s. 2d. to 5s. 5d.

Quis sciat causam solvit morbum.

N.B.—His shop is stocked with a general assortment of the best and freshest drugs imported into this Kingdom, carefully prepared after the Dublin method.

P.S.—A few merchants may be well accommodated in private to pay their cloth, with good stalling for Horses, Pump and every other convenience.



HENRY MACCORMAC, M.D.

**BLOCK KINDLY LENT BY
THE CURATOR, BELFAST
MUNICIPAL MUSEUM**

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Quis sciat causam solvit morbum.

N.B.—His shop is stocked with a general assortment of the best and freshest drugs imported into this Kingdom, carefully prepared after the Dublin method.

P.S.—A few merchants may be well accommodated in private to pay their cloth, with good stalling for Horses, Pump and every other convenience.

Dr. Henry has certainly given in the above much information in small compass; he must have been well known in Armagh and the surrounding country. One wonders what his remedy was that cured some thousands of skin diseases, and also if his home was popular with the itinerant linen merchants of the time. Altogether, he has written an able account of his professional abilities, whatever others thought about them.

The second advertisement appears in the issue of April 28—May 2, 1796 :

THOMAS GELSTON,

Surgeon,

has just received from London a choice assortment of genuine

DRUGS, PAINTERS' COLOURS AND MATERIALS.

He respectfully informs the public that he has erected the apparatus lately invented by Dr. Beddoes of London and constructed by Boulton and Watt of Birmingham for the production of those factitious airs used in medicine which have been found so useful in

CONSUMPTIONS,	CANCEROUS
ASTHMA'S AND	COMPLAINTS.

He is also provided with an electric apparatus in the most perfect order, and in future will be constantly supplied with the different artificial mineral waters prepared by himself.

Belfast, April 18, 1796.

Dr. Gelston was a member of a family long associated with the city of Belfast; Gelston's Corner marks the site where one of the family lived for many years at the junction of the Holywood and Belmont Roads. His speciality was not only the cure of intractable disease, but also a useful sideline in the sale of paint and mineral waters. His electric machine perhaps was as good a draw then as an electro-cardiogram to-day.

Lastly, in the issue of January 23—27, 1797 :

SAMUEL MUSGRAVE,

Surgeon and Apothecary

(Who is at present confined on a charge of High Treason),

Begs leave to inform his friends and the Public that his shop in Lisburn is as usual regularly supplied with well chosen Medicine. He pledges himself that every attention shall be paid to his business, compatible with his present situation.

Samuel Musgrave begs particularly that those Debts which have been sufficiently long due, shall be paid immediately to Mr. John McAuley (now in his shop), who is authorised to receive them, and that those to whom he stands indebted, will please furnish their accounts for the purpose of being immediately discharged.

Dublin, Newgate, January 23, 1797.

This unfortunate had landed himself in prison for political offences, but was anxious to retain some of his business. I wonder if it would be right and proper to-day for the profession to advertise for the payment of their debts (sufficiently long due)? Many of us could provide copy for the newspapers. Dr. Musgrave, however, was anxious to pay his own debts, and therein shows the integrity that our profession has uniformly enjoyed. The old systems have gone, and new ones have appeared with equal advantage to both doctors and their patients.

BRITISH MEDICAL ASSOCIATION PORTADOWN AND WEST DOWN DIVISION

A MEETING of this division of the B.M.A. was held in the C.B. Café, Scotch Street, Armagh, on Wednesday, 9th November, 1932, at 4 p.m. Dr. James Boyd, Chief Medical Officer, Ministry of Labour, N.I., delivered an address, "Some Problems of the Panel Practitioner." This paper will be published in the next number of the

THE ULSTER MEDICAL SOCIETY

THE first meeting of the Ulster Medical Society was held in the Medical Institute on Thursday, 20th October, at 8.30 p.m. The outgoing president, Mr. S. T. Irwin, introduced the president-elect, Professor C. G. Lowry, who delivered his presidential address: "The Problem of Uterine Cancer." This address is published elsewhere in this number of the Journal. Before delivering his address, Professor Lowry referred to the loss which the Society had sustained in the death of several of its members during the session.

"DR. CHARLES J. ALEXANDER joined the Society in 1920 when he was superintendent of the Forster Green Hospital. I knew him as a student, as a young practitioner, and finally as superintendent. He was a man of high ideals, unfailing industry, and a courage that, tested by a long struggle with ill-health, never failed him. The last few years of his life he was unable to practise his profession, but he maintained to the end his cheerful outlook.

"DR. JAMES GRAHAM was elected a Fellow of this Society so long ago as 1877, before many of the present Fellows and Members were born. He was one of the oldest Fellows of the Society and, in spite of his years, a man of great activity. He occupied the presidential chair in the session 1899-1900, and for the last twenty-seven years of his life was intimately brought into touch with many of the members of our profession through his official position as City Coroner. In the early part of his career he was an Alderman in the City Council and a prominent and active member of the Public Health Committee. Few practitioners were so generally beloved by their patients; they paid him a signal compliment some years ago in presenting him with a Daimler limousine. Kindly, cheery, and a good friend, he will be much missed.

"PROFESSOR JAMES ALEXANDER LINDSAY, elected a Fellow almost fifty years ago in the year 1883, a former secretary of the Society, president in the session 1897-98, and one of our trustees. Distinguished alike as a physician, teacher, author, and scholar, he has left his mark on this Society and on the Belfast School of Medicine. He was my teacher, colleague, and in later years I had the privilege of his friendship. I have never been in contact with a more precise and orderly mind, and his gifts were by no means merely clinical and academic. He was well-read, a good companion, and an invaluable member of a dinner committee—a connoisseur of both the menu and the wine list. In earlier days he was an enthusiastic golfer, and he presented the first golf trophy to this Society, the Lindsay Cup. He was one of the

finest teachers of clinical medicine in this country ; hundreds of students owe to his teaching and example a sound foundation in the principles of their art. Many of the philanthropic and educational institutions in this city had the benefit of his energy and advice, notably the Royal Victoria Hospital, which he served as physician and chairman of the Board of Management, and the Maternity Hospital, of which he was also the chairman. His influence had much to do with the amalgamation which resulted in the new Maternity Hospital, while his services in the foundation of the Dental School were also outstanding. I had the good fortune to be his student when his teaching capabilities were at their zenith, and any virtues which I possess as a teacher I must unhesitatingly ascribe to his example. He was a rare example of the scholar-physician, and his like we shall not soon see again.

“DR. WALTER SMYTH was elected a Fellow of the Society in 1896. He distinguished himself in his final examination, and was afterwards demonstrator in anatomy in the Queen’s College and clinical assistant in Ophthalmology in the Royal Hospital. He devoted himself to the department of mental diseases, where his energy, ability, and sympathy with his patients won him the confidence of his Board in the Country Antrim Asylum, and the affection of those who were committed to his care. His death at a comparatively early age was a loss to this Society and to the branch of the profession of which he was a member.

“DR. J. ERNEST WHYTE was a Fellow of the Society from 1902. After serving as house surgeon and house physician in the old Royal Hospital in Frederick Street, Dr. Whyte practised successfully in the Knock district. Within the last few years failing health curtailed his activities, but could not damp the quiet courage with which he faced the future. He was a singularly genial man whom it was a pleasure to meet, and he enjoyed in a marked degree the confidence and esteem of his patients. He also was carried off at a comparatively early age, and leaves the Ulster Medical Society and the profession in this city the poorer for his death.

“To the relatives of these our deceased Fellows we tender our respectful sympathy.”

The second meeting of the Society was held on Thursday, 3rd November, in the Medical Institute, at 8.30 p.m. The president, Professor Lowry, was in the chair. Mr. C. G. A. Woodside read a paper entitled “Acute Appendicitis : A Review of Cases.” This paper raised an animated discussion. It is published elsewhere in this number of the Journal.

The third meeting of the Society was held on Thursday, 10th November, in the Medical Institute at 8.30 p.m. The president, Professor Lowry, was in the chair. Dr. W. Edgecombe (Harrogate) delivered an address on “The Principles of Spa Treatment.” Dr. Edgecombe first pointed out that the value of spa treatment did not consist merely in “taking the waters,” but in a summation of a number of factors : drinking the medicinal waters, dieting, bathing, recreation, change of climate, etc. He then gave an account of the different types of waters peculiar to each of the British spas, and stated that although there were wide variations in the chemical content of each spa, all spa treatments were based on the same fundamental principle, that was, the regulation of disturbances in metabolism in the patient. The

elimination of all waste and toxic products through the bowel, kidneys, and skin was stimulated; the liver was activated; the blood and lymph circulation was improved; the amount and nature of the diet was regulated, as was the amount of daily exercise and rest. In addition, any septic focus was removed. Dr. Edgecombe said that in the acute phases of disease, spa treatment had no place, but that it was of great value in cases of chronic disease. He gave examples of its value in cases of anæmia, functional neurosis, arterio-sclerosis, hyperpiesia, rheumatic affections, intestinal disorders, D.A.H., skin diseases, etc. Spa treatment he held to be of especial value in rheumatism, both in the infective and the non-infective varieties; he also held that it was ideal for gout. Obesity, he said, was not a suitable condition for spa treatment unless due to some concomitant disease. Professor C. G. Lowry and Dr. George Lyttle paid tributes to the value of Dr. Edgecombe's treatment of patients whom they had sent to him in Harrogate. Professor W. W. D. Thomson moved a vote of thanks to Dr. Edgecombe for his interesting address, and Dr. Robert Marshall seconded. At the conclusion of the paper a series of cinematograph films was shown. These illustrated the various forms of bath treatment—Aix, neddle, Russian, Turkish, peat, foam, etc.—employed in the Royal Baths in Harrogate.

BRITISH MEDICAL ASSOCIATION NORTH-EAST ULSTER DIVISION

THE Division met in The Café, Coleraine, on Friday, 30th September. The chairman, Dr. S. J. Bolton, presided. The Golf Cup, kindly presented by the chairman, was handed to Dr. T. Adams, the winner of last season's competition. Dr. Huey and Dr. Sloan Bolton gave interesting accounts of the centenary meeting of the Association in London. Dr. S. J. Bolton then read his address from the chair: "Changes in General Practice During Forty Years." This paper will be published in the April number of this Journal.

The Division met in The Café, Coleraine, on Friday, 28th October. The chairman, Dr. S. J. Bolton, presided. Dr. J. A. L. Johnston, Derry, read a paper on "The Zondek-Ascheim Reaction for Pregnancy." The theory and technique of the test were explained. Valuable information was obtained in cases of hyatid mole, as the test gave a positive reaction as long as any of the mole remained in the uterus. The test was sometimes positive in ovarian disease.

The Division met in the Cottage Hospital, Coleraine, on Friday, 25th November. The chairman, Dr. S. J. Bolton, presided. Dr. Sloan Bolton gave a short account of a visit to the spas of Germany. The speaker was one of a party of British medical men who visited some of the leading German spas. At each spa lectures and demonstrations were given, and there were ample facilities for studying the work carried on. A noteworthy feature was the very moderate expense entailed by patients visiting the spas. AACHEN, situated near the Belgian and Dutch frontiers, is noted for the treatment of rheumatism. It possesses alkaline, muriatic, and

sulphur springs. WILDUNGEN is famous for the treatment of gall-bladder and kidney disorders. At NAUHEIM there are wonderful CO₂ springs, so rich in the gas that the baths are made of wood, as porcelain and even the pipes corrode. These baths are suitable for mild cardiac cases. NEUENAHN treatment is suitable for metabolic disturbances, especially diabetes, gastro-intestinal disorders, and kidney and gall-bladder diseases. Information regarding any of these spas may be obtained from Herr Rohme, 90 Sheaveshill Avenue, Colindale, N.W.9.

Following this short paper there was an exhibition of Kodak medical films :
(1) Reduction of crush fractures of the spine, by R. Watson Jones, Liverpool;
(2) Treatment of a normal breech presentation.

J. HUNTER, *Hon. Secretary.*

1 Mervue, Portrush.

BRITISH MEDICAL ASSOCIATION—TYRONE DIVISION

A MEETING of the Tyrone Division, B.M.A., was held in the County Hospital, Omagh, on Thursday, 3rd November, 1932. The subject for consideration was the new Mental Treatment Act. After a prolonged discussion the following resolutions were passed :—

“That the Tyrone Division, British Medical Association, objects strongly to the provisions of the new Mental Treatment Act in so far as it only provides for payment, in the case of rate-aided patients, if such patient is certified insane, thus laying the profession open to the charge of certifying unjustly for the purpose of obtaining a fee.”

“That the Tyrone Division, British Medical Association, considers the fees under the new Mental Treatment Act utterly inadequate.”

“That the Tyrone Division, British Medical Association, feels that in recent Acts, the interests of the general practitioner would have been better safeguarded if there had been a genuine general practitioner in Parliament, and that such an M.P. should fittingly represent Queen's University, Belfast. They therefore ask each division of the Ulster Branch to instruct its representatives in the Council to press for the inclusion of such a man at the next election, in place of the late Dr. Morrison, who so ably protected our interests.”

This meeting of the Division was a special one, and all dispensary medical officers of the area were invited to attend, as the Act so closely affects them.

GEORGE GILLESPIE, *Hon. Secretary.*

Ballygawley, Co. Tyrone.

BELFAST MEDICAL STUDENTS' ASSOCIATION

THE opening meeting of the session 1932-3 was held in the McMordie Hall, Students' Union, on Friday, 4th November, at 8 o'clock. Mr. Purce, F.R.C.S., the

outgoing president, occupied the chair. He introduced the new president, Mr. T. S. Holmes, F.R.C.S., who took for the subject of his address, "Some Experiences as Assistant to a General Practitioner." Mr. Holmes gave an account of the life and work of a general practitioner in the mining districts of County Durham about twenty-five years ago. Every morning, said Mr. Holmes, between forty and fifty patients were seen, and each insisted on having a bottle of medicine irrespective of the complaint. The medicine was made up by the doctor himself. The surgery end of the practice took place in the evening, and was scattered over a wide area. There was also a large midwifery practice, and although there was no skilled help and few of the elaborate aseptic precautions of the present day, it was remarkable how few cases of infection occurred. The good results were due largely, said Mr. Holmes, to the great personal resistance of the mothers, who were well fed and well housed.

Mr. Donnan proposed that a vote of thanks be passed to Mr. Holmes for his very interesting address. Mr. Armstrong seconded this proposal. The chairman put the proposal to the meeting, and it was passed by acclamation.

During the session addresses will be given by Colonel J. W. Langstaff, D.S.O., R.A.M.C.; Professor Young, M.A., M.D., and others. The annual dance will be held in the Students' Union on 27th January, 1933. There will also be a debate with the Literary and Scientific Society, and the students themselves will read papers on Students' Night.

R. B. BOAL, *Hon. Secretary.*

Students' Union Society.

LISBURN AND DISTRICT MEDICAL GUILD

THE November meeting of the Guild was held in Dr. J. G. Johnston's house, Lisburn. Dr. Johnston occupied the chair, and Dr. Richard McCulloch gave an address on "Malignant Disease of the Lungs." Dr. McCulloch demonstrated, by X-ray films, the radiographic features of the condition. He said many believed that this disease is much more frequent than formerly. He thought, however, that increasing frequency of recorded cases cannot be wholly accounted for by the improved methods of diagnosis. The majority of cases of intra-thoracic new growths, he pointed out, are carcinomata arising in the bronchi. Dullness with silence, and paralysis of the left recurrent laryngeal nerve, are signs which, even in the absence of other phenomena, should be regarded with the gravest suspicion. He emphasises the importance of tracheal displacement, both clinically and radiologically. The end results, he said, are often very distressing from stenosis of the bronchus with asphyxia. A discussion followed, after which the thanks of the meeting were conveyed to Dr. McCulloch for his excellent address.

J. W. PEATT, *Hon. Secretary.*

14 Railway Street, Lisburn.

THE LONDONDERRY MEDICAL SOCIETY

THE first meeting of the session 1932-3 was held in the City and County Infirmary at 4.30 p.m. on Friday, 7th October, 1932. The outgoing president, Dr. J. G. Cooke, nominated Dr. S. H. B. Allison to fill the office in the ensuing session. This met with the unanimous approval of the members present, and Dr. Allison was declared elected.

Dr. K. O. Robertson read notes of a case of localised empyema which had given a good deal of trouble both in diagnosis and in treatment.

Dr. J. A. L. Johnston gave a demonstration of specimens illustrating the Friedman modification of the Zondek-Ascheim test for the diagnosis of pregnancy. Dr. Johnston stated that the test had been proving to be of value, as it was apparently quite possible to make a certain diagnosis at a very early stage. He then quoted a case of vesicular mole, in which the test done after curettage indicated that the mole had not been completely removed, which was proved by the fact that more pathological material was discovered when a second curettage was done.

The second meeting of the session was held on 10th November, 1932, when a paper was read by Dr. John Watson, who chose as his subject "Confusional Insanity." Dr. Watson explained that this group of cases could be best described and defined as toxic insanity, because in all these cases the underlying cause was toxic in origin. The mental confusion due to alcohol is well known, also that associated with severe toxic infections, such as pneumonia, typhoid, scarlet fever, etc. Here the mental confusion or delirium is regarded as a troublesome though often a grave sign. In some cases the delirium may be so severe and so cloud the picture that the underlying cause may be missed. This is frequently seen in cases of uræmia, the whole attention being fixed on the delirium. He urged complete clinical investigation of all cases of mental confusion.

The speaker then discussed delirium tremens, and pointed out that an antibody is formed as a protection against the effects of alcohol. Should the intake of alcohol for any reason suddenly cease, this large quantity of antibody is circulating in the blood-stream, and the theory is advanced that the delirium is due to this antibody. Acting on this assumption, it would seem rational to administer alcohol in gradually diminishing doses during the early days of the delirium.

The speaker also dealt with insanity of pregnancy, and puerperal insanity, which, in his opinion, were due to toxæmia. The toxin probably arose from the placenta. He stated that hyperemesis gravidarum and eclampsia are undoubtedly toxic conditions, and that these clear up after the removal of the offending placenta. It is fair to assume that the toxin present may, in certain predisposed persons, have a selective action causing insanity. The mental confusion may occur during the early months of the pregnancy, during the latter months, or immediately after parturition. The first of these groups has an excellent prognosis, the patient usually recovering before the termination of the pregnancy. The placenta may cease to be toxic, or the patient may develop a satisfactory antibody. In the second group, the insanity occurs because the patient is unable to maintain the supply of antibody. In the

third group, the insanity may be caused by a large amount of antibody circulating in the blood-stream after the sudden removal of the toxin-producing body in a way similar to that seen in delirium tremens. Further, the speaker stated that there were certain grounds for the belief that a low blood calcium content tended to mental instability and predisposed the C.N.S. to attacks from selective toxins. Since there is an increased demand on the maternal calcium supply during pregnancy, as evidenced by the deterioration in teeth, this should be borne in mind when taking care of a case of pregnancy. He emphasised the fact that morning sickness, trace of albumen in the urine, or a tendency to insomnia, were not normal concomitants of pregnancy, but were evidence of toxicity, and where there is toxicity there is a serious danger of insanity. He outlined methods of early recognition and prevention of this complication.

Dr. Watson advanced the theory that prolonged worry *per se* caused formation of a toxin, as did also excessive and prolonged physical exertion. He believed that shell-shocked patients during the war were suffering from a definite pathological entity produced by this "worry toxin." Ordinary fatigue has been known to cause hallucinations. The "Angels of Mons" were probably a visual hallucination produced by the toxins of worry and fatigue.

The annual dinner of the Londonderry Medical Society was held in the Northern Counties Hotel on Saturday, 26th November, at which there was a very good attendance of members of the Society and guests. Previous to the dinner a presentation was made to the hon. secretary, Dr. J. A. L. Johnston. Dr. J. Galway Cooke, on behalf of the members of the Society, congratulated Dr. Johnston on his forthcoming marriage, and presented him with a set of entrée dishes suitably inscribed for the occasion.

J. A. L. JOHNSTON, *Hon. Secretary.*

19 Clarendon Street, Londonderry.

REVIEW

INJECTION TREATMENT IN MEDICAL PRACTICE. By David Levi, M.B., M.S., F.R.C.S.Eng. Cassel & Co., London. 6s. net. pp. 150; figs. 26.

THIS little book should be of very great value to the busy practitioner, as it gives in a succinct manner the essential details of the technique employed in the injection treatment of such common conditions as varicose veins, hydrocele, piles, bursæ, etc. The work is based upon the personal experience of the author, and is essentially a practical book. There are also short chapters on blood transfusion, cistern puncture, and intratracheal injections of lipiodol. These latter chapters are, however, too short and condensed to be of much value, and indeed few general practitioners would care to devote the time necessary to acquire the special skill requisite for their performance. The book can be most warmly recommended to the practitioner.

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