PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—J. MAGEE FINNY, M.D., F.R.C.P.I.
General Secretary—JAMES CRAIG, M.D., F.R.C.P.I.

SECTION OF MEDICINE.

President—J. M. REDMOND, M.D., P.R.C.P.I.
Sectional Secretary—F. C. PURSER, M.D., F.R.C.P.I.

Friday, May 17, 1907.

DR. KIRKPATRICK in the Chair.

Lympho-Sarcoma of the Left Lung.

DR. CRAIG read the clinical notes on a case of lympho-sarcoma of the left lung, and exhibited the *post-mortem* specimen. The patient was a man, aged forty-six, who thought he had caught a cold in October, 1906. He was treated in hospital for bronchitis. His most marked symptoms at that time were orthopnœa, cough, and occasional blood-stained sputum. He came under Dr. Craig's care on March 12, 1907. He had orthopnœa, cough, frothy expectoration, cedema of lower limbs, slight ascites, albuminuria, systolic aortic murmur. The left lung showed physical signs of complete solidification, with thickened pleura. His abdomen was tapped on March 30, 1907, and chylous fluid was drawn off. His voice became husky, and he had severe pain over the cardiac region. He died on April 4, 1907. *Post-mortem* revealed chylous fluid in the abdomen, enlarged and congested liver; nothing else abnormal. Pericardium was distended with sanguineous fluid, and subserous hæmorrhages were observed in many spots. Cardiac valves were healthy. A white, opaque, homogeneous,

spherical tumour occupied the greater portion of the left lung. Section of enlarged lymphatic glands showed in the substance of the tumour. Secondary growths were present in the rim of lung tissue which the primary growth had not invaded. Portions of the tumour extended along the course of the left pulmonary veins, the pulmonary artery, and the aorta, so as to appear within the pericardium. The entire adherent left pleura was about one-eighth of an inch in thickness, but had no connection with the tumour. The tumour appeared to have started in the bronchial glands, and spread outwards.

Some Cases of Tuberculosis treated by Professor Deny's Tuberculin.

DR. FRANK J. DUNNE exhibited six cases of tuberculosis treated by Professor Deny's tuberculin in the South Dublin Union Hospital.

THE CHAIRMAN desired to know if Dr. Dunne considered that the local and general reaction, which was so marked in some of the cases, was a necessity, or whether it would not be better to reduce the dose, so as to reduce the initial reaction, and try and spread it over a longer period.

DR. STEVENSON showed X-ray photographs of the case in which the wrist was involved, and said he could not say from the photographs alone whether there was any disease in the bone ; clinically there did not seem to be any disease now, but the photograph simply showed that there had been diseased bone removed.

DR. CRAIG, General Secretary, expressed the thanks of those present to Dr. Dunne for his exhibits ; they were, he said, greatly impressed by the excellent results obtained, and highly appreciated Dr. Dunne's work.

DR. MOORHEAD asked if the cases were all in which the treatment had been tried or were a selection. He had seen two of them when they were very bad, and was much impressed with the improvement. He was also desirous to know if Dr. Dunne had found the opsonic index raised by the injection of Deny's tuberculin.

DR. DUNNE, in reply, said he agreed with the Chairman in regard to the reduction of the dose. In fact he commenced the girl with the wrist with five parts in a million, and did not know what would have happened if he had given her the dose of half a milligram, which is recommended, of Koch's tuberculin. Tuber-

culin at present had to be used with very great care, and he believed the ordinary trial doses were too strong. The cases were selected from the one-third of the total (150) which he injected. He selected them because they were affected in a way that could be seen; but many of his pulmonary cases—which were difficult to demonstrate—were quite as good. He hoped later to present a tabulated return; pressure of work had prevented his making it, as well as trying the opsonic index.

An Obscure Case of Nervous Disease.

DR. WINTER exhibited an obscure case of nervous disease. The symptoms were, he said, vague. The main thing was exaggerated reflexes, and the patient had a sensation, sometimes of pain and sometimes of numbness and tingling, in his left arm and leg when he got out of bed. Sometimes he got a spasm in his calf and the three outer fingers of his left hand. His superficial reflexes were normal.

THE CHAIRMAN said he would hesitate to diagnosticate the case. There were a number of points which rendered it almost certain that it was a case of disseminated sclerosis; but he was not familiar with the marked spasm as a symptom.

A Case of Spleno-medullary Leukæmia.

DR. A. R. PARSONS read a paper on a case of spleno-medullary leukæmia which had undergone a very remarkable improvement under treatment with arsenic—improvement both in the size of the spleen and the condition of the blood.

DR. CRAIG recalled a case in which the spleen, under arsenic treatment, used to disappear quite beneath the costal arch, so much so that he thought the man was cured. He returned, however, a couple of times to hospital, although taking fairly large quantities of arsenic. In the end he died of general tuberculosis, and at the time of death the spleen was fairly large, though not so large as on previous occasions. Dr. Parsons had shown them a remarkable cure, but with his own case in view he would hesitate before saying that the condition would not recur.

DR. KIRKPATRICK asked Dr. Parsons if he had formulated any opinion as to the relative merits of the treatment by arsenic and by X-rays, or by both in combination. Dr. Craig's case showed that it was possible to cause the disappearance of the symptoms by drugs; but it was important to find whether not only a

disappearance of the symptoms, but a cure, could be effected by the X-rays.

DR. DRURY cited the case of a woman who had a much larger spleen than Dr. Parson's patient. Every drug treatment was tried without result. Then they tried the X-ray treatment alone, and the spleen was enormously reduced. Ultimately she died of syncope.

DR. PARSONS, in reply, said he had purposely avoided using the word *cured*. So far as he knew there was no case of *cure* on record. The improvement in the case had continued even after the arsenic was stopped. In another case, a lady, fifty-five years of age, who had been on arsenic for about five months, the treatment had produced diarrhœa and vomiting. She then came to him, and, as the arsenic had made no improvement, he put her under X-rays. After twenty sittings the spleen commenced to subside, and there was also a marked diminution in the white corpuscles. The case, therefore, proved that the X-rays alone could bring about a remarkable improvement.

Notes on a Case of Cerebellar-Pontine Cyst.

DR. PEACOCKE read notes of a case of cerebellar-pontine cyst, which occurred in a man, aged thirty years. His symptoms were frontal headache, giddiness and staggering gait, failing sight, and deafness of the left ear. There was no vomiting. Examination showed paralysis of the muscles supplied by the seventh nerve on the left side and loss of sensation on the left side of the face. There was no loss of power or of sensation in the legs or arms. The thoracic and abdominal organs were healthy. Examination of the eye showed optic neuritis, with small hæmorrhages and white patch in the neighbourhood of the optic disc. There was no elevation of temperature, and the pulse was normal. He died quite suddenly, about six months after the first onset of symptoms. *Post-mortem*, made thirty hours after death, showed a cystic growth involving both cerebellum and pons on the left side. Microscopic examination showed that the brain tissue adjoining the cysts showed two different tissues :—(1) Composed of spindle-shaped elements, very cellular, and resembling in all respects a spindle-celled sarcoma. (2) A tissue composed of smaller cells (neuroglial).

DR. PARSONS said that hardly any cases were more trying than brain cases, and he desired to know if the question of operative

interference had been raised. If the surgeon had been able to strike the cyst, the eyesight might have been saved.

DR. CRAIG instanced a case in which loss of hearing gave a fair opportunity of localising the tumour, but the operation failed, and the girl died.

DR. MOORHEAD said the question raised by Dr. Parsons was very important. In cases where localising symptoms made the position certain, he thought that early operation should be recommended.

DR. PEACOCKE, in reply, said that the question of operation did suggest itself to him, but no one else who saw the case suggested it.

SECTION OF OBSTETRICS.

President—R. D. PUREFOY, M.D., F.R.C.S.I.

Sectional Secretary—H. JELLETT, M.D., F.R.C.P.I.

Friday, May 24, 1907.

THE PRESIDENT in the Chair.

Specimens.

DR. HENRY JELLETT exhibited the following specimens:—
(a) Uterus and upper two-thirds of vagina removed by Werder's method for cancer of the vagina; (b) remainder of vagina and inguinal glands from the same case. They were, he thought, of interest from both the operative and pathological standpoint, as cancer of the vagina was a very rare condition. The specimen had been removed from a patient, aged thirty-nine. She stated she had menstruated regularly up to the present time, but that there had been a certain amount of leucorrhœal discharge, which had been gradually increasing. She had not suffered in any way from hæmorrhage. Her general health was good, and she had not lost weight. On examination he found, first of all, that there was a condition of the cervix somewhat resembling an erosion. It was congested, and bled when touched. On the anterior vaginal wall there were several nodules about the size of a hazel nut, extending half-way down the wall, and upwards almost to the cervix, and so close that for that and other reasons he believed the case to be one of intra-cervical cancer that had grown out on to the vagina.

The case was a favourable one, and he decided to perform the operation described as Werder's operation. The operation went off better than he expected, there being practically no hæmorrhage. He removed the uterus, appendages, broad ligaments, and upper two-thirds of the vagina, but did not do a very extensive para-uterine dissection, as there seemed to be no indication for it. He separated the anterior vaginal wall practically down to the urethral orifice, and the posterior wall half-way down. The patient made a favourable recovery. He sent the specimen to Dr. Rowlette, who reported as follows:—

“Specimens submitted by Dr. Jellett—(a) Uterus and appendages, with part of vagina; (b) remainder of vagina, with inguinal glands.

“(a) Vagina shows ulcerating patch, about one and a half inches in diameter, situated in anterior wall. Microscopically, this patch shows proliferating masses of epithelioid cells. In parts the cells show considerable resemblance to gland-tissue, empty spaces being surrounded by proliferating masses of cells. The condition is malignant. In other parts the cells are in solid masses. The uterus presents a firm, white cervix, which on section exhibits one or two small cysts. Microscopically, the cervix presents much fibrous tissue. The covering epithelium is regular, but covered with fibrino-purulent exudate. The glands in some parts are normal, in others dilated and cystic. The endometrium of the body is soft and friable. Microscopically, it shows congestion and neurotic changes, but the glands are quite regular. One ovary is firm and hard, showing microscopically much fibrous tissue. The other has some small cysts.

“(b) Examination of the remainder of the vagina and the glands is quite negative. The glands are hard and firm, but do not, as far as examination shows, contain any secondary deposits of cancer.”

There was no involvement of the rectum, bladder, or breasts, or of the intestinal tract, or anywhere else that caused any symptoms, or a tumour that could be felt. Such being the case, he thought it prudent to remove the remainder of the vagina and inguinal glands.

DR. HASTINGS TWEEDY said it appeared to him, from the description, to be a case of malignant disease of the vagina pure and simple; he was therefore anxious to know why Dr. Jellett considered the removal of the uterus necessary.

DR. ROWLETTE said the pathology of the tumour was of great interest because of its peculiar type. On first examining the vagina he had little doubt that he would find adeno-carcinoma of the body of the uterus, but on cutting the uterus and finding no primary focus of the disease he had, he thought, to conclude that it was primary in the vagina. It was possible that it was an adeno-carcinoma originating in Wolffian remains, or it might be an endothelioma.

DR. JELLETT, in reply, said the uterus was removed both because he believed the case to be one of intra-cervical carcinoma extending into the vagina, and because in any case of vaginal carcinoma, if the entire vagina had to be removed, it is necessary also to remove the uterus. He had previously cystoscoped the bladder and found the wall healthy.

The Report of the Rotunda Hospital for the Year 1905-6. Adjourned Discussion.

DR. NEILL congratulated Dr. Hastings Tweedy, the Master of the Rotunda Hospital, on the extent of the report and the work done. In the case of unavoidable hæmorrhage, he thought it would have been better to have brought down a leg and to have allowed the patient to deliver herself.

DR. JELLETT referred at some length to a case of concealed accidental hæmorrhage to which he had been called from the Rotunda some ten years before. He had found a patient with a pulse of anything above 120, and a uterus which had increased in size in a few hours from the umbilicus up to near the ensiform cartilage, and with the diagnosis of concealed accidental hæmorrhage on her face. He performed Porro's operation, and found the placenta floating about in the uterus, which was full of blood. At a subsequent discussion his treatment was objected to on the ground that a large number of cases of concealed accidental hæmorrhage had been successfully treated by other means. If that were so, then Porro's operation was unjustifiable, but he was of opinion that the cases referred to were in reality cases of external hæmorrhage. Dr. Tweedy stated that the case in the report was the first case he had ever seen, and he (Dr. Jellett) had made out some statistics on the matter, which showed that up to the year 1896 only five cases had occurred amongst 43,000 patients in the practice of the Rotunda. He believed Dr. Tweedy's statement to be perfectly correct, that

such cases were of extreme rarity, and that, considering the very severe mortality in them, it was a mistake to try to promulgate the idea that they were common, and that they were amenable to treatment suitable and excellent in the case of external accidental hæmorrhage. Dr. Tweedy had a theory that a plug in the vagina would compress the uterine arteries; that theory was susceptible of proof, as, if the uterine arteries were compressed, the child would die, and that the child did not always die was proved by a case in Dr. Tweedy's present report. If a uterus from which no blood was escaping went on increasing in size he thought it was fallacious to suppose that a plug would make any difference, and the only thing that could be said for it was that it might bring on labour. He suggested that the condition was to all intents and purposes identical with that of internal hæmorrhage anywhere else, and consequently the correct treatment was to get to the bleeding point from above or from below, and stop the hæmorrhage at its point of origin.

PROFESSOR ALFRED SMITH regretted he could find no advance in the teaching of midwifery in the report, or that the recognised methods of treatment were not set out in greater detail. As a teacher of students he would be glad to know why Dr. Tweedy altered the old-established division of *ante-partum* hæmorrhage. Again, he thought the results of the standard of morbidity were extremely remarkable. The Rotunda Hospital estimate made it a remarkably good standard, whereas the British Medical Association standard made it the same as last year. The question of which was the better standard was of importance to anyone estimating statistics. Then, in the treatment of abortions, it was not stated what kind of active interference was resorted to. He made the criticisms with a view to eliciting greater detail for the benefit of those who, like himself, would turn to it for information and enlightenment. He congratulated Dr. Tweedy on the excellent results which had been achieved.

SIR WILLIAM SMYLY said that, while he recognised the great difficulty in compiling tables, he agreed with Professor Smith as to the advisableness of having more details in regard to interference in abortion, particularly as to the number of cases in which interference was necessary, and the nature of the interference. He regarded the introduction of separate cots for infants as a matter of great importance. He had never seen a case of death

from labour shock in the report before, nor had he met with a case. He had, however, seen two cases in which patients very nearly died without any hæmorrhage; ultimately, however, they pulled round, and so he could quite believe that there was such a thing as death from shock after labour. As to his cases of concealed accidental hæmorrhage, it was probable that there had been only one case in the house and Dr. Baggot's case in the extern maternity. If there was any external hæmorrhage at all it showed that the uterus had some resisting powers, and that therefore that case could not be put in the same class as internal hæmorrhage without any external escape. The latter showed absolute atrophy of the walls of the uterus, and inability to resist the pressure of blood. He did not see how plugging the vagina could save the life of the person in such a case. He considered that Porro's operation was the less dangerous. He wondered if the increase in the mortality of *post-partum* hæmorrhage was connected with the modern method of treating the third stage of labour. It showed the care that had to be exercised in watching the uterus, as there was a risk of hæmorrhage going on which they did not either see or feel.

SIR A. V. MACAN said he would like to have the dates of cases given for easy reference. In his memory the extern cases had increased from 70 to 2,254. He thought it was a great pity that they could not refer to the same standard of morbidity as the Continental hospitals. He had no doubt that there were many cases of slight concealed hæmorrhage that were never diagnosticated. In cases of *post-partum* hæmorrhage, any treatment that omitted opium as a stimulant was not quite up to modern views. It was not, he thought, possible in an annual report, such as they were considering, to enter into the details of treatment in every case.

SIR WILLIAM SMYLY explained that his observations as to concealed accidental hæmorrhage applied only to severe cases.

DR. SPENCER SHEILL said it seemed a peculiar thing to him that a patient in a healthy condition could die of labour collapse. The three cases referred to by Dr. Tweedy bore a strong resemblance to each other in respect of causation. He did not think shock was the correct term. If the normal shock of labour acted on a patient in an unhealthy condition, it was not the shock that was the primary cause of death. He thought it would be better to put such cases down as death from unknown causes rather than under the ambiguous term of shock.

DR. ASHE said he thought they could greatly improve their methods of giving morphin salts. There were derivatives of morphin which were not so depressing as the hydrochloride.

THE CHAIRMAN said the occurrence of mammary abscess in the case of septicæmia was of great interest, as it was a rare accompaniment of the condition. In the other case of septicæmia it would occur to him that probably rupture of the uterus had taken place. He found it hard to understand what circumstances in a case of hydrocephalic head could have justified version. He thought it was a pity that they had not a standard of morbidity identical with the Continental for purposes of comparison. He doubted if so much benefit had followed the discarding the use of the blunt flushing curette, and douching as was expected. He agreed with the Master of the Rotunda that pubiotomy would go a long way to rendering the induction of premature labour unfashionable; but he still thought that cases would be found for a while longer in circumstances which would justify induction.

DR. HASTINGS TWEEDY, in reply, said he was not responsible for the diagnosis in cases of extern maternity. The point which Dr. Jellett had made in regard to concealed accidental hæmorrhage was a particularly good one. If he stopped the hæmorrhage in the uterine arteries the child died because he stopped the blood that went to the placenta, that was an apparently weak point in the theory; but he could say that he had never yet failed to stop hæmorrhage coming through a plug in the vagina, and he had never known of hæmorrhage pouring out over the plug. He had shown over and over again that there was no blood collected in the uterus when once the vagina was plugged. The plugging of the vagina caused a considerable amount of shock to the patient through pressing on the cervical nerves, and he regretted to say that patients often did not get better, in spite of the plugging of the vagina, even though the hæmorrhage ceased; nor had he ever had a living child born after plugging the vagina in the manner recommended as treatment for accidental hæmorrhage. He thought it was understandable how the uterine arteries could be stopped, when there was a plug pressing up with a binder pressing down the uterus. He dreaded the alternative of cutting out the uterus from a woman suffering from shock. As regards details of cases, where he had glossed over a subject, it would be found that the method had been given in a former report; if the treatment had been altered in

any way it would be referred to in the new report. He had been led to suppose that he had hit on an improved standard of morbidity, as it showed a high percentage when the hospital was really unhealthy and a low percentage when the hospital was in an extremely healthy state, as in the present year. He could assure the Section that there was no more regularity amongst Continental authorities than in their own country. The method standardised by the British Medical Association had the merit of being simple. As regards the cases of death from labour shock, Dr. Sheill would see that Dr. Rowlette could find nothing to account for death; and, though some other condition might have produced the shock, it was the shock that killed the patient. Sometimes the retention of the placenta gave rise to profound shock quite apart from hæmorrhage. He had therefore made it a rule that the sister should constantly take the pulse and examine the aspect of the patient while the placenta was in, and summon the Assistant-Master the moment the least change was seen, whether there was hæmorrhage or not.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At the annual meeting, held on Wednesday, October 16, Mr. Joseph Montagu Cotterill was unanimously elected President for the ensuing year. At the same meeting the following gentlemen, having passed the requisite examinations, were elected ordinary Fellows of the College :—William Rickward Bacot, M.R.C.S. Eng., London, W.; Harold Graves Bennetts, M.B., C.M., Sydney, N. S. W.; Gerald Hall Lloyd Fitzwilliam, M.B., Ch.B., Newcastle Emlyn, S. Wales; James Methuen Graham, M.B., Ch.B., Edinburgh; William Ezra Graham, M.D., C.M., Ontario, Canada; Duncan Lorimer, M.B., Ch.B., Edinburgh; Peter M'Ewan, M.B., Ch.B., Kinfauns, Perthshire; William Latto Robertson, L.R.C.S.E., M.B., Ch.B., Edinburgh; William Craig Stewart, M.B., Ch.B., Glasgow, W.; and Stanley Martin Wells, M.R.C.S. Eng., Lima, Peru, South America. John Pinkerton, M.D., &c., Honorary Physician to His Majesty the King, Gwydyr House, Crieff, Perthshire, was admitted an ordinary Fellow without examination

DIGITALIS FUCHSII (*Foxglove* v. *Foxesglew*); "*Opium of the Heart*"; "*Quinquina du Cœur*." By JOHN KNOTT, M.A., M.D., Ch.B., and D.P.H. (Univ. Dub.); M.R.C.P.I.; M.R.I.A., &c.

OUR definite knowledge of the *foxglove* derives its date from the renaissance of botany, not from that of classic antiquity. The name *digitalis* was first—so far as we now know—applied to this plant in the sixteenth century. The inventor of the appellation was Leonard Fuchs, one of the pioneer fathers of modern scientific botany, whose name has been embalmed for all time in that of the botanical genus *Fuchsia*. It would at first sight appear—as is generally believed—to have been suggested by the crude resemblance of the flower to the finger of a glove. To a similar origin must have been due the elderly French ones of *gant de Notre-Dame* and *doigtier*, and the Dutch of *vingercruiddt*. (Baillon gives the additional synonyms of *gantélet*, *gantelée*, *gantiller*, *gandio*, *pavée*, *pisse-lait*, *pétrole*, *petereaux*.) Of the lights of the twilight dawn of botanical science, Columna would identify *Digitalis* with the *Ephemerum* of Dioscorides; and Dalecampius (thought he) discovered its identity with the *Calathiana viola* of the elder Pliny. But there is no conclusive proof. It is of some interest to note, for purpose of correction, the mistake which is still made by the great majority of uninquiring readers—even many medical ones—that the English name of "*foxglove*" was inspired by the same resemblance which suggested the earlier of those above-mentioned. Fuchs adopted the name *digitalis* from the suggestive peculiarity of shape, corresponding to the (popular) German one of *Finger-hut* (thimble). But the English name is really an altered form of the Anglo-Saxon word *foxesglew* (*fox's music*)—an allusion to its resemblance to an antique musical instrument, which consisted of a bell attached to the end of a support curved in form of a bow. Still, I must note in passing that the monumental *New English Dictionary* does not mention this derivation. Under the head of FOXGLOVE we are there informed that "the reason for the second part of the name is obvious, as the flower resembles a finger-stall in shape; cf. the Latin name. Why the plant was associated with the fox is not so clear; but cf. Norw. *revbjelde* = 'fox-bell.'" (Was it an

oversight?) And here another singular coincidence of nomenclature presents itself which did not fail to impress the great French botanist, Baillon—who (also) does not appear to have heard of the “foxesglew.” “Chose singulière, le nom allemand de ce médecin [Leonardus Fuchsius] signifie *renard* (fuchs) et, en Angleterre, la digitale porte le nom de *foxglove* ou *gant de renard*. Je me demande s’il y a là un double rencontre ou si ce nom anglais ne signifie pas plutôt *digitalis Fuchsii*, en souvenir de l’intronisateur de ce précieux médicament. J’abandonne cette discussion aux érudits, . . .” Parkinson informs us that “*Cæsalpinus* calleth it *Virga regia major flore purpureo*, *Alisma* also and *Damasonium*, and *Fistula pastoris*. *Tragus* calleth it *Campanula sylvestris*, *flore purpureo*, and *flore luteo*; . . . the *Italians* call it *Aralda* as *Camerarius* saith, . . .”

Digitalis is one of the very few powerful therapeutic agents derived from the vegetable kingdom of which no definite knowledge or quasi-scientific lore has been transmitted to us from the classic fountains of the venerable past. But its modern position is, nevertheless, one of the most firmly founded on the unshakeable rock of scientific faith and practice. And it is one of the special weapons of our therapeutic armamentarium whose properties and powers have been continuously subjected to the scrutinising cross-examination of the most penetrating clinical search-lights—of the past century and a quarter. During that period the lustre of its reputation has never been definitely tarnished, nor has its radiance grown pale in presence of its most dazzling rivals. All its alleged failings have been tested—and its attributed merits unsympathetically questioned—before the highest placed judges of the cosmopolitan tribunal of science; it has been subjected to the severest scrutiny throughout the whole length of the nineteenth century—the most scientific, the most progressive, and the most sceptical of all recorded epochs of human history. Yet it has, every time, left the court without a stain on its character. Whenever mischief had become associated with its use, the fault had not lain with the weapon, but with the (mis)guiding hand!

The genuine professional recognition of the therapeutic value of *digitalis* is essentially modern. Its (unrecorded) use in the older centuries—which was very probably extensive, notwithstanding the silence of the historians of medical botany—appears to have been mostly among the uneducated, and after unskilled

advice. The very comprehensive John Parkinson, writing (in 1640) of the "Vertues" of digitalis as known at that date, informs his readers that: "The *Italians* have an usuall proverbe with them concerning this herbe, called by them *Aralda* which is *Aralda, tutte piaghe salda* : *Aralda* salveth all sores : for they use it familiarly to heale any fresh or greene wound or cut, the leaves being but bruised and bound too, and sometimes also they use the juyce in old sores to clense them, dry up their moysture, and heal them the more speedily, which it performeth by the bitter quality therein whereby it is found to be heating and drying, and clensing withall ; so that whensoever there is neede of a rarefying, or extenuating of thicke tough flegme and viscous humours troubling the chest or stomacke ; the decoction or juice hereof made up with some Sugar or honey is availeable, as also to clense and purge the body both upwards and downwards sometimes, of tough flegme, and clammy humours, and to open the obstructions of the Liver and Spleene ; and yet notwithstanding that these qualities are found to bee in it, there are but few Physitions in our times that put it to these uses, but is in a manner wholly neglected : It hath beene found by late experience to be availeable for the King's Evill, the herb bruised and applyed to the place, or the juice made up into an ointment and used thereon : And it hath beene of later experience found also to be effectuall against the Falling sickness ; that divers have beene cured thereby ; for after the taking of the decoction of two handfulls thereof, with foure ounces of *Pollypody*, of the oake brusied made in Ale, they that have beene troubled with that disease 26. yeares, and have fallen once in a weeke or two or three times in a moneth, have not fallen once in 14. or 15. moneths, that is untill the writing hereof, which I thinke may be sayd to be an absolute cure, not to be presumed that after so long stay it should returne againe." So that the reputation of digitalis was then high, and we are prepared to find it allotted a place in the London Pharmacopœia of 1650.

This last therapeutic effect—of the use of a fresh decoction of digitalis leaves—does not appear to be generally known ; it has, however, been recently tried with good results in some cases ; and the present writer can add his own observations to the favourable testimony of others on this head.

Having taken a forward progressive stride of seventy years, we find the advances made in fox-glove therapeutics fully mirrored

in the succeeding monumental Encyclopædia of British *Herbal* lore and science, that of William Salmon (1710). We are there informed, under the heading of "*The Qualities*," that "*Fox Glove* is hot and dry at least in the Second Degree, Sulphureous and Saline; Aperitive, Abstersive, Astringent, Digestive and Vulnerary: Pectoral, Hepatick and Arthritick; Emetick Cathartick and Analeptick." A goodly array of precious *qualities*, surely! If we practitioners and scientists of the twentieth century could only translate them into terms of our own coal-tar therapeutics and bacteriological pathology, how much clinically happier we would be!!

And, next, under the heading of "*The Specification*," we learn that "It Cures Consumptions, King's Evil, Green-sickness and Falling-sickness; also Wounds, old Sores and running Ulcers." "*The Preparations*" number half-a-dozen:—"*1. A Liquid Juice. 2. An Essence. 3. A Syrup. 4. A Decoction or Infusion. 5. An Ointment or Balsam. 6. A Cataplasm.*" Among the precious constituents of this list, the third item possessed qualities of value so transcendent that the author's account thereof is worthy of perusal—from more than one point of view.

"*The Syrup, or Rob of the Juice of the Herb and Flowers made with Honey.* It is a specifick which transcends all other Vegetable Medicaments for the Cure of Consumptions; cleansing and healing after an admirable manner Ulcers of the Lungs. It opens the Obstructions of all the Viscera, cleanses, carries off, or expels the recrements of the Humors, by which means the daily Nutriment may be conveyed to all Parts of the Body. It may be given Morning and Night, four or five Spoonfuls at a time, according to Age and Strength: some advise three Spoonfuls to be given in the Morning fasting in Mead, as much at Ten in the Morning, three Spoonfuls at Four in the Afternoon, and lastly, as much at going to Bed. This Medicine has restored (where the Patient has not been past Cure) beyond all Expectation. It cures a Phthisick or Ulceration of the Lungs, when all other Medicines have failed, and the Sick esteemed past Cure. It opens the Brest and Lungs, frees them from tough Flegm, cleanses the Ulcer, and heals it, when all other Remedies act without effect. I have known it do Wonders, and speak here from a long Experience. Persons in deep Consumptions, and given over by all Physicians, have by the Use of this *Syrup* or *Rob* been strangely recovered, and so perfectly restored as to grow fat again. I commend it as a

Secret, and it ought to be kept as a Treasure. These few lines concerning this Medicament alone are worth ten times the Price of the whole Book. I am very confident of it, the deplorable wasted Patient, who has been long languishing in an inveterate and tedious Consumption, or a Phthisis, if they make use hereof, will give me Thanks for this Notice, whilst they may have Reason enough to Curse even the Memories of Quacking Blood-suckers, Issue-makers, and Blister-drawers, who, as they may have possibly drained them of a fair part of their Estate and Treasures, would, by a Continuance under their Hands (for all their specious Methods of Cure), have fooll'd them out of their lives too. But here is to be noted, that this Syrup ought chiefly or only to be made of the Flowers."

"*The Virtues*" of the other *Preparations* are for the most part expansions of those catalogued under the heading of "*The Specification*"—already quoted. The principal divergent excursion is that regarding "*The Ointment or Balsam.*" This, we are told, "is said to be one of the best Remedies for a scabby Head that is: it is also good against Pimples, Tettars, Ringworms, Scurff, Morpew, or other Scabbiness and Breakings out in any Part of the Body." We find that "*The Liquid Juice*" "purges and cleanses the Lungs, Stomach and Bowels; but ought to be given not in too great a quantity, because of its violent operation. It . . . works strongly both upwards and downwards, and prevails against the Scurvy, Dropsie, Jaundice, Gout, and Rhumatism; . . ."

This vision of the vigorous purgative action of digitalis appears and reappears in the clinical lucubrations of the authors of the grand old *Herbals*. It is, of course, out of keeping with our modern experience; and the only rational explanation which I have found of an apparently gross misrepresentation of physical facts is that furnished by the suggestion of the eminent French therapist, Fonsagrives: "je serais très-disposé, pour mon compte, à croire que, quand ils ont signalé la digitale comme susceptible d'être employée à titre d'émétocathartique, ils ont confondu la digitale vraie avec la *gratiola* appelée *petite digitale*, plante qui fait vomir et purge en effet à la dose de 4 à 10 grammes en infusion."

The development of the modern scientific therapeusis of digitalis dates from 1775—and from the English "midland capital." It was then and there that Withering, the friend of Cullen, the

famous nosologist, published his epoch-making *brochure* on this plant, which he called the *Opium of the Heart*; on account of its sedative effects on that organ, and the consequent slowing and steadying of the pulse. He also pointed out its "hydragogue" properties. Soon after this date Solerne published the results of his experiments with digitalis on the circulation in the turkey. Schiemann, in 1786, gave to the scientific world the results of his experiments on the dog and cat. Both these observers reported slowing of the cardiac pulsations. Beddoes, in 1801, announced that digitalis produced an increase of the blood-pressure. This effect he attributed to augmentation of the contractility of the organic muscular fibres throughout the entire vascular system. In the same year, Kinglake sustained the thesis that digitalis acts simultaneously on the heart and the arteries. Curiously enough, down to this date—and even somewhat later, the sedative theory of Withering was the only one generally recognised in France; owing to the great authority of Bouillaud, by whom it had been introduced to the medical public of that country. Nevertheless, Beau, without appearing to have become acquainted with the subsequent items above referred to, and without having had recourse to physiological experimentation, had already, in testimony of the results of his own clinical observations, given to digitalis the appellation of *quinquina du cœur* ("quinine of the heart"). This view of the action of our foxglove was adopted by the celebrated cardiac authority, Bouillaud, whose emphatic opinion has in its turn been semi-diametrically criticised by Fonssagrives. "Le mot de Bouillaud: '*La digitale n'est pas l'opium, mais bien le quinquina du cœur,*' a fait fortune; je ferais toutefois remarquer que les termes de cette opposition n'étaient pas heureusement choisis, l'opium étant lui-même, comme je essayé de le montrer, un *cardiaque*, au sens de *stimulant du cœur* que les Anciens attribuaient à ce mot."

And now, in the opening decade of our new century, which inherits and enjoys the results and capitalised attainments of a predecessor more successfully scientific and more satisfactorily experimental than any (or all) of those that had gone before, we can claim, beyond fear of contradiction, the establishment of these three (at least) cardinal facts as unquestionable results of the ingestion of digitalis: 1. Slowing of cardiac movements. 2. Increase of contractile energy of cardiac muscle. 3. Elevation of arterial pressure. But, as would be anticipated by all readers

who have had a certain amount of experience of human nature in general, and of its developments in connection with physiological investigation in particular, the multiplex theoretical explanations of these phenomena which have hitherto been advanced still continue to present very marked degrees of divergence.

Like most other plants of which the more essential constituents exert, when taken into the circulation, a very powerful influence upon the conditions and phenomena of animal life, digitalis owes its peculiar powers—for good and for evil—to the presence of certain definite chemical compounds, which can be isolated therefrom in the crystalline form. The “active principle” first obtained from this plant was, according to the usual mode of practice in the nomenclature of organic chemistry, named *digitalin* by its discoverers, MM. Homolle and Quévenne. This soon after came to be known as “amorphous” digitalin; when M. Nativelle succeeded in separating a crystalline compound, which was regarded by its discoverer as “true” digitalin—the real active principle of the amorphous digitalin. This view seemed to be corroborated by the fact that the strength of the preparations of the amorphous digitalin was hopelessly unreliable, while those of the new crystalline substance were fairly trustworthy in the uniformity of their calculated effects. But, although much more uniform in physiological power than was the amorphous, it was soon discovered that even the crystalline digitalin of Nativelle offered no reliably safe standard. The more elaborate researches of the German pharmacologist, Schmiedeberg, soon afterwards brought our knowledge of the organic chemical principles of the digitalis plant to a state of approximate accuracy. Of these, the items which have been isolated, baptised, and studied—with apparently satisfactory clearness are:—

Digitalin: a granular, if not satisfactorily crystallisable, glucoside, which possesses in a high degree the characteristic physiological powers of the maternal plant. So much so, indeed, that Kiliani and some others would name it *digitalinum verum*, and regard it as the most effective means of administering digitalis. It displays all the characteristic influence on the heart, while its effects are non-cumulative. *Digitalein*: an amorphous glucoside, or—more probably—a mixture. Its action on the heart is also non-cumulative; and it causes no local irritation when injected

subcutaneously. *Digitotoxin* : regarded by some as an alkaloid—is certainly not a glucoside. This is the most active (toxic) and dangerous of all the constituents of the fox-glove plant. Its effects are cumulative—although to a degree not yet definitely measurable. *Digitonin* : a glucoside constituent, which forms the major portion of the total amount of the principles of this class which are present. It possesses an influence on the inhibitory nervous mechanism which is distinctly antagonistic to that of digitalis as a whole. *Digitin* : a crystalline principle which is physiologically inert. Homolle gave his digitalin the chemical formula $C_{20}H_{32}O_7$; Nativelle represented his own by $C_{23}H_{40}O_{15}$; Schmiedeberg calculated his at $C_5H_8O_2$. But the noon-day light of scientific certainty has not yet quite reached the formulæ of the “principles” of foxglove ; so we will just allow them to pass.

We have also read of the discovery and baptism of a number of other chemical “principles” and complex compounds : *digitoresin*, *digitonéin*, *digitogenin*, and *paradigitogenin* have been “derived” from digitonin ; *digitaliresin* from digitalein ; and *toxiresin* from digitotoxin. We also read of *digitalose*, *digitasolin*, *digitaliretin*, *paradigitaletin*, *digitolein*, *digitalacrin*, *digitalosmin*, &c. Then comes the inevitable series of organic acids : *digitalic*, *digitaleic*, *digitalœic*, *digitaloinic*, *antirrhinic*, &c.

Experimental observers have described three *degrees* of the effects of the administration of digitalis, according to amount of dose. And they have—respectively—made two, three, and four *periods* of their manifestation. The three degrees are : (1) Pulse slow and regular ; (2) pulse quickened ; (3) pulse slow and irregular. The *safely* effective therapeutic dose produces results not transcending the first of these three degrees. And in their manifestation, two time-periods are definable : (1) of physiological action ; (2) of gradual return to the normal conditions. A dose somewhat larger realises three periods : (1) pulse slow ; (2) pulse quickened ; (3) return to the normal state. The administration of an actually toxic dose furnishes four periods : (1) pulse slow ; (2) pulse quickened ; (3) pulse slow and irregular—followed by a cessation more or less prolonged ; (4) death, or return to the normal state. According to the eminent German authority, Schmiedeberg, the first effect of digitalis is to increase the *elasticity* of the heart—as other observers put it, the *activity of the diastole*. Hence results the “negative intraventricular pressure” which was indicated by Goltz and Gaule. This increase

of elasticity produces the augmentation of the volume of the pulse which *precedes* the elevation of the blood-pressure—thus (as a superficially-seeming paradox) independently of the latter. Kaufmann studied, in succession, the action of digitalis on the heart and on the arterial system, respectively. With regard to the first, there occurs at the outset a fall in the number of beats per minute. The cause is to be found in the stimulation of the inhibitory pneumogastric nerve; at its bulbar origin, and at its cardiac terminations. It is *not* a bulbar stimulation only, as Traube thought; for after preliminary section of the vagus the slowing effect is still sometimes observable. Other theories, however, account for the effect by: increase of the arterial tension; direct action of the drug on the cardiac muscular fibres; stimulation of the vagi—connected, by reflex action, with increase of the cardiac pressure; paralysis of the accelerator nerves of the heart. This last causal hypothesis is, however, completely refuted by the fact that the period of slowing is followed by one of acceleration. The period of slowing may, moreover, be wholly absent when the dose has been sufficiently large. With regard to direct action on the muscular walls of the heart, there is one experimental fact which should be specially emphasised: the characteristic influence is manifested when the apex of the heart has been excised and placed in a solution of digitalin. As the intracardiac motor ganglia are situated towards the basal segment of the organ, this experiment goes towards proving—as conclusively as physiological data well can—that the specific influence of this substance is exerted *directly* on the *muscle fibres*.

The pulse may become dicrotic, or tricrotic, with corresponding movements of the heart. With fatally toxic doses, the heart-stops—tetanically—in systole; the final contraction commencing at the apex. The auricles continue to beat for some time after the ventricles have become quiescent. It should be added, however, that these distinctive cardiac phenomena—very obvious in the frog—are not clearly marked in the mammal.

Next in importance to its influence on the cardio-vascular system, is, of course, that on the renal secretion. And it is—at this date—a matter of curious, even painfully amusing, interest to note the vast series of contradictory statements and opinions (with the explanations and elucidations thereof) which formerly inundated the literature of clinical therapeutics and experimental physiology on this divisional topic alone. The famous poet-

physician, Erasmus Darwin, was a contemporary pioneer of Withering in foxglove therapeutics; and these two physicians were the actual founders of the renal reputation of this potent drug. The great authority of Cullen—of *Nosology* and *First Lines* fame—was added; and, in the early years of the nineteenth century, that of Bidault de Villiers (*Essai sur les propriétés médicinales de la digitale*: Paris, 8 Fructidor, An XII.) who constituted himself the original herald of the clinical reputation of digitalis to the profession in France. But, startling to state, we have in the following generation a series of “authorities” denying the diuretic powers attributed to this agent: Germain, Durosiez, Royle (*Manual of Materia Medica and Therapeutics*), &c., &c. And between those two antagonistic camps was actually arranged a moderate one of “liberal unionists” (Hirtz, Kluyskens, Vassal), who defended the compound thesis that digitalis exerted no diuretic power in the healthy subject; but did in disease—indirectly, by removing the pathological cause of the scantiness of the renal secretion. In an article on the subject (*Nouveau Dict. de Méd. et de Chir. prat.*, 1872) which, generally speaking, displays great subtlety of thought as well as wide range of attainment, Hirtz states that “Elle n’est diurétique que dans certains états pathologiques, dans ceux où la circulation générale est entravée. En régularisant le cours du sang dans les différentes parties et en particulier dans le rein, elle amène le fonctionnement régulier de cet organe et par conséquent une augmentation dans la sécrétion, tandis qu’à l’état physiologique et dans les maladies où la circulation n’est pas en jeu, elle perd toute propriété diurétique.” The usual ingenuity of scientific obstinacy!—still more curiously scintillating is the affirmation of Kluyskens, that digitalis displayed an elective action in the elimination of the fluid of *hydrothorax*!

The cardiac position of foxglove therapeutics is now, of course, so conspicuously placed as to be familiar to all practitioners. There remains, inevitably, a marginal borderland territory, still sacred to clinical and scientific disputation. Trousseau was—as might be expected—one of the earliest experimenters with this remedy in “l’effroyable éréthisme de l’arbre circulatoire” which characterises *Graves’s disease*, and does not appear to have been very well satisfied with the result. The tonic contraction of the muscular walls of the arterioles was an attributed effect to which was owing its employment in *hæmoptysis* and other hæmorrhages

of that class—as in the treatment of *metrorrhagia* by Howship Dickinson (of Dublin). Its special sedative action on the whole circulation, and the organs thereof, led to its employment in *inflammatory conditions*—by Clutterbuck, and Hosack, and (on a very large scale, indeed) by Rasori of Milan, who proposed to substitute its employment for venesection. From the same source came the inspiration of its *antipyretic* uses; in *rheumatic fever*, in *typhoid fever*, in *acute tuberculosis*, and in *pneumonia*. Traube reported its successful employment in *puerperal fever*. All readers are, of course, familiar with the accidental discovery of its efficacy in *delirium tremens* by Jones, of Jersey; fewer, perhaps, with its (especially French) reputation as an *anaphrodisiac* and *antiblennorrhagic* agent. Duclos resuscitated the old treatment of *epilepsy* with digitalis—professing to regard the syndrome as often symptomatic of scrofulous disease, and digitalis as an *anti-scrofulous* agent. Kluyskens thought that it would prove efficacious in epilepsy which was symptomatic of serous effusion in the brain or its cavities. But, in the case of a remedy possessed of powers so pronounced and so peculiar as those of digitalis, if all that it has done, or can do, or was said to be capable of doing, or was employed for the purpose of—or in the hope of—doing, were written down: why, even the *κόσμος* itself would prove too narrow!

Its cardiac powers are, and pretty surely will for all future scientific clinical practice continue to be, those principally utilised. Deficiency of valvular competency, with insufficient compensatory hypertrophy: such condition will always be the great indication. And even in *aortic incompetency*—the approximately unique valvular herald of *sudden death*—the drug is often employed (of course, with observant care, and in specially small doses) when the compensatory hypertrophic *vis à tergo* is markedly deficient. Further detail of opinion or advice on the use of this very important therapeutic agent may be sought for, with confidence, in the monumental text-book of Sir Lauder Brunton, whose professional skill is as convincingly demonstrated in the pages of his writings as was his scientific zeal in the carrying out of the elaborate (and dangerous) experiments which his enthusiastic pursuit of knowledge led him to make on his own person with this same digitalis, its preparations and its active principles.

The peculiar, and practically important, *cumulative* property of digitalis is, of course (as in the case of aconite), dependent on the slowness of its elimination from the system.

A few words, in conclusion, on the toxic symptoms produced by an overdose of foxglove—or its active principles. They have seldom been so concisely and so graphically arranged as in the sentence formulated by Murray in 1793: *Excitat nauseam, vomitum, alvique purgationem, vertiginem, oculorum caliginem, lotii uberiorem secretionem, sudores frigidos, deliquia animi, anxietatem vehementem, cardialgiam, singultum, convulsiones, et ipsam aliquando mortem.* One of the special facts to be noted in connection with the toxicity of digitalis is that, notwithstanding the very great potency of the drug, but a comparatively small proportion of the (more than possibly) lethal doses have been followed by a fatal issue. This peculiarity is largely due to the vomiting which is so prone to occur *soon*; while the characteristic *cardio-vascular* effects are often comparatively very *late* in course of development. The vomiting produced by digitalis is also distinctively violent in its movements, and pertinacious in its recurrence, as Sir Lauder Brunton found in his own (personal) experience. The tracing of this poison in fatal—or otherwise questionable—cases has certainly not been, up to the present, satisfactorily simplified by our most advanced chemical and physical knowledge. In this respect, the position of *digitalin* is almost startlingly similar to that of *aconitin*. This is a somewhat curious coincidence—affecting two drugs of unrivalled potency, in directions—clinically speaking—almost diametrically opposite. And the similarity is still more curiously punctuated in the report of the single case of digitalin poisoning which, so far as I know, has been followed by the conviction and execution of the poisoner—that of Dame de Pauw. Drs. Roussin and (the celebrated medico-legist) Tardieu, were the experts of the inquest. The body was exhumed thirteen days after death. The most careful search for mineral poisons gave wholly negative results. But suspicions were aroused by the discovery of digitalin in the possession of the accused, whose mistress the deceased woman had been. The latter had been in good health the day before her death. No natural cause of a sudden termination of life was revealed by the *post-mortem* examination. On these (and various corroborative circumstantial) grounds of suspicion MM. Tardieu and Roussin drew up a series of *conclusions*, eight in number—beginning with:

1. La veuve de Pauw est morte empoisonnée ;
2. La poison qui la tuée est de la nature de ceux qui, empruntés

au règne végétal, peuvent ne pas laisser de traces caractéristiques dans les organes, ne pas être isolés par l'analyse chimique, mais que révèlent leur présence par leurs effets et sont décelés par l'action meurtrière qu'ils exercent sur les corps vivants.

3. Nous avons retiré non-seulement des matières vomies par la veuve de Pauw sur la parquet de la chambre, mais aussi des organes soumis à l'analyse un principe toxique très-énergique, qui, expérimenté sur les animaux, a produit des effets analogues à ceux qu' à ressentis la veuve de Pauw, et les a fait périr de la même manière ;

4. Ces effets et cette action ont une grande ressemblance avec ceux de la digitaline, et sans toutefois que nous puissions l'affirmer, de fortes présomptions nous portent à croire que c'est à un empoisonnement par la digitaline qu'a succombé la veuve de Pauw ;

5. . . .

Inquiring readers will probably take some interest in comparing these "conclusions" with those of Dr. Geoghegan, in the case of the first medico-legal investigation of aconite poisoning; which I took a recent opportunity of re-introducing to the notice of readers of the DUBLIN MEDICAL JOURNAL. And they can hardly help recognising the similarity of the conclusions. But I would ask them, at the same time, to bear in mind the incomparably smaller group of data which guided the almost inspired reasoning of our illustrious fellow-countryman.

IONIUM.

PROFESSOR B. B. BOLTWOOD, of Yale University, reports in the last issue of the *American Journal of Science* his discovery of a new radio-active element, which he has named ionium. He says, in part, "strong evidence has therefore been obtained of the existence in the uranium minerals of a new radio-active element, which emits both alpha and beta radiations, which produces no emanation, and which resembles thorium in its chemical properties. It is without doubt a disintegration product of uranium, and is in all probability the immediate parent of radium. The name 'ionium' is proposed for this new substance, a name derived from the word 'ion.' This name is believed to be appropriate, because of the ionising action which it possesses in common with the other elements which emit alpha radiations. Further experiments are in progress, which it is hoped will afford additional information as to the properties and chemical behaviour of this new body."—*New York Medical Journal*, October 5, 1907.