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Albert and Son, Imp.

THOMAS ALFRED BARKER, M.D.Cantab. & Edin., F.R.C.P.Lond.

Thomas Alfred Barker, formerly and for many years physician to St. Thomas's Hospital, died on the 19th October, 1891, in the eighty-fourth year of his age. He was the second son of Thomas Barker, Esq., of Ashford Hall, near Bakewell, in Derbyshire, where he was born on the 16th January, 1808.

Of his boyhood there is little to record beyond the fact that he received a good education, first at a school at Bakewell, and subsequently at one at Derby, kept by an able and popular schoolmaster named Martineau. It may, however, be mentioned that as a small boy he played an active part in the local rejoicings that took place on the proclamation of the peace of 1814, and on the occasion of the defeat of Napoleon at Waterloo.

At an early age he was sent to the University of Edinburgh, where he studied medicine, and at the age of twenty-one obtained the degree of M.D. Whilst at Edinburgh he made the acquaintance of Charles Darwin, who became his constant companion in long walks and rambles. A favourite feat amongst the students in those days was to climb to the summit of Arthur's Seat by a narrow cleft in the face of the rock, which was known by the name of "the cat's nick." On one occasion they both made the ascent; and when they were at the top, Darwin bet Dr. Barker half-a-crown that he could not descend by the same route. This was more dangerous than the ascent, and looked specially dangerous from above; and when Dr. Barker (who had taken the bet) was halfway down and seemed in difficulty, Darwin shouted out to him, "Barker,

I will give you five shillings to come back." But Dr. Barker persisted in his task, and reached the bottom safely. They lost sight of one another for many years; but when they met once more, late in life, this incident was still fresh in their minds.

After leaving Edinburgh Dr. Barker studied medicine in Dublin and Paris, entered as a student at St. Thomas's Hospital, and also at Downing College, Cambridge, and became a member of the Royal College of Physicians. For a short time he was one of the physicians to the Royal Dispensary. In the year 1839 he was elected assistant physician to St. Thomas's Hospital, and in 1840 took his M.D. degree at Cambridge, was elected a Fellow of the College of Physicians, and was elevated to the post of physician to his hospital. From this time until he retired, from age, in 1868, he was an active and important member of the staff. On his retirement he was elected consulting physician and a govenor, and continued to take a warm interest in the affairs of the hospital and school, until within the last three or four years failing health incapacitated him. He married in 1864.

Dr Barker, although he never acquired a large practice as a consulting physician, or achieved greatness in the common acceptation of the term, was nevertheless a very able and in many respects a remarkable man. He never pretended to be a great scholar or a great mathematician; yet he had received an excellent all-round education, and possessed a very retentive memory; he had an intimate acquaintance with the works of the chief Latin poets, read his Greek Testament regularly almost to the last, had a good knowledge of mathematics, and took intelligent interest in mechanical and engineering matters. He was also well read in English literature, having a special admiration for the works of Scott and Byron. He did not affect to be an orator, but nevertheless he was a good speaker. He always expressed himself quietly, without hesitation, in appropriate language, and to the point; and he was never at a loss to say something suitable for the occasion, even when called upon unexpectedly. As a physician he was remarkable for the attention he bestowed upon his patients, for his accuracy of diagnosis, and for his simplicity and directness of treatment. These qualities were no doubt largely due to his

training; for he had studied auscultation in France, and had made himself an accomplished auscultator, had for a time made the autopsies at St. Thomas's, and was always in the habit of comparing his diagnosis with the facts as ascertained in the post-mortem room. But they were also in a small degree due to the special qualities of his mind, for he was logical and clear-headed, and it was always a matter of conscience with him to take the greatest pains to arrive at the truth with respect to his patients' ailments, and to direct his treatment accordingly. He was unfailingly punctual in his visits to the hospital, and never scamped his work. It cannot be said that he was a great clinical teacher, at any rate in the sense in which that expression is understood now-a-days; for he never discussed his cases fully at the bedside, or examined his pupils upon them, and consequently he was never followed by a large class; but, on the other hand, most of the students who took a really enlightened interest in medicine made a point of attending his clinique, and profited by his lessons and by his example. During the whole of his long connection with the hospital Dr. Barker lectured, first on systematic medicine, and later as the specially appointed lecturer on clinical medicine.

Dr. Barker was a well-known figure at the Royal College of Physicians down to the last ten or fifteen years of his life. He was six years on the Council; he was a censor on five different occasions, being senior censor in 1859; he examined in medicine for four years; and he gave the Lumleian Lectures in 1860, 1861, and 1869.

He was a careful and clear writer, but did not contribute largely to medical literature. He furnished several valuable papers to the 'Transactions of the Royal Medical and Chirurgical Society,' and his Lumleian Lectures were published in the medical journals.

But he did not limit his work to medicine. He was a strong Churchman and a devout Christian. For many years he was connected with the Society for Promoting Christian Knowledge, and from 1868 to 1891 was on the General Literature Committee of the Society, his duty being to read over manuscripts offered for publication, and to report on their suitability or otherwise. Also for some years, while living in Wimpole

Street, he held at his own house a Bible class for young men in connection with All Souls' Parish.

In his younger days Dr. Barker was a slim, well-built, neatly dressed man, of a fair rosy complexion, bald, but with an abundant fringe of rich brown hair, and of a bright, intelligent, and handsome countenance. His manner was somewhat reserved, he was a strict disciplinarian, and his pupils consequently were a little bit afraid of him. In his dealings with all, but especially with his female patients, he was strikingly considerate, and was always most careful not to expose the latter unless there was absolute need to do so; and the writer never knew him to make an indelicate observation either in the presence of his patients or to his class. No one could doubt his conscientiousness and straightforward honesty—qualities which impelled him to express himself strongly and to act accordingly if anything was done in his presence which seemed to him wrong, sometimes even though the occasion or the quality of the offence made such interference inexpedient. The following two incidents are quoted in illustration. In the year 1858 the Governors of St. Thomas's decided that thenceforth the official visits of the physicians and surgeons to their wards should be made in the morning instead of in the afternoon, as had up to that time been done. Dr. Barker and some others resisted this innovation on conscientious grounds; but, as the majority of the staff approved of the alteration, they had to yield. Shortly afterwards the Treasurer discovered that Dr. Barker was still paying his afternoon visits and he forbade him to do so. But Dr. Barker replied that so long as he had charge of patients in St. Thomas's Hospital he should visit them as often as he thought fit; that in accordance with the new rules he paid his official morning visits on certain days, but that he had always regarded it as his duty to attend his patients every day in the week, and that he should continue to discharge his duty; and, not only so, but that he should pay his non-official visits at the times which were convenient to himself and in his opinion best for the patients. It need scarcely be said that Dr. Barker had his way. The other incident, which he was himself fond of narrating, is somewhat amusing. He was a season ticket holder of the second great exhibition

in London; and on one occasion the official to whom he showed his ticket on entry insisted on having it given into his hands. This demand Dr. Barker resisted, on the ground that the official had no right to make it; and an altercation ensued. Dr. Barker's resistance was successful, but during the whole period of his visit he had the honour of being escorted by a policeman.

All who knew Dr. Barker intimately, as some of his old pupils were permitted to do, held him in high respect, not only for his skill and knowledge as a physician, for his clear intelligence, and his high moral character, but also for his real kindness, and for the interest he showed in the welfare of others, which were genuine if not ostentatious qualities of his mind.

His health began to suffer in 1874, and in 1879 he had a serious illness. But although in somewhat failing health he continued to perform all the duties he had accepted with zeal and efficiency. In 1887 he was again attacked with serious illness, from which, in fact, he never recovered; and for many months before his death he was confined to bed, remaining, however, sensible and in full possession of his mental faculties to the last. During his long illness he was carefully tended by his wife and only daughter. He was buried in Bakewell Churchyard on the 24th October, 1891.

It may be added in conclusion that among his brothers, all of whom predeceased him, were men of some eminence. One, Henry, was for many years a well-known metropolitan police magistrate; another, Charles, was a captain in the navy, and served with distinction in the war with La Plata, was engaged in Lord Elgin's mission to Japan, and was in command of H.M.S. Retribution at the storming of the Taeping forts.

J. S. B.

Adlard and Son, Imp.

Sir JAMES RISDON BENNETT, M.D., LL.D., F.R.C.P., F.R.S.

Sir James Risdon Bennett, who died on December 14th, 1891, at the age of eighty-two, was born in 1809, being the eldest son of the Rev. Dr. Bennett, a distinguished Nonconformist minister.

He was apprenticed to Mr. Thomas of Sheffield, and after the completion of his apprenticeship became a student at the University of Edinburgh, where he took the degree of M.D. in 1833.

The next few years he spent upon the Continent, as travelling physician to one of the sons of the Earl of Aberdeen, and during this time acquired an excellent knowledge of French, German, and Italian. Subsequently he obtained the membership of the Royal College of Physicians, and for a short time lectured at the Charing Cross Hospital.

In May, 1844, he was appointed Assistant Physician to St. Thomas's Hospital, and lectured on Materia Medica. In 1846 he was elected a Fellow of his College; in 1848 the City of London Hospital for Diseases of the Chest was established, and he became one of the original members of the staff; and in 1849 he was elevated to the physiciancy to St. Thomas's, in succession to Dr. Burton, who was carried off in that year by Asiatic cholera. About the same time also he became connected with the Orphan Working School at Haverstock Hill.

The twenty years of his life following on his appointment as physician to St. Thomas's was a period of hard work; he lectured for only a few years, but he performed his clinical duties both at St. Thomas's and at the City of

London Hospital for Diseases of the Chest with unfailing regularity and earnestness; he devoted himself largely to the work of the College of Physicians, and he was the medical officer to several large assurance companies. Further, it should be mentioned that he delivered the annual oration of the Medical Society of London in 1840; that he was President of the Society in 1850; and also that he was the President of the Metropolitan Counties Branch of the British Medical Association.

On the completion of his sixtieth year, in 1869, he retired from the post of Physician to St. Thomas's, and was appointed Consulting Physician and a Governor. After this he was rarely seen at the hospital, but he devoted himself more earnestly than before to other duties.

As previously mentioned, he began comparatively early to take special interest in the affairs of the College. He was censor in 1857, 1858, and 1868, and senior censor in 1871. He was five times on the Council. He was Examiner in 1862, 1863, and 1864. He gave the Croonian Lectures in 1863, and the Lumleian Lectures in 1870. He was the representative of the College in the Medical Council from 1867 to 1875, from which post he retired only when in 1876 he was elected President of the College. This distinguished position he held for the customary five years, discharging its duties with conspicuous ability and dignity, and at the end of his term of office received the honour of knighthood. He was made a Fellow of the Royal Society in 1878.

Sir Risdon Bennett in his prime was a man of tall stature and distinguished presence, and had a strikingly expressive intellectual face. In advanced life he became much bent, but his face never seemed to grow old, and it retained to the last all its power and attractiveness.

He was a man of much intellectual vigour and wide culture. He was a good practical physician, but science was certainly not his strong point. His tastes lay chiefly in the direction of literature and religion; and he took great interest and played an important part in all matters relating to the education and social advancement of the population, but mainly of the medical profession. He had strong if somewhat narrow religious convictions. He was earnest and

conscientious in all his work, and took life seriously; but he was a kind friend and a pleasant and instructive companion.

As a lecturer at St. Thomas's Hospital he was not very successful, but this failure was scarcely due to any fault of his own. He lectured on Materia Medica and Therapeutics; and, as the custom was in those days, to students in their first winter session. His lectures were mainly therapeutical, and it is needless to say were quite beyond the comprehension of those whom he addressed. They were really full of information and well delivered, and had they been given to third-year students would doubtless have proved attractive and instructive. As a physician, his interest lay mainly in intra-thoracic diseases, in the disorders of children, and in dermatology; and he was certainly well versed in auscultation. He had very little practical acquaintance with morbid anatomy, and was rarely seen in the post-mortem room; but he took great interest in medicinal and dietetic treatment, and his clinical teaching in the wards was mainly valuable in relation to these matters.

But he was seen at his best at the College of Physicians, and in all other positions in which capacity for business, clearness and decision of thought, readiness and impressiveness of speech, high moral tone, and personal dignity had room for display and could be appreciated. His voice had much weight at the Medical Council, and at the Mansion House meetings in connection with the Hospital Sunday Fund. But it was especially during his Presidency of the College of Physicians that his reputation grew, and that his great qualities became conspicuous. He continued to take a warm interest in the affairs of the College, and to give it the benefit of his wise counsels, after he ceased to be President, and down almost to the time of his death.

In 1881 he was appointed Chairman of the Organising Committee in preparation for the International Medical Congress, and "at the general meeting at St. James's Hall welcomed the assembly in a well-worded and well-delivered French speech."

Although, as before stated, he was a man of literary tastes and culture, he wrote but little. In his early days

he translated from the German Kramer's 'Treatise on the Ear.' In 1842 he obtained the Fothergillian Gold Medal of the Medical Society of London for his 'Treatise on Acute Hydrocephalus.' His Croonian Lectures were on the subject of 'Bronchitis,' and his Lumleian Lectures (which were republished) on that of 'Intra-thoracic Growths.' Among his writings must be included a memoir of Haller. All his productions were well written and scholarly, and that on Haller, written not long before his death, was a singularly graceful and appreciative tribute to the memory of that great man.

Sir Risdon Bennett's last important appearance in public was at the meeting of the British Medical Association at Bournemouth in August last year, when he joined in several discussions with all his usual impressiveness and point, and appeared in the best of health. He had had a serious attack of influenza, however, in the previous spring, and soon after the meeting at Bournemouth showed symptoms of aphasia. This was the beginning of the end; the evidence of cerebral mischief gradually developed thenceforth, and he died universally respected, leaving a widow and three sons and three daughters to mourn his loss. The funeral service, which was largely attended by friends, hospital colleagues, and representatives of the Royal College of Physicians, was conducted on Saturday, December 19th, 1891, at the Weigh House Congregational Chapel, Duke Street, and his body was interred at Abney Park Cemetery.

J. S. B.

Adlard and Son, Imp.

WILLIAM HENRY STONE, M.A., M.B.Oxon., F.R.C.P.Lond.

In the passing away of William Henry Stone, a remarkable personality is lost to us, a personality always, until the later days, of vigorous originality and of singular versatility; a personality of ambition always successful to a point, and then most frequently dropped; a personality of immense promise in many directions, unfulfilled to completeness in all. It may be said of him that, having at one time or another some great end in view, he was content to travel on the road to it, overcoming all difficulties of the way, until from some final eminence he could look down upon the land of promise. He had, so to speak, but to travel a few miles further to reach that point. So far to have conquered seemed to satisfy him. On the road he had caught sight of finger-posts pointing in other directions than the straight line. Finding that he had gained the knowledge and the power which he wanted, his ambition ceased, for he lived unto himself. So, like some knight of old, he would seek some new path of adventure, wherein the glory and the reward lay in the overcoming of difficulty. From his early life onward this perpetually recurring dissatisfaction with lines of study or investigation, imposed upon him from outside, or taken up by reason of impulse from within, marked his career. A man of great power, he had in himself a source of distinction in many ways, but his enjoyment seems to have consisted in overcoming difficulties rather than in standing on any pinnacle before the world. He was born in Spitalfields on July 5th, 1830, and died at Wandsworth on his sixty-first birthday. His father, the Reverend William Stone, was then Rector of Christ Church,

Spitalfields, and became afterwards a Canon of Canterbury. The father was a man of commanding presence, of wide culture, and of great learning. It was his earnest desire that William Henry Stone should become a great scholar, and should win distinction in the Church. To this end all the qualities of the boy seemed fitted. He took to classics with avidity, he was brought up amid refined surroundings, and in an atmosphere of deep religious feeling. But at an early age he showed signs of branching off from the high road. When only seven years of age he was found to be attending alone the lectures at the London Institution, and one evening was questioned as to whether he understood them. He answered so well that the managers gave him a free admission for a term of years. Here was assuredly indicated his attraction to the path of physical science, of which he never lost touch during the remainder of his life. Whether with his will or against it, he had after this to keep to the main road. He went to Charterhouse School, and gained a Balliol Scholarship from there. At Oxford his career was crowned by a brilliant first class in Classics and a second class in Mathematics. This attained, he finally diverged from the road laid down for him, and entered on the study of medicine at St. Thomas's Hospital. During his successful school life even he had not shunned byroads. His love for physical science was then greatly fostered by his friendship with Dr. Jackson, of Spitalfields, a man greatly skilled in the construction and use of the microscope, an acute scientific observer, and at the same time a very successful practitioner. In him physic and physics were seen working together so naturally, that his young friend was led to choose a profession in which both could take part. His course at St. Thomas's was, in its way, as brilliant as at Oxford. He took with ease the Entrance Scholarship in Classics and Mathematics; he finished by carrying off the Treasurer's Gold Medal for General Proficiency. Subsequently he took the M.B. degree of Oxford, the M.R.C.P., and the F.R.C.S. To complete his studies he went to Paris, where he became a pupil of Richet. Returning to London he was appointed Medical Registrar at St. Thomas's Hospital, but, after a brief tenure,

gave up the appointment and accepted the post of Inspector to the Board of Health and Superintendent of Vaccination of Trinidad. In these capacities he gained great experience of tropical fevers and of leprosy. In 1861 he came back to London, and was soon appointed Physician to the Surrey Dispensary and Assistant Physician to the Brompton Hospital for Consumption. He now devoted much of his leisure to the study of Physics, and to the acquisition of apparatus connected therewith. His house in Vigo Street was in a short time a museum of such appliances. A little later he was appointed Lecturer on Forensic Medicine at St. Thomas's. In 1863 he was elected a Fellow of the Royal College of Physicians, and in 1868 he became Physician to the Clergy Mutual Assurance Office, with which he remained connected until his death. In this capacity he showed one more of his many sides, a very practical business side. He threw himself into this work, both as Medical Examiner and Director, with persistent energy, gaining, as I have every reason to believe, and certainly deserving, the full confidence of the Board. In 1870 he was made Assistant Physician to St. Thomas's Hospital, and Lecturer on Materia Medica and Physics in the Medical School. A year or two later he became full Physician, holding this appointment until 1890, when he retired on the attainment of the age of sixty years. He took a high position at the Royal College of Physicians, where he was censor in 1884, Lumleian Lecturer in 1886, Harveian Orator in 1887, and Croonian Lecturer in 1879. His Lumleian Lectures were, as connected with medicine, the culmination of his physical studies; they treated of the electrical conditions of the human body, and, while carefully recording the results obtained by previous observers, were full of original thought and observation far in advance of what was already known. In his pursuit of medicine he was at all times attracted by subjects related to physics. Thus he wrote early a prize essay on "Ægophony," in which he explained the origin of that physical sign. He afterwards wrote papers, chiefly in the 'St. Thomas's Hospital Reports,' on "The Physical Basis of Auscultation," on "Pleural Tension"—a very interesting essay, in which he showed the need of an aspirating force

to overcome the inward pressure,—and on the "Adjustments of the Sphygmograph." He devoted much time to electrical research, reading many papers before the British Association and the Society of Telegraphic Engineers. Some of these papers were technical, others again were related with medicine. Such were his articles on "The Use of the Continuous Current in Diabetes," on "Measurements in the Medical Application of Electricity," and on "The Electrical Resistance of the Human Body"—all of which appeared in the 'St. Thomas's Hospital Reports.' The last-mentioned led up to the Lumleian Lectures already alluded to. His purely medical writings were few; they included papers on "Hysteria and Hystero-epilepsy," on "Some Effects of Brain Disturbance on the Handwriting," in which he gave an account of his own illness, and "On the Tricælian Heart." In conjunction with the actuary, Mr. Wyatt, he brought out an important series of reports on "The Mortality Experience of the Clergy Mutual Assurance Society," in the last of which, published shortly before his death, he showed that there was no evidence of any increased prevalence of cancer, and that the hereditary transmission of phthisis was less frequent than is commonly supposed. The literary style of his writings is of high merit. They are lucid, of admirable composition, and constantly illuminated by flashes of wit and felicitous illustration. He never lost touch of the classical studies in which he had been so early distinguished, and was deeply versed in the ancient Greek and Latin authors on medicine. His memory was retentive, the things remembered were easily accessible, so that he could quote readily on almost any subject. Hence as a teacher he possessed many advantages. He spoke fluently; well-told stories, puns, and dashes of humour following in fast succession gave a great charm to his lectures, and in a way fascinated his pupils; but, master of all points in his subject, he, for the most part, was carried away by it, and discoursed mainly on its most difficult aspects, forgetting that his class had not acquired the necessary rudimentary knowledge. Fascinating as a lecturer, he was therefore not equally valuable as a teacher. His attention to his duties as physician was always very close. As lecturer on materia

medica he was careful to illustrate that subject to his pupils, and perhaps the most important part of his teaching in the wards was therapeutical. Outside the hospital he appears to have not sought private medical practice. His leisure time was allotted to other things, a great deal to physical investigation, not a little to the Clergy Mutual Office, and lastly to music. Music was one more of his bypaths, into which he struck early in life. He was an excellent musician, chiefly choosing wind instruments, and was a member of the famous amateur musical society called the "Wandering Minstrels." It was said of him that even in orchestral practice he had a tendency to take a line of his own, somewhat to the distraction of his fellow-players. He was highly accomplished in the science of music, and was of course greatly interested in the construction of musical instruments. Although usually performing on the clarinet, he took great pains to improve the effectiveness of the double bassoon, and introduced it into orchestral performances. His papers on music show that he might have taken a very high position in that art if he had so chosen. From music to the physical study of sound was a natural step for him. He published lectures on "The Scientific Basis of Music," and "Elementary Lessons on Sound," which had a large sale. One would have thought that his musical accomplishment alone would have led him much into social life. Moreover, by his numerous accomplishments, by his conversational powers, and by his wit, he was eminently fitted for social distinction. Yet he went very little into society, and made very few close friendships. His choice of residences manifests his dislike of public notoriety. From his little house in Vigo Street he moved to Dean's Yard, Westminster, a place convenient for his hospital work, and for the Clergy Mutual, otherwise as far out of the world of London as might be. There he lived a life mostly to himself, with his kindly old housekeeper, his owls, and his multitudinous apparatus. Here in 1882 he was attacked with the severe cerebral illness to which one of his papers has reference. The illness left an abiding impairment of strength and vigour. Later on he removed to Wandsworth, and seemed about to become a

hermit. Nevertheless he reappeared in public from time to time, and for several years acted as the Honorary Secretary of the Fellows' Club of the Royal College of Physicians. At the quarterly dinners one could see what his social possibilities were. But the end was even then impending. It was evident that his mind and body were failing. In 1890 came, as has been noticed, his resignation of his office of Physician to St. Thomas's Hospital. The rest of his life was spent in retirement at Wandsworth, and there he died on his sixty-first birthday, after months of suffering, chiefly consisting in weakening and failure of cerebral functions. If he made few friends, he made at least one true friend, faithful and helpful and careful of him to the last. That friend, Dr. S. W. Wheaton, has supplied much of the information on which this memoir is based. To him the writer of this notice, an old and attached friend of Dr. Stone, renders grateful thanks for the twofold kindness.

W. M. O.

Adlard and Son, Imp.

ALBERT JAMES BERNAYS, M.A., Ph.D.

Albert James Bernays was the son of a German father and an English mother. His father, Adolphus Bernays, Ph.D., a native of Gross-Gerau, Rhenish Prussia, had settled in England, had become naturalised, and was for many years well known as Professor of German at King's College, London. Born in England in the year 1823, Albert Bernays was from the first a thorough Englishman in thought and feeling. After his first education at King's College School he pursued his professional studies chiefly in Germany, at the University of Giessen, under the auspices of Fresenius, the Father of Analytical Chemistry, and there had close touch with Liebig, Hofmann, and others. After taking the degree of Doctor of Philosophy he returned to England, and when only twenty-two years of age he became Lecturer on Agricultural Chemistry in Derby. Here he speedily established a laboratory, in connection with which he attracted the interest of farmers by his agricultural lectures and analyses, and of townspeople by his instruction in hygiene and foods. Shortly after this he published, under the title of 'Household Chemistry,' a book which, after going through several editions, was followed by 'The Student's Chemistry' and 'Notes for Students,' well known and greatly valued alike by teachers and by candidates for examination. In 1851 he did good work in the juries of the Great Exhibition, and was then and subsequently busy in many ways in connection with scientific research and commercial analysis. In 1855 he was appointed to the Chair of Chemistry at St.

Mary's Hospital, London. After holding this for four or five years he succeeded to the Chair of Chemistry at St. Thomas's, then at London Bridge, which he still occupied at the time of his death on January 5th, 1892.

A little before this date his 'Investigations on the Atmosphere of Cornish Coal Mines' was published by a Royal Commission, and has always been regarded as a standard contribution to mining hygiene. It may be added that he was a Fellow of the Chemical Society and of the Institute of Chemistry.

Looking back on Dr. Bernays' career from 1860 onward, I see him branching out in a threefold path of strength from his first firm standpoint. I hardly know whether he touches me most as a teacher or as a practical chemist, or in his social and domestic relations. Taking him as a teacher, one might have supposed that what he did sufficed to fill a life. He taught regularly at hospital. He taught much outside. Whenever he taught he gave his whole heart to the business. He never allowed himself to fall into routine. Every single lecture, the total being thousands, was carefully prepared for the occasion. He would sit of evenings surrounded with books of reference and the latest pamphlets, consulting them on every point wherein any recent progress had been made. No one who heard those lectures could fail to recognise their completeness. In respect of delivery his lectures, complete as they were, were far from being dry. They were brightened by his practice of introducing facetious illustration. This, of course, could not be obtained from books of reference, and was not capable of being brought up to the knowledge of the day. So, while his jokes were good, they were occasionally repeated, and great would be the delight of a student detecting the line of remark leading up to the production of the joke which he had heard before, which might indeed be venerable, but which was delivered with a freshness recalling of the first impression. Dr. Bernays had indeed the great faculty of sympathy, and of carrying the student into and through his dry work by the help of genial humour. The jokes were for the aid of the student, not for the glory of the professor. Let it also be noted here that his classes were models of order and discipline. The 'Notes

on Chemistry,' which were produced in help of his lectures, embodied his successful method of teaching, and have been of wide value outside his own classes.

In the second place, his laboratory work continued the spirit of his earlier methods at Derby. On one side he was a practical man, on the other side an enthusiast. He devoted much attention to water-analysis in private and public relations, always as a seeker of truth, never as an advocate. He invented a very successful system of water-filtration by means of the manganous carbon filter, still maintained in use by Messrs. Doulton and Co. He also carried on a long and laborious series of experiments on the hydrochloric acid fumes emitted in the process of salt-glazing, and was successful in modifying their evil effects. The reports of this work were published in a Parliamentary Blue-book on Dangerous Trades. In many other ways he was constantly employed in the application of his chemical skill to important hygienic uses. In connection with his hospital professorship he took great interest in mineralogy, drawing together a large and valuable collection of minerals, which he has bequeathed to the hospital.

To understand the undoubtedly great and beneficial influence which he exerted in St. Thomas's Hospital, one must penetrate to his inner life. One must see him in his home, punctual in each item of the daily life, unselfishly loving in every relation to his family, gentle and forbearing and helpful to his dependents, everywhere carrying with him an atmosphere of love. In the interest of his allotted work and of his home he renounced, so far as he could, in later years all the attractions of outside society. This gave him time for preparation of many lectures, for indulgence of his hobby of floriculture, and left withal a margin for the exercise of religious duties and for the help of humanity. So he was able to take part in the administration of his church, to further, again in an active way, philanthropic enterprise in his own neighbourhood, and to foster useful good fellowship among his neighbours. The clergymen with whom he was brought into contact have testified abundantly to the help which was afforded to them by his simple, loving, and accurate spirit. His garden remains, I fear only for a short time, a

memorial of the way in which a hobby may be a thing of love without display. Very few people, I think, know of this garden. It is a garden full of those old-fashioned British flowering plants which, as it appears to me, appeal most strongly to the hearts of people who enjoy plants for themselves. There are to be found the old perennials which in former days formed the glory of the few feet of ground in front of old cottages, or grew luxuriantly under the shelter of the high wall of the fruit-garden of old English halls. In addition to these he had gathered together plants memorial of journeys on mountain, in field, and by sea-side. Every one of them had for him its story and meaning, and for me at least one of the most delightful recollections of Albert Bernays is interwoven with the simple affectionate arrangement of the flowers clustering in his suburban *angulus terræ*. Smiling back smile for smile, they might well seem to be repeating to him the story of his well-spent life.

Such a man as this, linking his fortunes for more than thirty years with those of the medical school of St. Thomas's, could not fail to make a deep mark. In that school he, ripening himself, made others ripen. How much St. Thomas's owes to his wisdom, to his sweetness of temper, to his indefatigable energy, can best be measured by the sense of loss felt by all who were associated with him in the effort to maintain and advance its ancient prestige.

W. M. O.

THE SOURCES OF POPULAR FALLACIES,

AND THEIR

INFLUENCE ON EDUCATION.[1]

By FREDERICK LE GROS CLARK, F.R.S.

Definition—Sources—Superstitions—Sensuous deceptions—Legerdemain—Delusions consequent on disease or produced by drugs—Visions: dreams: prophetic anticipations—Attempt to classify common sources of fallacy—1. *Exaggerated estimate of our own knowledge*—2. *Apparent identity of dissimilar things*—3. *Substitution of an accidental trifle for an important cause*—4. *Ignorant assurance in explaining events: common sense*—5. *Mistaking accidental alliance for relation of cause and effect—Transposition of cause and effect—The foregoing fallacies exemplified—Supplementary sources of fallacy—Fallacies from confusing predisposing and exciting causes of disease—from assumption of data—from exaggeration—conventionalities—Influence of authority in matters of opinion—Misapprehension of words—Mental emotion—Hasty generalisation—A priori and à posteriori reasoning—Conclusion.*

In the Addresses which it has been my privilege to read before this Society in the last two years, I said that my purpose was to treat my subject in such manner as should

[1] Read before the Physical Society of St. Thomas's Hospital November 6th, 1890. It was intended that this paper should be included in the 19th volume of the 'Reports,' as a sequel to papers in the preceding volumes by the same author: but it was inadvertently omitted.

help you generally, in the preparation for, and pursuit of, your studies, instead of limiting myself to that which is strictly or exclusively professional. Such also is my intention in the selection of my present subject, which is that of the sources of popular Fallacy, and their influence in relation to Education.

By popular fallacies I mean, that incorrect interpretation of facts or phenomena which has received the popular sanction; and those inaccurate conclusions which derive their delusive property either from incorrect data, or from illogical reasoning; but which, nevertheless, from their plausibility, have become currently received as just and true.

Fallacy implies ignorance of some sort; but the character and extent of this ignorance have varied at different periods of the world's history. Our forefathers realised that knowledge is power; and the ignorant and uneducated mass were thus kept in subjection by the few. The art of printing did much to break the charmed circle within which knowledge was confined: and though in the present day we smile at many of the superstitions of our ancestors, or shudder at some of their consequences, we still retain many which, in their nature if not in their degree, are as open to refutation, as the exploded fallacies which we ridicule.

Another cause, tending to the same result as ignorance, is the love of the marvellous, which seems to be born with us, and to be an essential element of our nature. Much of the romance and chivalry of early life is associated with this attribute, and needs direction rather than suppression. The Fairy tales and Arabian Nights of childhood, and Gulliver's Travels, Robinson Crusoe, and Don Quixote later on, are not less relished because they are known to be unreal; and such light reading calls forth and nourishes elements of character which prove useful and elevating in their maturity. But such literature has nothing in common with sensational novels, in which vice is draped so as to render it attractive instead of repulsive; and a morbid sentimentalism of the heart and intellect is engendered, which is subversive of sound moral education, and also a ripe source of fallacy, by impairing the capacity to distinguish between that which is right and true, and that which is vicious and false.

There are many requisite qualifications which need cultivation in searching for truth: such are observation, the accumulation of facts, comparison and classification of, and reasoning upon, those facts: and above all, a candid and impartial mind. I have had occasion, in one of my previous addresses, to speak at length on the subject of "Observation" in professional pursuits; and I dwelt on the importance of training the senses to observe correctly, and on the cultivation of the intellect necessary in utilising the information thus obtained. I will not now repeat what I then said; but I would impress on you the value of habituating yourselves to observe accurately, and to be cautious in your adoption of associated facts; as well as slow in generalising on what you observe. Neglect of these precautions is a prolific source of error, and has much retarded the progress of science, by promoting the acceptance of crude theories and popular fallacies. But I shall return to this part of my subject presently.

The alliance between popular fallacies and superstitions is such as to render it difficult to dissociate the two in even a brief survey of this extensive subject: for they are both referable to the same causes, or, more correctly speaking, superstition is the offspring of fallacy. Either the senses are deceived and thus mislead the judgment; or the deception is purely mental,—consisting in an ignorance of that kind of information which is required for detecting and exposing a fallacy; or in an incapacity to draw a just conclusion even with correct data. If our senses deceive us, we are at once led astray: if we are ignorant of the foundation on which a fallacy is built, we are at the mercy of the impostor; or, if we do not know how to handle our facts—albeit they are without a flaw—the conclusion drawn from them may be the reverse of that which, logically, it should be.

I shall frequently have occasion to use the words *illusion* and *delusion*, which are sometimes, somewhat fancifully, distinguished from each other. Illusion seems rather to imply deception from external circumstances, over which the will has no control; whilst delusions often have their source in the individual, and denote, in that case, credulity if not weakness. But it is impossible to draw a hard and fast line of

definition between words, which their etymology does not justify: and it must be remembered that they have but one verb between them.

Although in enlightened communities of the present day natural magic is practised for the amusement of the public, the time was when it was utilised as a spiritual despotism over the minds of the ignorant. This influence, which is not altogether obsolete, is aided by the proneness of the uneducated mind to the supernatural; so that when the aid of science is invoked, a vivid imagination will often interpret the most simple phenomena in a fanciful and fallacious way. Extraneous circumstances assist in promoting these fantastic delusions. Spectres and ghosts are, as we know, seen in the dim and uncertain light of night. The midnight hour and the lone church-yard, with the pale moon struggling through a bank of clouds, and the flitting reflection of its light from the tomb-stones, are favourable for these mysterious visitations. Yet a moment's consideration must satisfy anyone acquainted with the elements of natural science, that that which is immaterial cannot possibly be revealed to material senses. Visions appeal to the imagination; and where there is purpose and design in them, they are so far real: but the ghost-seer claims credence for that which he sees and hears.

The ear as well as the eye may be deceived, in that echo is to the one that which reflection of light is to the other; and a clever adaptation of these means of deception, together with the singular gift of ventriloquism, no doubt played an important part in imposing on ignorance in the earlier history of the world, as they are now the avowed explanation of many of the astonishing feats of the professors of leger-demain. Knowing that we may be thus deluded, without being able to discover the means by which the deceit is accomplished, we ought to be the less disposed to yield assent to many phenomena which are offered seriously for our acceptance, and which are apparently at variance with natural laws: ignorance of how illusion is produced is no excuse for credulity.

But many delusions are purely intrinsic; dependent on functional derangement or organic disease of the brain, which

you will have to deal with in the course of your practice. The raving of febrile delirium constantly has reference to some objects present only to the imagination. The delirium of habitual drunkards also exemplifies this form of cerebral disturbance. The subject of this condition ignores objects of sense, and holds intercourse with the phantoms of his imagination. He works at his trade; he drives his horses; he talks to his boon companions; and his vacant eye wanders in space. When under the sway of these morbidly generated delusions it is difficult to arrest the attention of the sufferer or to divert the current of his thoughts. Delusions of a similar nature are produced by certain drugs, especially of the narcotic class.

Again, the somnambulist walks forth impelled by a mysterious influence of his misguiding will. In some instances he seems to see and hear partially, and to be guided by external circumstances: but very often the senses are sealed against ordinary impressions, and the creations of the active brain assume the semblance of reality, and lead him in his wanderings,—sometimes to destruction.

These delusions occur occasionally in health, and, in some instances, may be attributed to the revival of past impressions, in a manner so vivid as to veil the actual and material impressions then present. I have personally experienced something of this sort; in the dead of night awaking to listen to a repetition of music I had heard in the day-time, and incapable of distinguishing between the reality and the fantasy of my brain, until assured, by the testimony of another, that there was no sound audible.

Associated with these illusions of the senses, I may narrate an instance in which I was the subject of deception, in order that I may offer that which I believe to be the true explanation of this and similar cases. I was lying awake, as I believed, in the morning twilight, when a female figure passed the side of my bed, and glided noiselessly out at the door. Not only the outline of the figure, but the costume worn, was accurately noted. I called loudly to ascertain who was the intruder; but, receiving no answer, I concluded that I should learn all about the mystery at the breakfast table. I scarcely credited, at first, the assurance

that no one had entered my room ; and it was not till some time had elapsed, as the impression became fainter, and reason was allowed its proper influence, that I was satisfied I had been the subject of a delusion, which I thus explain. Whilst only half awake I had lapsed into dreamland, when the figure was portrayed to the mental eye,—so vividly that the impression was prolonged for a few seconds after I awoke ; and what I saw, so to speak, with my mental vision was adopted as a material reality.

A similar and striking illustration of these illusions occurred to one of my former colleagues here, who has, at my request, sent me a copy of the narrative he published. He fell asleep at mid-day in his library, whilst reading, and was suddenly awakened by the postman's sharp knock at the door. He then goes on to say that, on opening his eyes he saw standing before him, on the hearth-rug, the figure of a man looking at him. He appeared about thirty years of age and of Jewish aspect. His coat was dark brown and of foreign cut, and he wore a pyramidal hat. His nose was aquiline and he had moustache and beard. After looking him full in the face for some time the narrator adds, "I said to myself, who are you, and what are you come here for? Coincident with these mental questionings an amused smile passed over the lips of the spectre, the form became hazy, so that I saw distinctly the bookcase through and behind the figure. In another moment my visitor had vanished, and I found myself looking at the familiar row of books on the top shelf of the case." This instance admits of the same explanation as my own experience. My friend—a staid and learned physician—was startled from sleep, and the figure which his mental eye had pictured faded gradually away, as the ocular vision claimed its privilege to see outward things as they really were.

Probably the mental acts which are implied, in the reception of the present and the revival of past impressions, cannot exist simultaneously. Indeed, we must all be conscious of this power of abstraction from external objects, when the mind is occupied by reflecting on some subject of interest. The organs of sense are appealed to in vain, so long as the attention is not aroused to take cognizance of

the sight or sound which claims their notice ; the pictures which are presented to the mental eye,—memory's photographs of the past—exclude the substantial realities of the present. My own experience induces me to believe that past impressions, which have been forgotten or lost to our waking consciousness, are sometimes presented to us in sleep ; and in this way we may account for the association of various elements, which so often constitute a confused medley without any natural alliance or reasonable meaning, and the source of which we cannot trace. Are mental impressions ever obliterated ? I think not. Certainly the past is, at times, more vividly recalled in sleep, than when the waking senses are occupied with their environment.

I suppose I am not singular in my observation that ignorant persons are much more prone to prophetic anticipations than their more educated neighbours ; and that they are naturally disposed to accept readily the realisation of a prophecy as a proof that there was a necessary association between the prediction and its fulfilment. In like manner when a dream or some dreaded calamity is realised, the anticipation is regarded as a revelation of the event. Some remarkable instances of this sort are recorded, such as distant relatives appearing to their friends in the garb of death, at the time of their actual decease ; or the communication of some mysterious secret. But these coincidences—for as such they must be generally treated—commonly admit of a natural explanation. Love of the marvellous lends its aid to credulity, by rejecting a simple interpretation in favour of another which is preferred because it is mysterious : and this attribute seems so inherent in the human mind, as to suggest that it is the perversion of an instinct, designed to find its exercise in faith in a Superior Being. That haphazard prophecies are occasionally realised is to be expected ; but this does not take them out of the category of coincidences. Probably no railway train ever starts on a long journey, with its living freight, without a certain percentage of nervous passengers anticipating an accident. The journey is safely completed, and all the prophetic fears are forgotten : but if an accident occur once in a hundred journeys, the

neurotic prophets are satisfied that they were warned of the impending calamity.

I will now endeavour to classify the sources of error to which I have alluded.

1. Probably among the popular fallacies, belonging to all people and to all time, there is no one more prevalent than *an exaggerated estimate of our own knowledge :* and this seems to be the cause of our eagerness to generalise from insufficient data. It is a common fallacy in early life, and is corrected as we grow older, and gradually learn how limited is our knowledge, even in subjects with which we supposed ourselves to be most familiar. The awakening of the student is sometimes a rude one, by the examination test : but I have known many instances in which such painful discipline has been amply compensated for by the self-knowledge thus acquired. The accumulation of facts is often dry and tedious work ; yet he who would reap must sow.

2. Another source of fallacies with which you will meet springs from *the assumed identity of things apparently alike,* but essentially dissimilar : and the readiness with which thoughtless people allow themselves to be thus misled is an inducement to designing persons to mislead them. For example, two bodies may have the same property or quality in common, such as colour or taste, hardness or elasticity, and it is hastily assumed that they are, therefore, identical : or, again, two series of phenomena may run parallel for a certain distance, and if the point of divergence be not reached by the superficial or idle observer, he concludes that they will lead to the same result. You will meet with familiar examples of this class of fallacy in your future practice, in cases in which both vegetable and mineral poisons have been, carelessly or ignorantly, mistaken for harmless food or medicine ; such as the varieties of fungus and edible mushroom ; and some crystalline salts. In practice such errors occur as mistaking diffuse suppuration for œdema, or pleurisy for pleurodynia, because some of their features are alike : and I have known such fatal errors as the opening of a hernia or of a vascular tumour, because the presence of a swelling merely suggested to the operator that he was dealing with

an abscess. These are only a few instances of a class of fallacies, which have their source in superficial clinical study and careless observation.

3. *Distraction of the attention from the really important features* of any subject, by bringing into prominent notice some trivial or accidental circumstance, is the common artifice of the juggler and charlatan, and is eminently successful in deluding those whose ignorance or simplicity renders them easy and profitable victims. Many of the prosperous impositions in our Profession owe their success to this cause. Some special form of practice or simple medicine is prescribed, the efficacy of which is guaranteed, if the patient will only attend to the judicious directions which are given respecting diet, exercise, early rising, and abstinence from any acknowledged cause of disquiet, or infringement of sanitary rules: —as if these instructions, if scrupulously regarded, were not by themselves the really efficient agents in the promised cure. I believe such also to be at least a partial explanation of the marvels achieved by many of the mineral springs, to which the over-fed part of our population resort, after the indulgence of the appetite through the greater part of the year, to do penance for a month, and thus prepare themselves for the exploits of another season.

What, again, is the explanation of the curative theory by infinitesimal doses of medicine, but strict hygienic discipline and abstinence from drugs? To this form of quackery we are much indebted; for it has taught us how potential is the *vis medicatrix naturæ*, if left alone under favourable circumstances. The taste for physic is fostered by public opinion, which compels the practitioner to prescribe, under the threatened penalty of losing the confidence of his patient, who fallaciously supposes that medicine and a cure are necessary allies. The ignorant theorising of patients on the cause and manner of their cure is often amusing, and rarely injurious to the doctor. It is true that he is sometimes arraigned or abused for malpraxis, and disappointment for which he is no way responsible: but, on the other hand, he is often credited with results, which are due to causes quite independent of his interposition; so that the debtor and creditor account is, in this way, fairly balanced.

4. There is a wholesome tendency in the human mind to seek for an explanation of that which is not understood. But here again this commendable desire is often perverted by ignorance; and the *self-imposed task of discovering a cause* continually ends in the adoption of an erroneous one. It is remarkable with what pertinacity such fallacies are retained and propagated, because they are conventionally popular. This was no less true concerning the educated classes in the generation which is passing away, before science had been accepted as a branch of general education. Instances were not infrequent in which pseudo-scientific illustrations were employed to elucidate or enforce some important truth: but such fallacies as then passed undetected would not be tolerated now. The explanation of this delusive style of reasoning is not far to seek: for not only were the authors of it ignorant, but they did not recognise that they were so; and thus trod blindfold on treacherous ground.

This habit of assigning a reason, whether right or wrong, for everything, specially characterises those who are least qualified to judge correctly of any doubtful question submitted to them, and who thus justify the quotation, that

"Fools rush in where angels fear to tread."

In like manner there are some young people—and belonging generally to the same class—who are in the habit of asking silly questions, in the belief that they are thereby displaying their knowledge. But that laudable curiosity, which is begotten of a sincere desire for information, deserves every encouragement from the teacher, and should not be suppressed by the student in the fear of exposing his ignorance. It will thus be perceived that there are occasions on which, if speech be silver, silence is golden; and your own instinct will, I trust, show you which they are.

How frequently, again, do we hear common sense extolled at the expense of logical reasoning. Yet the lack of logical training is a rife source of error: and in no profession or calling are inconsequential inferences and false conclusions more fatal than in ours. Certainly common sense is a valuable guide in many things, and less common than its

name would seem to indicate, if, as I conceive, its possession implies intelligence, impartiality, and truthfulness: at least that is what we expect, when we speak of taking a common-sense view of anything.

5. Another rife source of fallacy is that of *mistaking the accidental alliance of two or more facts for an actual relation to each other of cause and effect.* This fallacious treatment of incidents which come under our notice may assume different forms. A cause and effect may be mistaken for each other, or their relation transposed; or there may be some common cause for both, which has to be sought and discovered. I will attempt briefly to exemplify these varieties of fallacy.

1. The alliance of certain signs or symptoms in a disease does not necessarily imply anything beyond an accidental association; such as swelling and pain, or asthma and dyspepsia: but that such alliances are, not infrequently, indicative of a close relationship should make us more cautious in searching for a right interpretation of them.

2. Cause and effect are sometimes transposed: thus, I have known neuralgia of the face accused of producing decayed teeth; whereas it was evident that the pain was the effect, and not the cause, of the decay. In gouty attacks of the joints I believe the inflammation used to be regarded as primary, and the cause of the specific deposit which accompanied it; now the inflammation is believed to be the consequence of the deposition of crystalline urates in the cartilages.

3. Allied phenomena, which seem to be related as cause and effect, may be really due to some latent cause. For instance, gastric irritation and headache may appear to be so related, though it may not be obvious which is primary: whereas, they may both be traced to some disturbing condition remote from the seat of the morbid symptoms, such as mental emotion, or the non-elimination of some poison from the blood.

4. The common—I may call it the vulgar—propensity to assign a reason for that which is not understood is so habitual with the least informed as scarcely to need illustration. And this is specially noticeable in the popular way of

accounting for disease. The hap-hazard conjectures of patients or their friends are usually founded on some accidental circumstance, which has no other relation to the malady than the coincidence of the two : yet these convictions are adhered to so firmly, that an incautious medical attendant may thus be influenced in his judgment, and led astray. The best advice I can give on this and allied points in forming your diagnosis is, to permit the patient to narrate all he desires to communicate of his history, without asking leading questions ; to use whatever your sagacity indicates to be probable and worth retaining, and to reject the rest. An exaggerated illustration of this taste for conjectural explanation came to my knowledge recently. In a village near my home the occasional prevalence of diphtheria and typhoid is attributed by the inhabitants to the introduction of vaccination, and consequent abolition of small-pox.

5. The relation of cause and effect is, not infrequently, interchangeable in disease ; by which I mean that each acts and re-acts on the other : and this is the case in degradation as well as in restoration of health. This is exemplified in many local affections, and by functional derangement of organs ; improvement or progressive disturbance in either is accompanied or followed by a corresponding amendment or deterioration in healthy action : and a similar interchange of sympathetic activity may be observed in organs which are closely allied in their functions, as the skin and mucous membranes, the liver and kidneys, which may help or injure each other in this reactionary way. These relations are often obscure, and a fallacious estimate of them may be fraught with serious consequences.

An apt illustration of the difficulty of distinguishing between cause and effect is afforded by the connection between education and pauperism. It has been ascertained, statistically, that they exist in an inverse ratio to each other : but it is impossible to determine which is the cause and which the effect. Education may save from poverty, as ampler means may afford the opportunity for education. Probably they react on each other.

In the practice of our Profession there is another form of error which is closely allied to those just considered ; viz. the

neglect of discrimination between the predisposing and exciting causes of disease. Confusion in these essentials in diagnosis, or failure to search for and distinguish them from each other, are faults which are due to carelessness as well as to ignorance, and need early correction. Even the simplest diseases exemplify the necessity of attending to this distinction, as their treatment is often modified thereby; such are abscesses, ulcers, skin diseases. But in more complex and doubtful cases, not only is the diagnosis likely to be faulty or imperfect, but the remedial measures may be entirely misdirected by inattention to this elementary information.

It is a trite remark that you must look to your foundation before you begin to build; yet how often is this simple axiom ignored in argument. It is a common source of fallacy to assume data which are not proved or accepted, or to mistake opinions for facts. Always beware when your opponent opens his argument by taking anything for granted, as this is the common artifice of the sophist to entangle his antagonist in his net: for sophistry is a dishonest attempt to mislead by plausible but false reasoning. The "suppressio veri" and "suggestio falsi," as well as exaggeration, are other stratagems to delude the unwary: they are unworthy weapons to use in argument. Not on this account only, but on every account should exaggeration be shunned as a deviation from truth. Its motive, at best, is the childish desire to excite sympathy, or fear, or wonder; and, like many other habits, it recoils upon its author, by subjecting him to suspicion when he tells the truth, and by inducing his companions to discount all he says. The use of extravagant expletives in speaking or writing is, for the same reason, to be deprecated; and many of the hyperbolical expressions which have become conventional in the present day, though harmless, are not euphonious, and are sometimes paradoxical. I cannot see, for example, why that which attracts the eye offensively should be stigmatized as "loud;" or that any circumstance, which may be justly termed very agreeable, gains greatly in importance, whilst it loses somewhat in graceful expression, by being called "awfully jolly."

The influence of authority in matters of opinion deserves a passing notice. You do well to trust those who have

proved themselves worthy of your confidence: but your faith must not be blind; for bigoted adhesion to any authoritative dictum is obstructive of progress, and may lead you astray. Especially is this caution necessary where you are dealing with those who are strange to you: for there are many pseudo-scientists who assume an authority to which they are not entitled, and thus impose on the weak and credulous.

Names sometimes mislead by conveying a meaning different from that which really pertains to them. This is noticeable in tracing their derivation. Many words, also, become corrupted in course of time, and thus convey an entirely incorrect impression of their real signification. Others, again, are incorrectly employed, and error receives the stamp of conventional usage. It is remarkable to find, when carefully examined, so much of fallacy attributable to the misuse of words.

Mental emotion, especially hope and fear, often mislead us by warping the judgment, and thus inducing us to put an exaggerated or fallacious interpretation on that which we covet or dread. The wish is often father to the thought; and not infrequently, without our being conscious of it, actually influences our actions. A curious example of this fallacy came under my observation some years since, which I will narrate because of its typical character. A credulous friend, on whose honesty and truthfulness I had perfect reliance, assured me that if a shilling were attached to a thread, and suspended from the ball of the thumb in a wine-glass, it would strike the hour against the side of the glass. This experiment was performed by him, in my presence, and with success. Of course my friend willed that it should be so: but I am satisfied he did not intend to deceive me; he willed it unconsciously. This is very like uttering a paradox; nevertheless I believe it.

I may place in the same category the formerly fashionable amusement of table-turning, which deluded a great number of people, because they preferred a mysterious to a simple and intelligible explanation of the phenomenon. Many persons combined to produce the desired result, and it was a necessary condition that their wills should all be

united to move the table in one direction. Of course the will set the muscles in action, and thus, probably in most instances unconsciously to the actors, determined the movement of the table. Naturally the velocity of motion would be augmented when the actors followed the animated mahogany ; and so the experiment was complete. Professor Faraday condescended to expose this fallacy by a simple experiment. He placed a small piece of smooth paper between each finger of every operator and the polished surface of the table. The hands moved, but the table stubbornly refused to stir ; and thus was this absurdity exploded. I suppose the fragments of paper were nonconductors of the will.

One general principle which I have ventured to enunciate is, that whatever may be presented for our credence, however plausible it may be, should be rejected if it contravene a known and established law. But it behoves the student of science, in exercising this discretion, to assure himself that he is not influenced by preconceived impressions, or misled by mistaking opinions for facts. Among those who have not been trained to scientific research there is a carelessness in this respect, which is necessarily mischievous in its results. Error is propagated by adopting, as law, that which has no higher claim than conventional belief. I remember, many years since, exemplifying the consequence of inattention to a natural law, by wasting much time in some physiological experiments, which proved to be valueless because fallacious, in consequence of ignoring the temperature requisite for water to be converted into vapour where air is not present.

On the other hand it is essential to beware of the reaction that follows the detection of error, which is apt to lead to an opposite extreme. In his reliance on the uniformity of natural law the student in science is compelled, by the very nature of his pursuits and his love of truth, to require demonstrative evidence to satisfy him : for such knowledge as is within the reach of his finite capacity to acquire is not fitting subject for direct revelation. Yet, if unconvinced, his scepticism must be neither captious nor prejudiced, but an honest suspension of judgment. He must be cautious

in accepting data, and judicious in estimating their value; patient in accumulating evidence, and discriminating in drawing conclusions. With such mental training, and conformable education of the senses, there is little fear that one so qualified would become the victim of fallacies of any description.

In discussing the preceding sources of fallacy I would not have it supposed that I have exhausted the catalogue, which might, indeed, be extended indefinitely. Those which have been mentioned have appeared to me as the most likely to be encountered from without in your professional studies: and my design has been, as I said, to direct your attention to them as the best way of warning you against plausible illusions. But there are ways also in which we may delude ourselves or induce others to deceive us. If you have formed a decided opinion respecting a doubtful disease, before thoroughly investigating the case, your diagnosis will certainly be biassed. By asking your patient leading questions in the direction of your bias you are very likely to be further misled: for it is quite possible to induce some persons, especially of a neurotic type, to admit or to deny anything to which you manifest a desire for a positive or negative answer. I think specialism has a tendency in the same direction, by inducing its professors to look at disease through the medium of their own particular spectacles.

There is yet one source of fallacy to which I have referred only incidentally, and which is likewise independent of extraneous influence. Hasty generalisation is a frequent cause of disappointment and failure in scientific pursuits. It is a common defect in the uneducated, who seem to learn little in this respect, by experience: but it is by no means limited to this class. It is also the fault of inexperience and an over sanguine temperament, especially in the young: and in them it is so far excusable that it is often indicative of earnestness and love of truth, and only needs to be controlled by the patience which is bought of disappointment. Instances of this defective reasoning must be familiar to all in social life, where it is generally harmless in its influence, and often ludicrous. But in your practical work precipitancy in generalising may seriously mislead you. The results of treat-

ment, especially medicinal, are not to be relied on from single cases, as there are many obvious contingencies which may determine the effect under different circumstances. In diagnosis, again, the association of certain signs or symptoms which we have noticed in one case may dispose us, without further investigation, to classify with it another, in which we have observed similar symptoms. But in this instance, also, it would be unsafe to act upon an opinion, the foundation for which may be merely an accidental coincidence, and therefore fallacious. Of course these remarks are not intended to apply to cases in which the similarity of the indications has been repeatedly noticed, and where principles have been adopted which are the fruit of extended observation and long experience. It is premature generalisation on limited data that constitutes the snare against which the young and ardent student in Science needs to be warned.

The argument by analogy, which is often employed in biological research, is included in this category. It is both legitimate and valuable if judiciously applied; but, like rash generalisation, it is unsafe in the hands of the inexperienced; for the soundness of such reasoning depends on the acquirements and judgment of him who employs it. I will exemplify what I mean from my own personal experience. When young in my hospital work, knowing the influence of pressure in the absorption of tissue, I applied air-cushions to scirrhous breasts. At first I fancied that marked success attended this practice; but I subsequently discovered that the superjacent tissue alone had been absorbed, whilst the diseased growth was unaffected by the pressure.

In connexion with this part of the subject it may not be out of place to say a word respecting *à priori* reasoning, because it is to some minds seductive, and in natural science frequently fallacious. Now, I have no intention of detaining you by a dissertation on logic or Baconian philosophy, and shall, therefore, simply point out, in familiar words, the inapplicability of this form of reasoning in natural science.

The distinction between *à priori* and *à posteriori* reasoning is, that in the former we proceed from the cause to the effect, and in the latter from facts or consequences to the

cause. In *à priori* reasoning a proposition is assumed, and then we proceed to prove it, as in mathematics: but in *à posteriori* reasoning facts are accumulated, their relations to each other are observed, and thence the conclusion is drawn. In other words, the order of reasoning is reversed: in the one case the reasoning is from general ideas, without the help of experience: in the other the inference is drawn from experience. It must be obvious, therefore, that to reason, *à priori*, in biology, involves a certain amount of guessing,—the assumption of a necessary truth or a hypothetical basis, which has to be sustained by proof from without: and it is needless to remark that this opens the door to partiality, if not to prejudice. The judgment is apt to be perverted, and fallacy is the result. In some instances, no doubt, sagacious conjectures have been made, and subsequently supported by satisfactory evidence of their correctness: but it must be evident that it is far safer to pursue the Baconian method of reasoning from effects or consequences to their cause; and it is thus that the greatest triumphs in natural science have been achieved.

In one of my latest interviews with Sir William Gull, when I had the privilege of conversing with him on subjects of mutual interest, he gave me, on a slip of paper, an extract from Newton's 'Treatise on Optics' (2nd edition, 1718), laying great stress on the last words of the quotation. As the passage is not inappropriate as a sequel to what I have just said, I will read it to you without further comment. "The main business of natural philosophy is to argue from phenomena without feigning hypotheses, and to deduce causes from effects, till we come to the very first cause, which certainly is not mechanical."

Allow me, in conclusion, to impress on you that an abiding confidence in natural laws is the firm ground on which the student of science treads, and a trustworthy aid in the detection and exposure of fallacy. If discrepancies confront him, he knows they are due to his ignorance, and he would scorn seeking to bring them into conformity with his own interpretation or preconceived ideas; but he patiently resumes his search, in the assurance that when the truth is revealed to him, it will be in plain and unequivocal

language. His energy is not expended in formal worship; for he knows that Nature reveals her mysteries to him alone, who, in a faithful, loving, and earnest spirit, seeks for truth.

EXTRACT OF MALT.

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The value of extract of malt for medicinal purposes is generally held to depend largely on its amylolytic power. Since this power depends on the presence of a ferment, the quality of the extract is greatly influenced by the care exercised in its preparation, the process for which consists in digesting ground malt in water and evaporating the liquor, separated by filtration from insoluble matter. This evaporation should be conducted *in vacuo* in order to shorten the time during which the preparation is exposed to heat, and to reduce the temperature at which evaporation can profitably be carried on. Neglect of this results in a preparation possessing no amylolytic power, and of value only on account of the mineral matter and carbo-hydrates of which it is chiefly composed, the ferment having been destroyed by the long exposure to heat which is unavoidable in aqueous evaporation carried on at ordinary atmospheric pressure.

Owing to this ferment—in common with so many other bodies of the same class—having, up to the present, eluded all attempts made to separate it from accompanying inert matter, it is impossible to state the value of malt extract, so far as its amylolytic power is concerned, in absolute terms or percentage of active principle, as is done, for instance, in the case of morphine in opium, or quinine in cinchona bark.

In testing its value as a digestive agent we are therefore obliged to use a comparative method, such as the quantity of starch converted into sugar in a certain time at a given temperature. Now these two variables—time and temperature—are not the only factors one has to take into consideration. The rate of conversion of starch into sugar is also influenced by the dilution of the digestion mixture—in other words, by the amount of starch and converted starch present. The conditions are thus rendered exceedingly complex, and in the absence of any official or standard authority each investigator in this field pursues his own course, and arrives at results which are not comparable with the results obtained by others.

The most satisfactory process from a chemical point of view is to take a small quantity of starch in the form of mucilage, and note the time required for its complete conversion into sugar by a given quantity of malt extract at the body temperature. The difference in the reaction of starch and sugar with iodine furnishes an indication of the termination of the reaction. A small quantity of the digestion mixture removed from time to time is tested with an aqueous solution of iodine, and the time noted when no colour is produced, the dextrins which are intermediate products between starch and sugar being indicated by a reddish colour with iodine.

The enormous difference in quality between the various malt extracts now being offered to the medical profession may be seen in the following table, which is a record of some experiments recently carried out in the dispensary of the hospital.

Sample.	Quantity of extract taken.	Quantity of starch taken.	Time required for complete conversion.
A	1·5 grammes	·1 gramme	3 minutes.
B	„	„	10 „
C	„	„	35 „
D	„	„	3½ hours.

These are all well-known brands, having a considerable sale, and in some cases very largely advertised. The sample D is the most expensive, but may be regarded as practically useless as a digestive agent, notwithstanding the great merit claimed for it in the advertising columns of the medical journals. Sample A is the kind now in use in the hospital.

From a physiological point of view it would be more satisfactory to determine the total quantity of starch capable of being converted into sugar by a medicinal dose of malt extract in the time during which it may be estimated that amylolytic digestion proceeds in the stomach after a full meal, and before it is suspended by the acidity of the gastric juice.

This is practically an unknown time, but 20—30 minutes may be taken as a fair estimate. This would indicate at once to the physician the real value of extract of malt as an aid to digestion, but up to the present no process based upon these suggestions has been published. The chief difficulty lies in the correct determination, in presence of each other, of the various products of the action of the extract. These would include more than one variety of dextrin and sugar, and, in addition, some unconverted starch, since it may be taken for granted that an ordinary dose of the extract—a dessert-spoonful, for instance—would not suffice to convert the whole of the starch taken in an average meal into the terminal product, sugar, but would leave a certain amount of unaltered starch beside dextrins and other possible intermediate products. The author is, however, engaged upon an investigation of this subject, and hopes to elucidate some of these obscure points in a future communication.

ON TUBERCULAR PERITONITIS;

ITS VARIOUS FORMS, THEIR SURGICAL TREATMENT, AND COMPARATIVE CURABILITY.

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The term tubercular peritonitis is used here in its familiar sense. It excludes those cases in which a deposit of tubercle upon the peritoneum occurs, either as a part of acute general tuberculosis, or merely upon the site of intestinal ulcers. It is applied to those cases only in which the peritoneal affection predominates, though deposits are commonly present elsewhere.

If we are to trust the older writings on the subject, recovery from this disease under medical treatment must be considered to be rare and exceptional.

Whether this is so or not, the opinion begins to prevail that the mortality may be materially diminished by operative interference. Thus König, of Göttingen,[1] gives an opinion founded on 131 cases, that by laparotomy 75 per cent. are much benefited, and 25 per cent. completely cured.

The same idea finds expression in a valuable paper by Osler,[2] who goes so far as to place "abdominal section for tubercular peritonitis among the triumphs of recent surgery."

[1] Internat. Med. Congress, Berlin, 1890.

[2] 'Johns Hopkins Hosp. Rep.,' vol. ii, No. 2.

It may be of use, then, to examine our hospital practice with particular reference to this point, and a series of 100 consecutive cases are taken for this purpose by kind permission of the physicians and surgeons.

Its Incidence.

Age.—All ages are liable to this disease. The range in our series is from one to sixty-eight, the distribution being as follows :

Under 5	...	17	
5 to 10	...	26	
10 „ 20	...	27	
20 „ 30	...	15	
30 „ 40	...	9	Rather more than one tenth of the total.
40 „ 50	...	2	
50 „ 60	...	0	
60 „ 70	...	4	

Thus two thirds of the cases apparently occur between the ages of five and thirty. It has been shown, however, by Osler[1] that this distribution becomes untrue when the cases are added in which the presence of peritoneal tuberculosis has been discovered in the performance of laparotomy. The following table includes the 357 cases collected by him :

Under 10	...	70	
10 to 20	...	102	
20 „ 30	...	102	
30 „ 40	...	80	Nearly one third of the total.
40 „ 50	...	63	
50 „ 60	...	19	
60 „ 70	...	8	
Over 70	...	2	

A considerable increase appears between the ages of thirty and fifty.

Sex.—Out of 100 cases 53 are males, 47 are females, these figures agreeing with those of Bristowe.[2] Fagge[3] found

[1] Loc. cit.

[2] 'Reynolds' System,' art. "Tuberc. Perit."

[3] 'Practice of Medicine.'

that the disease was more than twice as common in men as in women.

This proportion, however, like the age distribution, is rendered incorrect by the addition of statistics derived from laparotomies; the figures of Boulland, Häne, and Maurange, quoted by Osler, show 60 males to 131 females.

Predisposition.—In 24 of our 100 cases a strong family history of phthisis was ascertained.

Its Various Forms.

A. *From the Anatomical point of view.*

Though the disease consists essentially of an outbreak of grey miliary tubercle upon the peritoneum, with a resulting inflammation of that structure, the resisting power, both of the whole organism and of the particular tissue affected, varies so largely in different individuals, that diverse conditions are found after death.

These conditions are in fact but stages in one fairly uniform process, and the particular stage at which death steps in depends upon factors which we cannot appreciate.

Three such stages are to be recognised in the post-mortem room, which may be briefly described:

(1) *Acute and subacute miliary tuberculosis.*—Here the peritoneum is wholly, or over a large extent, studded with miliary grey or greyish-white tubercles.

The intestines, which are commonly suffering somewhat from paralytic distension, are injected; the interstices between them are occupied by more or less lymph, fragmentary or in sheets.

There is frequently an effusion of fluid, varying in amount from a few ounces to many pints; the fluid may be clear, or turbid, or pink from admixture of blood.

The great omentum is usually closely studded with tubercles, much thickened and rolled up into a transverse bar, or sometimes curiously folded on itself, and even adherent to the upper surface of the liver.

Though all the abdominal viscera are often glued together,

they are easily separable, and true fibrous adhesions (if any are present) are scanty and young.

These conditions were presented by 13 of our 40 fatal cases (32 per cent.).

(2) *Fibrous adhesive condition.*—In these cases, which have been usually of longer duration, the abdominal contents, especially the intestines, are bound together firmly by fibrous adhesions or bands, which are often stronger than the intestinal wall itself.

These adhesions may be general, obliterating the peritoneal cavity, or local, tending to produce loculi in which fluid may accumulate.

The fluid may be clear and serous, but is far more commonly purulent. The pus may lie in several small pockets, or may form a large collection, which in women is frequently situated entirely within the precincts of the pelvis.

As regards the tubercles two forms are found, and it is useful to subdivide the class accordingly :

(i) They may be still grey and translucent, or yellow and caseous, but they remain isolated and miliary in size. In our 40 fatal cases 21 were of this form (52 per cent.).

(ii) Coalescence has occurred, and there are formed larger nodules, masses, or plates of cheesy material, lying here and there between the intestinal coils. The presence of pus is nearly constant. Especially in this form is it that the intestinal wall is liable to perforation from without. There were 6 cases of this class (15 per cent.).

B. *From the Clinical point of view.*

Translating these anatomical conditions into clinical language, we find the following classes of cases,—classes, however, which represent stages of one morbid process, at any one of which death or recovery may occur.

(1) An outbreak of tubercle, sudden or insidious, associated with a peritonitis which is slight from the first, and never severe, and is attended with little or no effusion of fluid. These are the cases which are discovered accidentally in the performance of laparotomy.

Dr. Cullingworth has recently had a striking example under his care.

A. H—, æt. 20, was admitted in November, 1890. There was no history of tubercular disease in her family, and she had had no previous illness, except "pleurisy and congestion of the lungs." For two months before admission she had been subject to pains in the abdomen, which from time to time became distended. She had been suffering from menorrhagia, and had been feeling weak, and losing weight.

On examination there was no sign of disease beyond a tumour of uncertain nature in the pelvis. On making an exploratory abdominal incision, Dr. Cullingworth found a thick sprinkling of grey tubercle upon the intestines. Nothing further was done, and the wound was closed.

A few months later, though the girl was still somewhat thin, there was no sign or symptom of peritoneal disease. A year later she was looking very well, had completely regained her strength, and presented no physical signs of disease in chest or abdomen.

(2) In the second class the peritonitis is more severe. Abdominal pain sets in with sudden or gradual onset; there is usually some fever, wasting, and often diarrhœa; there is more or less paralytic tympanites and the effusion of clear or turbid fluid. The fluid may be small in amount, just sufficient to be evident in the flanks, or it may accumulate until ascites forms the prominent feature. In either case the inflammation frequently subsides and the fluid is absorbed, provided it has not become purulent.

In the later stages the omentum may gradually come into touch, irregular areas of abdominal resistance may appear as peritoneal adhesions form and contract, and in some cases ascitic fluid may be observed to become encysted during the process of absorption.

(3) The third class is characterised by the formation of pus, which may be general or local. Suppuration is frequently associated with the formation of large caseous masses or plates, and nearly always with strong peritoneal adhesions.

(4) The fibrous adhesive form commonly represents the last stage in the course of the disease. Here recovery may

occur, but is frequently prevented by the existence of complications or of tubercular disease in other organs.

The fatal and non-fatal cases in our series may thus be brought into line:

	Apparently recovered.	Died.
(1) Latent tuberculosis	2	0
(2) Moderate or severe peritonitis:		
(*a*) With moderate effusion ...	30	10
(*b*) With marked ascites	19	4
(3) Suppurative form	4	8
(4) Adhesive form	4	18
	59	40

Co-existent Tubercular Deposits.

Cases of pure peritoneal tuberculosis are seldom met with in the post-mortem room, though it not uncommonly happens that during life no sign of other disease is detected.

In 2 of our 40 fatal cases tubercle was limited to the peritoneum; in 2 more the Fallopian tubes were the only other parts affected.

The condition of the Fallopian tubes is of great importance, for while they are liable to a primary tuberculosis, and are so situated as to readily give rise to general peritoneal infection, they are at the same time amenable to surgical treatment.

In these 40 cases, 16 were females; in 8 of these the tubes were affected. Bristowe[1] puts it at a much lower point, viz. 4 in 22 females; Häne[2] finds 7 in 16 cases; Fagge[3] is of opinion that the tubes are almost always affected.

At any rate, the frequency of their affection is probably generally under-stated, for in the chronic adhesive form of the disease considerable difficulty attends their thorough examination; and Osler's estimate, that they are found to be diseased in 30 or 40 per cent. of fatal cases in women, is certainly not excessive.

[1] Loc. cit.
[2] Quoted by Osler.
[3] Loc. cit.

The lungs were affected in more than half of our fatal cases. This is probably below the average, for Bristowe found tubercle in them in 42 out of 48 cases, and Fagge in 7 out of 9 cases.

The subjoined table shows the distribution of tubercle in these 40 fatal cases:

Lungs	...	22
Intestines	...	12
Mesenteric glands	...	11
Pleuræ	...	9
Fallopian tubes	...	8 (in 16 females)
Spleen	...	7
Kidneys	...	6
Bronchial glands	...	5
Liver	...	4
Meninges of brain	...	3
Brain	...	1
Supra-renal bodies	...	1
Pericardium	...	1

On the other hand, in the 59 cases which apparently or temporarily recovered, there was evidence of tubercular disease of the lungs in 7 only, of the pleuræ in 2, of the brain (probably cerebellar tumour) in 1.

Complications.

In estimating the chances of life in any given case, the following series of complications or secondary conditions must be taken into consideration:

	In 40 fatal.	In 59 non-fatal.
(1) Severe pleuritic effusion	4	5
(2) Liver, fatty disease of	14	0
„ cirrhosis of	6	0
(3) Abdominal wall, local abscess of	1	1
(4) Perforation of bowel from without	5	1
„ „ from within	2	0
(5) Umbilical fistula, simple purulent	1	2
„ fæcal	1	1
(6) Abdominal suppuration, simple	5	1
„ opening into vagina ...	1	0
„ „ rectum ...	1	0
„ „ lung ...	0	1
(7) Intestinal obstruction by adhesions	0	1

Its Mortality.

Influence of age.—It may almost be said that the younger the patient, the greater is the prospect of recovery. This relation is doubtless connected with increased liability to tubercular disease of other organs after the age of twenty, and it marks the great influence of co-existent disease upon the mortality.

	Apparent recovery.	Death.
Under 5	... 12	5
5 to 10	... 23	3
10 „ 20	... 19	8
20 „ 30	... 6	9
30 „ 40	... 0	9
40 „ 50	... 0	2
50 „ 60	... 0	0
60 „ 70	... 0	4

Influence of sex.—There appears to be no marked difference in the mortality of the two sexes; in our fatal cases 24 were males and 16 were females.

Influence of predisposition.—Of 59 non-fatal cases a strong family history of tubercular affections was obtained in 9 (15 per cent.), of 40 fatal cases in 15 (37 per cent.).

Influence of co-existent tuberculous disease.—An attempt to unravel each fatal case and to trace out the exact cause of death is unsatisfactory; but an examination of a large number of fatal cases shows clearly, how great a part in the production of a fatal issue is played by the tubercular disease so commonly present in other organs.

It is not that these fatal cases run a longer course than those which end in recovery, and so afford a greater space of time for the development of disease in lungs, pleuræ, or intestines. On the contrary, these adventitious affections often precede the appearance of tubercle on the peritoneum, or speedily follow it, and making rapid advance soon turn the scale against the patient and put recovery beyond hope.

One quarter of our fatal cases had gross tubercular disease of the lungs, for the most part attended with excavation—a condition in itself hardly compatible with life.

One half of the women who died had tortuous Fallopian

tubes, lined or distended with caseous matter and pus, opening freely into a pelvic abscess, or inextricably buried in coherent coils of bowel.

Influence of complications.—Some of the conditions previously enumerated under this head are truly a part of the disease; some are, as it were, accidental; but all of them form obstacles to recovery.

Six of the 40 patients who died had drunk alcohol to excess, and had developed cirrhosis of the liver. Five had one or more collections of pus in the abdomen; in five more the bowel had been opened by ulcerative process from without, so that fæces had escaped into the peritoneal cavity; in one a similar result had occurred from the rupture of the floor of an intestinal ulcer, and in another a communication had been established between the ileum and the bladder.

General result.—Of our 100 patients 40 died, and 59 left the hospital, needing no immediate treatment.

This is a death-roll heavy enough, but it would be light in comparison with older estimates if it could be proved that in these 59 patients the apparent cure was permanent.

A review of the conditions surrounding these fatal cases seems to teach that neither the mere presence of tubercles on the peritoneum nor the resulting peritonitis is in itself the usual cause of death; but that death proceeds commonly from phthisis or tubercular pleurisy, or from disease of the Fallopian tubes (which serves to maintain and increase the intensity of the peritoneal inflammation), or from abdominal suppuration or perforation of the bowel.

Its Curability.

A. *Curability by Medical Means.*

There is or was a general consensus of opinion that recovery from tubercular peritonitis is rare and exceptional. Thus Bristowe[1] says that it "tends, as a rule, to a fatal

[1] 'Theory and Practice of Medicine.'

result ; at the same time there are good grounds for the belief that recovery occasionally ensues." Fagge[1] said that he had seen "several instances in which there was reason to believe that recovery took place, and in one case the diagnosis was afterwards proved to be correct by a post-mortem examination." Flint pronounces it to be always fatal. Speaking of children only, Henoch[2] says that when recovery occurs he thinks it has been simple peritonitis ; and Eustace Smith[3] thinks that it is not invariably fatal, though recovery is an exceptional termination, and alterations of improvement and relapse are common.

Now, as has already been stated, 59 patients out of 100 admitted left the hospital apparently cured ; they are entered on the hospital records as being "relieved." With three exceptions, they had been subjected to no more drastic treatment then enforced rest, tonics, and, in a few cases, paracentesis. Their subsequent history is of interest.

I do not myself think that the diagnosis in these cases is at fault. The tendency, as shown in the post-mortem room and on the operating-table, is to overlook the presence of peritoneal tuberculosis, not to take refuge behind the name in obscure conditions. One of the least marked of our cases died accidentally a year later, and the original diagnosis was proved to be correct. At any rate, whatever their nature, they are the very cases which the advocates of operative treatment would claim.

Of these 59 patients, 20 are now in the enjoyment of good health ; 1 remained well for a year and then died of intestinal obstruction by a diverticulum ; 38 have passed out of reach, but not one of them has sought readmission.

Of these 20 patients, 1 has remained well for nine years ; 1 for six years ; 3 for four years ; 5 for three years or more (early phthisis now in one case) ; 2 for two years or more ; 6 for one year or more ; 2 for more than nine months (one still has a little fluid in the abdomen). A few examples may be briefly given.

[1] Loc. cit.

[2] 'Dis. of Children,' 1889.

[3] 'Dis. in Children.'

A. S—, æt. 8, was admitted in March, 1883, under the care of Dr. Ord. There was a history of phthisis in his father's family, and he himself had some enlarged glands in the neck. He had had pleurisy and inflammation of the lungs before admission, but no other serious illness.

Five months before admission his abdomen began to swell, and he suffered from attacks of abdominal pain; he was tapped twice, several pints of fluid, "like brandy," being drawn off.

On admission he was somewhat wasted; his abdomen was distended and contained a moderate amount of fluid, and showed, as is frequently the case, a network of dilated superficial veins. There was no other sign of disease, except pleuritic thickening at the base of the right lung.

He improved rapidly and gained flesh, temperature being normal throughout.

Nine years later he is in perfect health, and has no physical signs of disease in chest or abdomen.

F. C—, æt. 9, was admitted in March, 1886, under the care of Dr. Bristowe. There was no family history of tubercular disease, and she had had no previous illness besides scarlet fever and measles.

Four months before admission she began to feel weak and languid; a month later she began to suffer from pain in the abdomen, especially on the left side, and found difficulty in fastening her dress.

On admission she looked delicate, but was not particularly thin. The abdomen was distended, but not very prominent; in it a hard mass, some nine inches in length by three and a half in breadth, could be felt running from the left costal margin downwards, and to the right, nearly into the opposite flank under the umbilicus; its free end and lower border were sharply defined; its upper border was less marked, and it appeared to be adherent to the abdominal wall.

There was also some ascitic fluid encysted in the left flank.

During her stay in the hospital the fluid was completely absorbed, and the tubercular omental mass diminished somewhat in size and hardness.

Six years later she is in good health, and presents no physical sign of disease.

A. C—, æt. 16, was admitted in November, 1889, under the care of Dr. Ord. There was no family history of tubercle, and her only previous illness had been measles.

About six months before admission she began to lose her health; her abdomen began to increase in size, and became the seat of occasional pain.

On admission she was rather thin and anæmic, her face and abdomen somewhat pigmented. She was suffering from extreme ascites, and her symptoms were mainly produced by the upward pressure of the fluid upon lungs and heart.

She was twice tapped, on one occasion more than 17 pints of fluid being removed. Her improvement was very slow, but continuous.

More than two years later she is in good health, and shows no sign of disease in chest or abdomen.

Now I think there are good grounds for belief that in all, or most of the remaining 38 cases, the apparent cures were real and permanent.

(1) Of these 38 we know nothing, merely because they have left the district from which the hospital draws its patients, and cannot be traced. It is not likely that simple migration from the south of London would place them in a worse position as regards recovery than the 21 patients whose cure we know to be lasting.

(2) The statement of Eustace Smith, that alternation of improvement and relapse are common, is not generally confirmed. Certainly, a definite recrudescence of symptoms after apparent cure is so uncommon that there is no trace of such an occurrence in our hospital records for the last ten years.

(3) Patients suffering from chronic and relapsing disease return time after time to the hospital, and we must suppose that, if many of these 38 patients underwent a relapse, some at any rate would have sought readmission.

Gairdner[1] gives three examples of recovery, the patients

[1] Quoted by Osler.

remaining well at the end of two years; the effusion had disappeared, but in two of them slight omental thickening persisted.

Boulland[1] finds at least 20 recoveries in 81 cases; but the permanence of the recovery is uncertain, except as regards three cases, in which good health persisted for ten, twelve, and seventeen years.

Of our 100 patients, then, one was removed by her parents; 38 cannot be traced—all left the hospital in fairly good health, and none have returned; 21 made good recoveries, remaining well for nine months to nine years; 40 died.

It seems, then, that we may conclude that 20 per cent. of patients suffering from tubercular peritonitis recover completely under medical treatment, and there is strong reason for thinking that this percentage of recoveries is very far below the truth.

Anatomical changes resulting in cure.—Peritoneal and pulmonary tuberculosis run parallel courses up to a certain point; in both cases the tubercles and the embedding tissue undergo a definite series of changes. But the parallelism soon ceases.

In the pulmonary disease there is a tendency to steady progress from end to end of the lung, so that at death all stages of tubercle are found associated. And further, though evidence of a healing process is not uncommonly seen, it must be remembered that, even if the healing be complete, the structure of the lung is none the less damaged, and the function of an important organ thereby permanently impaired.

The peritoneum, on the other hand, is subject to one general infection with tubercle; there ensues the series of changes in the tubercles and peritoneal tissue which has already been described. But the disease is not progressive; the deposit of tubercle is over. If death occurs, the peritoneal tubercles are found to be of the same age and state throughout the abdomen; if recovery, there remains no more serious damage than the thickening or local adhesion of an unimportant structure.

The changes that result in cure are well known. They

[1] Quoted by Osler.

may be watched during life, and may often be seen in cases that subsequently die of other diseases.

The fluid is absorbed, often becoming encysted during the process; adhesions are formed to a greater or less extent; and the tubercles undergo a fibroid change, and may disappear entirely.

How complete the recovery may be is seen from the following cases.

(1) F. B—, æt. 10, was admitted in January, 1888, under the care of Dr. Bristowe. About two months before admission he was suddenly seized with illness, in the course of which his abdomen became distended with fluid. On admission his abdomen was distended, but contained only a small quantity of fluid. Absorption was doubtless proceeding. In February Dr. Bristowe notes that there is some thickening round the umbilicus, and later he figures a resistent mass in the lower part of the abdomen, which the house physician describes as "lumpiness." Four years later this boy is a ruddy youth, with perfect health, and a soft normal abdomen.

(2) H. B—, æt. 2, was seen as an out-patient in the summer of 1887. He was suffering from a painful distended abdomen and slight ascites, and a diagnosis of tubercular peritonitis was made.

A year later he died of intestinal obstruction, which was produced by a diverticulum. There was found post mortem a local patch of thickening on the parietal peritoneum, in which a little caseous matter was embedded (this, by the way, gave rise to an erroneous conclusion that the child was suffering from intussusception when the symptoms of obstruction set in); there were a few adhesions among the intestines, and in these were some old tubercular nodules, and there was a caseous nodule in the spleen.

Osler gives the case of a man, æt. 38, who died of phthisis three months after the onset of tubercular peritonitis. Cure was even then nearly complete; the peritoneal cavity was obliterated by adhesions, and here and

there in the adhesions were pigmentations and small, hard, dark tubercles.

Kümmel[1] quotes a case of a woman, upon whom laparotomy was performed for peritoneal tuberculosis, with apparent recovery. Death occurred from phthisis eight months later, and no trace of the granulations was found.

In another case quoted by him, in which the peritoneum was accidentally found to be studded with tubercles, no trace of them could be found at the autopsy a year and a half afterwards.

Keetley[2] mentions a case in which the existence of tubercular peritonitis was demonstrated by operation ; two years later the abdominal scar gave way, and, in radically curing the hernia thus produced, he found no sign of tubercle remaining.

B. *Curability by Operative Treatment.*

A large number of cases have now been recorded as recoveries after operation ; but to compare them fairly with the series of unselected cases above described, and to draw an unbiassed conclusion, is not an easy matter.

It must be remembered that cases which show no improvement, or die soon after operation, are seldom recorded, that cases for operation are selected, and that the word recovery is very loosely used, and often means no more than ability to leave the hospital.

Still, when all this is granted, it must be confessed that these operative results are well worthy of attention. The modest estimate of König, with its basis of figures, is of itself sufficient to justify a review of the position. But if we were to place any trust in the wilder and more general statements, this disease ought never again to be seen in a medical ward.

Maurange[3] may be taken to supply 68 cases, of whom 13 died soon after operation, 15 disappeared, 14 remained alive at the end of six months, and 26 at the end of twelve months.

[1] 'Archiv f. klin. Chir.,' 1888, Bd. xxxvii.

[2] 'Lancet,' 1890, vol. ii, p. 1028.

[3] 'Thèse de Paris,' 1889.

Homans[1] records 2 cases:

(1) Ascitic form of the disease. The patient being extremely ill, and thought to be near her end, twelve pounds of fluid were removed, and the abdomen sponged out, but no drainage-tube inserted. The wound, which had healed, broke down three weeks later. She was quite well two and a half years later, but still had a sinus discharging a small amount of pus.

(2) A supposed ovarian or parovarian cyst. One Fallopian tube and ovary removed, the abdomen sponged out, and drainage-tube inserted, but withdrawn on the third day. She was well but not very strong eight months later.

Homans operated in a third case (quoted by Osler), the patient leaving hospital well in three months; a fourth case is included in Maurange's table.

Goodell (quoted by Osler) has operated in 4 cases. They were all of the ascitic form, and in each case the presence of an ovarian tumour was suspected. Of these, 3 apparently recovered, and one seems to have died six months later with recurrent ascites and a pelvic tumour.

Mundé (quoted by Osler) has operated in 3 cases with ascites, of whom 1 died of phthisis two months later, and the other 2 made only a temporary recovery.

Kelly (quoted by Osler) gives 4 cases:

(1) Some months after the first operation, a second became necessary, the patient remaining alive and well four years later.

(2) After diagnosis of a doubtful tumour, an encysted collection of pus was found and drained; the patient died of phthisis a year later.

(3) In this case a parovarian cyst was diagnosed. The abdomen was drained, but the fluid reaccumulated; on three subsequent occasions the peritoneum was incised and drained, and at the last operation the right tube and ovary were removed. Nine months later there was still fluid in the abdomen.

(4) Tubercular peritonitis was found in the performance of ovariotomy; the ovarian tumour was removed and 500

[1] 'Lancet,' 1888, vol. i, p. 268.

c.c. of ascitic fluid drained off. The patient was well at the end of two months.

Gardner[1] operated on an encysted collection of pus, the patient dying in six weeks.

Wilson (quoted by Osler) operated on a supposed case of ovarian cyst, and found the peritoneum studded with miliary tubercles; the patient died six months later.

Dudley (quoted by Osler) removed a double ovarian tumour from a case of tubercular peritonitis; the patient lived for four years, but a fistula remained.

Späth[2] reports 4 cases: (1) died after the operation; (2) died of phthisis at the end of three months; (3) died of intestinal ulceration four months later; (4) had intestinal disease, but the result unknown.

Van der Warker[3] drained a case of the ascitic form, the patient being well and robust at the end of three months.

Imlach[4] mentions 5 cases on which he had operated, of which one remained well at the end of four years, while the rest apparently recovered, though their subsequent history is unknown.

Schmidt[5] gives 2 cases, one dying at the end of five months, the other being well more than a year after the operation.

Greig Smith[6] has operated in 2 cases:

(1) A case of encysted ascites, in which the abdomen was washed out; the patient died at the end of six months.

(2) A case of general peritoneal tubercle with caseation, but without fluid or adhesions; it was thought to be hopeless, and nothing was done.

Spencer Wells opened and drained the abdomen in a case of supposed ovarian cyst, the patient remaining well twenty-five years later.

Naumann[7] records a case of tubercular ascites in which he drained and washed out the abdomen; the patient ap-

[1] 'Canada Med. and Surg. Journ.,' vol. xiii.
[2] 'Deutsch. med. Wochenschr.,' 1889, No. 20.
[3] 'Journal Amer. Med. Assoc.,' 1887, Nov. 5th.
[4] 'Brit. Med. Journal,' 1889, Dec. 14th.
[5] 'Centralbl. f. Gynäc.,' 1889, No. 32.
[6] 'Abdominal Surgery.'
[7] 'Jahr. f. Kindh.,' 33.

parently recovered, but nothing is known of the subsequent history after the first few months.

Keetley[1] mentions 2 cases, in both of which there were symptoms of intestinal obstruction. One, in which there was found much matting of the intestines, died in sixteen days; the other was well two months after the operation.

Mayo Robson[2] has operated in 2 cases:

(1) A case of tubercular ascites, four pints of fluid having been previously removed by paracentesis. On operating (the patient being extremely ill) several pints of fluid were drained off, a tube and ovary were removed, the abdomen irrigated with salufer solution, and a drainage-tube inserted. He thinks that life was saved for a month.

(2) Diagnosed as pyosalpinx; the adhesions were found to be too strong to allow manipulation, and the abdomen was sponged out. A pelvic abscess was afterwards aspirated through the vagina. The history is unknown after the first three weeks.

Lawford Knaggs[3] records a case which was diagnosed as an ovarian cyst; the abdomen was washed out with many pints of warm water; recovery was good, at any rate for a year.

Clarke[4] operated on a case in which tubercular peritonitis was diagnosed, and washed out the abdomen with 1 per cent. carbolic solution; the patient was well two months later, but the further history is not known.

At this hospital Croft, in 1884, opened the abdomen of a girl who presented a central encysted collection of fluid; tubercles were seen, the fluid removed, and the abdominal wound closed; the patient left the hospital well at the end of a month, but her subsequent history is unknown.

Pitts has operated in 3 cases, which have made good recoveries, one for four years, one for two years, the third, at any rate, for nine months; the first two of these cases will be subsequently alluded to.

More recently Cullingworth, as already described, has

[1] 'Lancet,' 1890, vol. ii, p. 1028.
[2] Ibid., 1888, vol. ii, p. 1170.
[3] Ibid., 1887, vol. ii, p. 917.
[4] Ibid.

made an abdominal exploration in a case of the mild form of tubercular peritonitis, the patient being quite well a year later.

The results of these 112 cases are as follows:

One was unrelieved; 26 apparently recovered from the operation, but nothing more is known; 28 died soon after the operation; 57 made a more or less complete recovery (nearly 50 per cent.). Of these 1 remained well for twenty-five years; 4 for four years; 1 for two and a half years; 1 for two years; 29 for one year; 1 for nine months; 1 for eight months; 14 for six months; 2 for three months; 3 for two months.

Rationale of operation.—What is comprehended under the term operation in these cases? There is (1) in a few cases the clear wish to deal actively with the recognised disease. The abdomen is freely opened, fluid is removed, lymph and caseous material are, as far as possible, washed away, and the actual cause of the local disease is attacked with an antiseptic solution.

But (2) in most cases the opening is made under an erroneous diagnosis; ascitic fluid is withdrawn, but nothing further attempted.

And (3) in some the operation is a pure exploration, and tubercles being seen the abdomen is forthwith closed.

The first mode of procedure is intelligible, and may well find advocates. The second mode does not greatly differ from the old-fashioned treatment by paracentesis, unless the actual incision of the peritoneum is held to be the essential point. But what shall be said of the third mode—the making of a small opening into the abdomen, the gazing on the tubercle-studded peritoneum, and the possible disturbance with the finger of the parts immediately below the wound?

It has, in fact, been urged that such simple incision into the peritoneal cavity is the essential element of success in all these modes of procedure.

For instance, Lawson Tait (quoted by Osler) writes in 1889, "That some emphatic physiological change is at once set up by opening the peritoneal cavity is clearly indicated by the uniform onset of a most distressing thirst, which lasts

for days, and is not seen so markedly after any other operation known to me. Let the incision in the abdominal wall be made down to the peritoneum, but let the serous cavity remain unopened, and this thirst is not marked. But let the peritoneum be opened but a finger's breadth, and the result is marked."

He says further, "That a therapeutic change is effected in the peritoneum itself by the mere opening of the cavity is now universally recognised in the treatment of what we call tubercular peritonitis by abdominal section. I have now had a large experience on this point, and can say positively that we can cure permanently and speedily cases that have gone even as far as suppuration by opening and cleansing. But in the bad cases, in all probability, the cleansing is never complete, no matter how much time and care are spent on it. And in the non-purulent cases I very often do no cleansing at all, but merely empty out the serum and put in a drainage-pipe. Yet the majority of these cases are cured by these simple means." This is not reassuring.

It may well be that at the bottom of all this there lies the old false creed that tubercular peritonitis is almost invariably fatal.

With the extension of promiscuous abdominal surgery, many cases of this disease, having been accidentally revealed by an exploratory incision, were subsequently found to recover. Upon this ground there took root and grew the idea that such cases could be cured by operation, and by operation alone.

Finally, when these operative successes came to be reviewed, it was realised that the operation, in the bulk of them, amounted to no more than incision of the peritoneum.

The conclusion was irresistible. The opening of the peritoneum, by "but a finger's breadth," came to be regarded as a therapeutic force, capable of effecting the retrogression of tubercle over the length and breadth of that structure.

To complete this evolution of a principle, an explanation, which should fit this new remedy, had still to be found; but the *à priori* search after it has hitherto produced nothing more serious than a suggestion that it is in some way connected with thirst.

Conclusions.—A perusal of these published cases, taken in comparison with the results of our hospital practice, leaves a strong impression on the mind—

(1) That these operative successes occur in the cases of moderate or extreme ascites, *i. e.* in the very cases which I have endeavoured to show so commonly recover under medical treatment.

(2) That there is very little difference in the mortality of these cases whether operation is resorted to or not; that such slight difference as does appear is in favour of the operative method of treatment.

(3) That no harm seems ever to result from laparotomy in this disease, and that even in the most gloomy of the published cases some degree of improvement seems to have set in after operation.

(4) That such merit as may be allowed to surgical treatment lies (*a*) in a more prompt and more complete removal of fluid than is commonly practised in medical wards, and (*b*) in removal of the larger lymph masses and caseous products which impede the natural process of recovery.

(5) That the washing out of the abdominal cavity with germicide solutions is not only futile, but wrong in principle; not that such feeble instruments are likely to do injury, though König[1] indeed has found from his 131 cases that the mortality is greater with their use than without.

Some Points in Treatment.

Though it seems that the surgical claims are extravagant, I nevertheless believe that, in the routine treatment of tubercular peritonitis, recourse should be had to surgical means both more frequently and at an earlier period than is commonly the case.

A. *In Mild Cases.*

When the peritonitis is slight or severe, the intestines are distended, and there is effusion of lymph or fluid in small quantity (41 of our 100 cases), the experience of this hospital seems to show that the tendency is towards natural

[1] Loc. cit.

cure under orthodox medical treatment. Laparotomy, with or without an attempt at antiseptic flushing, appears to be officious and unnecessary, though probably not harmful.

The local application of mercurial liniment, so warmly recommended by Fagge, has been fairly tried here in some ten cases, but I think without any definite result.

A local abscess of the abdominal wall, usually near the umbilicus, may require incision in this as in other forms of the disease; but it must be noted how frequently the skin in this position becomes red and glossy without subsequent formation of pus. In 2 of our 100 cases a local abscess formed; in 5 more there appeared a patch of redness without suppuration, and in one of these an incision was made by mistake.

B. *In the Ascitic Form.*

When fluid accumulates in the abdomen, until it is clearly evident in the flanks or appears above the symphysis pubis, or, it may be, produces dulness as high as the umbilicus, a divergence appears in practice as regards the promptness with which it is withdrawn.

Considering that the removal of all exudate is essential for recovery, it certainly does appear that to leave it to slow absorption is to lay upon nature an unnecessary task.

Moderate effusions are not dealt with, because a blind thrust with a trocar immediately above the pubes is attended with considerable risk, and the use of the trocar was introduced at a time when incision into the abdomen was an exceedingly dangerous measure.

But there can now remain no reason why in all cases of tubercular ascites, moderate or extreme, the fluid should not be withdrawn by means of a suitable incision. If this were practised there would be gained a withdrawal of fluid and of inflammatory and caseous products more complete than is ever effected by paracentesis; and, moveover, the case of moderate effusion, which is inaccessible to the trocar, would receive a prompter relief, and would be earlier set on the way to recovery.

Of our 100 cases, 23 presented considerable ascites; 19

apparently recovered, of whom 9 were tapped at least once; 4 died, of whom one had been tapped three times, while the abdomen in the other 3 was found at the autopsy to contain four, ten, and thirteen pints of fluid respectively.

c. *In the Suppurative Form.*

When pus is present, recovery is probably impossible without evacuation by art or nature.

It may be present in considerable quantity without giving any obvious indication of its character, and here again appears the importance of the early withdrawal of fluid.

If this suppurative form is not complicated by perforation of the bowel, or disease of the Fallopian tubes, it shows no great tendency to death. In 2 cases of our series the pus was spontaneously discharged at the umbilicus; in a third case it was discharged both at the umbilicus and through the lung; a fourth case was incised and drained. All four cases recovered.

In the same series, however, 8 died unrelieved. I can find no published record of any attempt to deal actively with such cases as these, and the conditions, it must be confessed, are sufficiently grave.

In three of these the pus lay in several small collections, here and there, from the diaphragm to the floor of the pelvis, embedded in strong intestinal adhesions, with, in one case, gross disease of the Fallopian tubes. In two cases there was a large pelvic abscess, with disease of the tubes in one case and advanced phthisis in the other. In the remaining three there was perforation of the bowel by external ulceration, and a pelvic fæcal abscess resulting.

Exact diagnosis of these conditions is difficult or impossible; but as, notwithstanding their gravity, some of them seem not to be hopeless, and as, without help, cure cannot be looked for, an exploration should be made at the earliest opportunity, and any possible mode of procedure may be then adopted.

The harm, if any, which would result in some cases from exploration would be more than counterbalanced if by its means a curable condition should from time to time be found.

After exploration it is open to anyone to judge of the propriety of further operative measures.

The existence of advanced phthisis can be with certainty recognised beforehand, and will be allowed to preclude all active treatment.

But the case of the localised pelvic abscess with diseased tubes would surely afford some hope.

In the case of multiple collections of pus and intestinal adhesions, more or less strong, the prospects would vary with the accessibility of the pus and the strength of the adhesions.

Finally, when the bowel is perforated in this disease, it is to be noted that the perforation is nearly always due to a local ulcerative process from without, and that this form of perforation differs essentially from that occurring as a result of internal ulceration, in that a general adhesive process always accompanies and usually precedes it. In all of our instances the bearing of this can be seen. For in them all, not only was the resulting fæcal abscess strongly limited, but the upper three fourths of the abdominal cavity had long been obliterated, and natural cure was in fact not far from completion.

D. *In the Adhesive Form.*

During the process of cure more or less adhesions between the intestines, or between the intestines and the parietal peritoneum, are of very common occurrence.

In most cases no symptoms result; but it is not uncommon for patients at this stage to suffer from irregular and impeded peristalsis, or intermittent obstruction of the bowels, and their symptoms may be so urgent as to call for exploration.

Two cases of this kind have recently occurred at this hospital. In one of these not only did the exploration serve to show the nature of the case, but, through the manipulation entailed by it, the cause of the incomplete obstruction was apparently removed.

(1) P. H—, æt. 11, was admitted in June, 1888, under the care of Dr. Sharkey. He had been suffering for some three months from attacks of incomplete obstruction

attended with very severe pain ; the first onset of symptoms was sudden, and there was nothing in the previous history to suggest the nature of the case.

There was some sense of resistance above the umbilicus, and it was to this spot that the pain was usually referred ; the abdomen was otherwise natural.

On exploration of this spot by Mr. Pitts, the peritoneum was found sprinkled with tubercles, and there was some matting of intestines in this position.

The symptoms were relieved, and he is now, to all appearances, a perfectly healthy boy.

(2) A. D—, æt. 51, was admitted in May, 1890, under the care of Dr. Bristowe. For a month before admission she had been losing flesh and not feeling well, but had shown no symptoms of abdominal disease. Four days before admission she was seized with violent pain in the right side of the abdomen, with severe vomiting and absolute constipation.

On examination there was no tangible sign of disease beyond a slight fulness in the cæcal region, which was suggestive of coherent and distended intestines, but the patient was extremely ill.

An exploration by Mr. Pitts showed that the peritoneum was studded with yellow granules and nodules. Castor oil was then fearlessly used, and, while the obstructive symptoms were speedily removed, the patient made a slow but good recovery.

Two years later she remains in good health.

It is noteworthy how, in both cases, there was nothing in the previous history to indicate the existence of tubercle on the peritoneum, and the same point is seen in the two cases recorded by Keetley.[1]

Tubercular peritonitis may thus lie latent until it is discovered accidentally in the operating room, or gives rise to a sudden obstruction of the bowels, and it is possible that many such cases pass through our hands unrecognised.

[1] Loc. cit.

ON VEGETABLE GROWTHS

AS EVIDENCE OF THE PURITY OR IMPURITY OF WATER.

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The causes of the impurity of drinking-water, and the best means of ridding it of its impurities, are among the most pressing sanitary questions of the day. A very important investigation is now being carried on, conjointly by the London County Council and a Committee of the Royal Society, on the vitality of pathogenic bacterial germs in water. The influence on the purity of water of more highly organised vegetable growths has not as yet received much attention ; but it is possible that a series of systematic observations on this subject may yield important practical results. Having had occasion recently to pay some attention to this subject, I would commend the following preliminary observations to those who are able to assist in a more detailed inquiry, which I hope to carry out.

The vegetation of running streams may be conveniently classified, for our present purpose, under four heads, viz. :

I. *Flowering Plants.*
II. *Fungi.*
III. *Algæ.*
IV. *Characeæ.*

We may take these up in succession.

I. Flowering Plants.

The flowering plants which grow in running water, either rooting in the soil, or, in some cases, continuing to grow vigorously when floating and unattached, are numerous. Among the more common in our own country are species of *Potamogeton, Callitriche, Utricularia, Myriophyllum,* &c., and the *Elodea canadensis* or "Canadian waterweed," an importation from America, which has propagated itself (non-sexually) to an enormous extent in our rivers and canals, greatly assisted by its power of deriving nutriment from the water alone without any root-attachment to the soil. Since the vital phenomena are the same for green water-plants as for green land-plants, and the process of assimilation is far more energetic in the daytime than that of respiration, they must constantly be giving off oxygen into the surrounding water, and their influence on the purity of the water must be uniformly favorable. Moreover, none of this class of plants are able to withstand the injurious effects of a large amount of fæcal or other pathogenic organic impurities in the water; and their presence, if in a healthy flourishing condition, must be regarded, not only as beneficial, but as a sign of comparative purity of the water.

II. Fungi.

Excluding the Schizomycetes or Bacteria, a consideration of which does not come within the scope of the present paper, the number of aquatic fungi is small. Of these some, like the *Saprolegniaceæ*, are parasitic; and the only aquatic fungus which practically comes into consideration in relation to the purity of water-supply is the so-called "sewage-fungus," *Beggiatoa alba*. Since all fungi which are not parasitic are saprophytic—*i. e.* derive their nutriment from organic compounds in a state of decomposition—their occurrence is in itself sufficient evidence of the presence in the water in which they grow of putrid or decomposing organic substances; and since they do not assimilate in the proper sense of the term—*i. e.* do not decompose carbon dioxide,

and produce carbo-hydrates or other similar compounds—they can exercise no purifying influence on the water by the disengagement of oxygen. In a former volume of these Reports[1] I have described the structure and vital phenomena of the "sewage fungus" as it occurs, in enormous quantities, in the effluent water from sewage works. A few words only in addition will suffice here. *Beggiatoa alba* occurs in two forms—what may be called the *Eu-beggiatoa* and the *Crenothrix* form. The former is the especial characteristic of sewage effluents, and of water containing a large amount of sulphates. The filaments are of considerable diameter (1—5 μ), and possess the remarkable property of containing within them refringent globular particles of sulphur. In the *Crenothrix*-form *Beggiatoa* forms a flocculent slimy mass, of a dirty white colour, generally lying at the bottom of the water; the very delicate filaments of which it is composed can only be made out with a high power of the microscope, and there is little or no precipitation of sulphur. It is, however, an unfailing sign of the presence in the water of a large quantity of deleterious decomposing organic compounds. I have almost always found it to be accompanied by fæcal matter; and water in which the least trace of it occurs should be entirely discarded for drinking or culinary purposes.

III. Algæ.

The algæ of fresh water are exceedingly numerous, many of them visible to the naked eye, consisting of dense masses of green threads, or forming a scum on the surface; a much larger number are revealed only by the use of the microscope. They may be classified for our present purpose under two heads, viz.:

a. Blue-green Algæ.
b. Chlorophyll-green Algæ.

The diatoms, of which a few words presently, are not included under either of these heads.

[1] See 'St. Thomas's Hospital Reports,' vol. xiii, for 1883.

a. Blue-green Algæ.

The blue-green algæ, or *Cyanophyceæ*, found in running water, comprise the following orders: the *Nostocaceæ*, *Oscillatoriaceæ*, *Rivulariaceæ*, and *Chroococcaceæ*, of which the last consist of detached cells, the first three of filaments of cells, the *Nostocaceæ* being distinguished by the moniliform or necklace-like appearance of the filaments. The individual cells or filaments are in almost all cases invisible to the naked eye; but the *Rivulariaceæ* grow in tufts, often the size of a pea, invested in gelatine, and attached to water-plants; and several genera of *Nostocaceæ* and *Oscillatoriaceæ*, *e. g. Anabæna, Aphanizomenon, Oscillatoria, Lyngbya,* &c., often form a scum of considerable thickness on the surface of the water. The *Cyanophyceæ* do not contain chlorophyll in the ordinary sense of the term, *i. e.* in the form of distinct chlorophyll-grains or chlorophyll-bodies; the nature of their cell-contents or endochrome is not yet fully determined. It probably contains a modification of chlorophyll in solution; but the amount of oxygen which they give off into the water is, at all events, exceedingly small, and they can exercise no appreciable purifying influence; while in their decay they frequently give out noxious and fœtid gases, and their presence in the water in any considerable quantity should be regarded as rendering it unfit for domestic purposes. Étard and Olivier[1] state that *Oscillatoria* has the same property as *Beggiatoa* of withdrawing sulphur from water containing sodium or calcium sulphate in solution, causing an exhalation of sulphuretted hydrogen.

The diatoms—among the most beautiful and interesting objects in nature for microscopic investigation—resemble the *Cyanophyceæ* in not containing green chlorophyll-bodies; but they are protected by a hard transparent siliceous cell-wall. They occur in enormous masses, but more especially in stagnant or brackish water; and their presence, except when in excessive quantities, does not appear to produce an injurious effect on the water.

[1] 'Comptes Rendus,' xcv (1882), p. 846. See 'Journal Royal Microscopical Society,' 1883, p. 258.

b. Chlorophyll-green Algæ.

The chlorophyll-green algæ, or *Chlorophyceæ*, include by far the larger number of species of the vegetation of running water. A very large number of them are unicellular microscopic organisms; others consist of green filaments, often forming dense mats, and the individual filaments of sufficient thickness to be perfectly visible to the naked eye. Though something must be said about some other members of this group, those with which we are chiefly concerned belong to the two families *Conjugatæ* and *Confervaceæ*.

The *Conjugatæ* are either filamentous or unicellular algæ, the former including the well-known genera *Spirogyra* and *Zygnema*, the latter the desmids; both comprising microscopic objects of great beauty and interest. Although found in stagnant as well as running water, the *Conjugatæ* are extremely sensitive to organic impurities of a putrescent character; they rapidly perish in water that is not well charged with oxygen, and, when found in any quantity—or, at all events, if occurring in the reproductive condition, *i. e.* displaying the phenomenon of "conjugation"—it may be taken as a certain evidence that the water contains no considerable quantity of deleterious organic ingredients. They give off into the water an appreciable amount of oxygen, and thus contribute to purify it, and their cell-walls are so thin that but very little noxious gas can be given off in their decay.

To the *Confervaceæ* (using the term in its wider sense, as including the *Cladophoraceæ* and *Chætophoraceæ*) belong some of the most abundant of freshwater algæ, found in almost every running stream, members of the genera *Conferva* and *Cladophora*. Two species of the latter genus in particular, *Cladophora glomerata* and *fracta*, are frequently found in vast masses of densely interwoven dark green filaments, and are popularly known as "blanket-weed." I find it to be a very prevalent opinion among riparian dwellers that the "blanket-weed" is an extremely noxious growth, and that its rapid increase during recent years in some suburban streams is an evidence of the increasing

foulness of the water. On this point I want further evidence. Though the *Cladophora* is undoubtedly, probably in consequence of its comparatively thick cell-walls, more tolerant of organic impurities in the water than other more delicate algæ, such impurities must be injurious rather than helpful to its growth; and it can itself, while in a growing condition, only have a beneficial influence in giving off oxygen gas into the water, the quantity of chlorophyll which it contains being very large. It should, however, be borne in mind that all freshwater algæ contain carbo-hydrates or similar compounds, either in the form of the cellulose of which their cell-walls are composed, of the starch contained within their cells, or of the envelope of mucilage with which they are frequently surrounded; and it is quite possible that noxious gases may be given off by the decay of these substances in conjunction with that of protoplasm. In connection with this subject, I may mention the following circumstance. I was last autumn asked by our colleague, Dr. Seaton, to examine and report upon the nature of a brown fœtid scum on the surface of a mill-pond in Surrey, not far from Croydon. I found it to consist almost entirely of flour, which was being attacked and decomposed by countless myriads of bacteria. It is no doubt desirable that any great accumulation of the *Cladophora*, or other filamentous algæ, in streams from which water is obtained for domestic purposes, should be prevented. Much yet remains to be ascertained with respect to the natural checks on this accumulation. An interesting series of observations has been carried on by some Italian naturalists on the consumption of seaweeds by marine fish;[1] but whether freshwater fish, or whether swans and other water-fowl, feed to any extent on freshwater algæ, is a question on which I am not aware that trustworthy observations have been made. Fish may frequently be seen nibbling at water-plants; but whether for the sake of the plant itself, or of the animals that nest in it, I do not know. Examination of the contents of the intestines of freshwater fish, similar to that which has been made with regard to the fish of the Mediterranean, would settle the question.

[1] See 'Journal Royal Microscopical Society,' 1887, p. 787.

Other algæ, besides those belonging to the families already mentioned, are occasionally found in considerable quantities in running water. In the only paper with which I am acquainted in botanical literature, on "Freshwater Algæ, and their relation to the purity of public water supplies," one contributed by Mr. G. W. Rafter to the 'Transactions of the American Society of Civil Engineers,'[1] he mentions two as having rendered water in the vicinity of Rochester, in the State of New York, unfit for drinking purposes during recent years, viz. *Volvox globator* and *Hydrodictyon reticulatum*. The latter alga, commonly known as the "water-net," makes its appearance sporadically in great quantities in both stagnant and running water; but I have not myself met with any evidence of the noxious properties attributed to it by Mr. Rafter. *Volvox* has, on more than one occasion, appeared in enormous quantities in the reservoirs which supply Rochester with water, imparting to it a fishy taste and odour, and apparently causing sickness and death among the cattle which drank of it. Such excessive development of this minute and beautiful organism is, however, extremely rare. I have never met with an instance.

IV. Characeæ.

The *Characeæ*, popularly known as "stoneworts" or "brittleworts," are a small group of freshwater or brackish plants, included by many writers under the Algæ, but with organs of reproduction which indicate a closer alliance with the higher families of Cryptogams, especially with Muscineæ. The greater number belong to the two genera *Chara* and *Nitella*, and grow submerged in stagnant or running water. They derive their English names from the remarkable property possessed by many species of extracting calcium carbonate from the water in which they grow, by which the whole plant becomes covered with a calcareous incrustation. Their occurrence is no evidence of the presence of organic impurity in the water; but since, when decaying, they give off a strong fœtid odour, accompanied by evolution of sulphuretted hydrogen gas, they must be regarded as noxious.

[1] See 'Journal Royal Microscopical Society,' 1890, p. 489.

Enough has been said to show that much remains to be learnt with regard to the relation between the purity or impurity of water, and the aquatic vegetation found in it ; and that a systematic investigation of the subject may possibly lead to important practical results. Further details of the life-history of the various organisms referred to above will be found in Bennett and Murray's ' Handbook of Cryptogamic Botany.'

N.B.—Since writing the above, I have received a very interesting paper, "Sur la 'peste des eaux' du lac Balaton," by Dr. V. de Borbás, extracted from the 'Bulletin de la Société Hongroise de Géographie.' The "pest" of the Hungarian lake appears to consist of dense masses of floating flowering plants, chiefly several species of *Potamogeton*. It is not, however, alleged that these plants have any injurious influence on the wholesomeness of the water of the lake; they simply interfere with the navigation and with the fishing.

SPECIFIC DISEASES

CONSIDERED WITH REFERENCE TO THE LAWS OF PARASITISM.

By JOSEPH FRANK PAYNE, M.D., F.R.C.P.

The micro-organisms, which are the cause of specific diseases, live, for a part at least of their lives, in another organism. This portion, at least of their life, is a parasitic life, even if the whole should not be so, and this parasitic life would not occur unless it were in some way an advantage to the parasitic organism, supplying to it the necessary conditions of existence, and also furthering the continuance of its species. If it were not advantageous to the organism in these respects the species would come to an end, unless, that is, it should have some other means distinct from parasitism, of continuing its race. Hence the specific disease has to be looked at, not only as an event in the life of the affected person or animal, but also as an episode in the life history of the parasitic micro-organism. Its laws, or the symptoms of the disease have to be considered, not only in relation to the welfare of the patient, as making for recovery or making for death; but also in relation to the micro-organism whose welfare this parasitic episode must necessarily serve.

In order to discuss this question we must first consider

the laws of parasitism in general; and these laws are best exhibited in the case of animal parasites, since their biology is more thoroughly known. Parasites are spoken of as of two kinds: as true, necessary, or "obligate," and as occasional or "facultative" parasites.[1] The former must necessarily spend the whole or part of their life in, or on another animal; the latter have a regular scheme of life in external nature, only occasionally living for a time in other animals. Tapeworms are the best instance of the first, since their development is quite inconceivable except as intestinal parasites; their free life being merely a passive existence, as ova or simple embryos.

Occasional parasites are not really very numerous. Perhaps the larvæ of blowflies, which are occasionally found in neglected and putrid wounds, instead of in their natural habitat, the carcases of animals, are the best example; and dipterous larvæ, sometimes found developing in the human intestine, furnish a still stronger instance.

But a more important case, in its bearings on human pathology, is that of certain organisms which are necessary parasites in certain species of animals, but are found in the human subject only occasionally or accidentally. Such, for instance, are the liver-flukes of sheep, whose life history is necessarily related to the feeding of sheep on damp pastures; and the passage of the immature parasite through an intermediate host, a fresh water mollusc. These can only be found accidentally in the human liver, since the conditions of existence there do not permit the parasite to pass again into its intermediate host. This will be the case, generally speaking, with all liver parasites and flesh worms of man such as *Trichina spiralis* and the cysticerci; since under existing conditions, they will very rarely find their way back into their intermediate host, and hence the human parasitic existence will be no part of their regular cycle of development. The same is true of such an insect as the *Leptus autumnalis* or harvest bug, which is certainly only an accidental parasite of man, though said to be a regular

[1] The awkward word "obligate" is sometimes used in English books; imitating the German, but if it merely means *necessary* surely it is *unnecessary*, and "obligatory" would be better English.

parasite of certain insects. In cases like these the existence of the organism as a human parasite will not supply the key to the problem of its continuance; but by tracing it through another allied host, or by analogy, we may see what its complete cycle of life is, and would be, perhaps, even in man, but for artificial restrictions.

Confining our attention to the true or regular parasites, it is proposed to consider—

(1) What advantage their parasitic life gives them over the allied non-parasitic forms; and thus how far their adoption of, and adaptation to, a parasitic life may be considered as a factor in the evolution of the species by natural selection.

(2) How far the conditions of parasitic life are adapted to secure the continuance of the species.

(3) The action of the parasite upon its host, and the reaction of the latter; and how far both of these are beneficial to the parasite.

I. Evolution of Parasites.

It must be assumed that parasitic animals generally must have been developed out of forms not parasitic; since even if one parasitic species was developed out of another, suppose, for instance, the parasites of Vertebrata out of those of Invertebrata (though there is no evidence of this), still we should come back to non-parasitic forms ultimately. The original forms would not have been necessarily lower in organisation, as in most instances of transformation of species, but probably higher since parasitism involves degeneration. Little has been done in this branch of investigation, but the study of the phylogeny of parasites would be in the hands of a competent naturalist, a most instructive branch of Darwinian biology. If Darwin himself had added to his classical studies in evolution one on the evolution of parasites, he might have thrown marvellous light on the subject.

One who is not a naturalist can hope only to point out some of the more obvious facts bearing on the production of

parasitic species, especially from the point of view of natural selection or the survival of the fittest.

For this purpose it is necessary to consider some group of parasites having near allies in free-living species. The tapeworms, for instance, are so peculiar in structure as to offer no clue to their line of descent; but the parasitic intestinal Nematoda seem to offer an instance in point. The nearest allies of the parasitic Nematoids are evidently the free Nematoids, living on water and feeding on decomposing organic matter. The nutrition of such creatures, whether abundant or not, is often precarious, and by the drying up of the stagnant pools in which they live they may be often threatened with extinction. Now such worms must often be carried into the intestines of larger animals drinking the water, and if they were able to accommodate themselves to the conditions of existence there, they would evidently have great economical advantages: they would have abundant supplies of food, and high equable temperature. Moreover, since the larger animals would desert dried-up-pools, and go where there was water, so the parasites or their progeny would be carried from exhausted to fresh supplies of water. Supposing, out of many that are swallowed, a few individuals, or one should survive so as to produce ova; these ova would be deposited in a favourable situation to develop, and to be swallowed again by the same species of animal. A certain number of the brood would go through the same experiences and if any of them happened to be suited to life in the intestines of a host, they would remain there. Their progeny again would undergo a natural selection by which the fit would be retained as parasites, the unfit eliminated, till at length it is easy to see that a species of Nematoid might be produced, which would spend all its adult life as a parasite, and its embryonic life only in the water. When such a species had once established the habit of passing through a cycle from the intestine to the water, and back again from the water to the intestine of another animal, it would have great advantages in the struggle for existence, its fertility being heightened by the high temperature and abundant food of its parasitic life. Indeed, the multiplication of parasites introduced into the animal body is an almost invariable

feature, and of itself might account for the establishment of a parasitic species.

The evolution of a tapeworm or other parasite requiring an intermediate host to complete its life-cycle is evidently more complicated, and will not be entered upon now ; but if what has been sketched or anything like it, of the manner in which parasitic animal species have been formed, be true, a similar theory will apply to the evolution of parasitic or pathogenic bacteria of which I shall speak later.

2. Conditions which secure the Continuance of the Parasitic Species.

It is not enough that a parasitic species should be evolved. It must, of course, acquire in the process such structural peculiarities as fit it for an entozoic life. These I do not propose to dwell upon. But it must also acquire the habits which make the continuance of the species possible, namely, the right way of entering the body of its host, and the right way of leaving it; that is by such a channel as brings it into the proper medium for its next stage of development ; either into free nature or into the body of its next or intermediate host. These conditions are regulated by three laws, which we may term the *Law of Entrance,* the *Law of Migration,* and the *Law of Exit.*

The law of entrance is generally simple. Most animal parasites enter with food or water into the digestive organs, whether they remain in those organs or not. A few may enter by the respiratory channels, and possibly a few by inoculation. The only habit or instinct necessary is that of an aquatic life, or that of a passive existence on the soil or on certain plants eaten as food ; the parasites in this stage of existence being for the most part quite passive. In the case of those which are through their whole life purely intestinal, nothing more is required. It is thought that some enter with dust into the respiratory organs, which is supposed, though not actually proved to be, the way in which the ova or embryos of *Tænia echinococcus* sometimes get into the human lungs and form hydatid cysts. This supposed

mode of entrance is noteworthy in connection with the assumed mode of entrance of tubercle bacilli into the lungs. But in this process also the echinococcus embryo or egg is quite passive.

The law of migration.—It is different when the parasite, after being received into the alimentary canal, migrates into other parts of the body, or produces embryos which migrate. In these cases the embryos, whether introduced from without or born in the body, display a remarkable activity, guided by what looks like a marvellous prescience of their future destiny, or at least by something quite comparable in its effects to the instincts of the higher animals. This law, which we may determine the law of migration, determines their course to that part of the body which offers the best chance for the continuance of its species. Thus the embryo of *Tænia echinococcus* passes by the portal blood, usually to the liver, which is likely to be the first point of attack when the carcase of its (herbivorous) host is eaten by the dog or wolf, which is the host of the parent worm. Even in other viscera it will equally find its way to its destination, assuming in all the form of a hydatid or echinococcus cyst. The embryos of human tapeworms set free in the intestines of oxen or pigs, find their way to become encysted chiefly in muscular tissue, which is the food of man. Embryonic trichinæ, born in the intestine, penetrate the tissues till they reach muscle, and slumber there till the death of their host allows them to be eaten by some carnivorous animal, when their intestinal life is repeated. Rats, which are probably the chief or most important hosts of Trichina, and are able to keep up the race without the aid of any other host, appear to have strongly cannibal propensities, and to devour the dead individuals of their own race. There are some still more remarkable cases of instinctive determination to the right part of the body; such as that of the *Pentastoma tænioides,* which in one stage of existence hangs in the nostrils of dogs or wolves, and its next stage after being dropped on the grass, is eaten by rabbits or other herbivorous animals, and passes straight to the liver. The perfection of this adaptation is marvellous, for when a dog or wolf eats a rabbit, and makes first, as has been said for the liver,

plunging its nose into it, the liver-parasite if not, as some think, first swallowed, at once attaches itself to the nostrils of the devouring carnivore, whence the eggs drop on the grass, to be again picked up by the rabbit. Other remarkable instances of special determination are seen in parasites which make their way to a part of the body by which they can best escape during life, as the Bilharzia or *Distoma hæmatobium* to the urinary organs, Dracunculus to the skin, and others which will be spoken of in relation to the law of exit.

The general conclusion from the law of migration is a very important one, which I mention especially for its bearing on the case of vegetable parasites or microbes, namely, that the part of the body to which the parasite determines itself is an indication of the channel by which it has to pass into its next stage of existence, and might guide us to a knowledge of this next stage if it were unknown. Only it must be remembered that, as already mentioned, parasitic life in the human body is not always in the direct line of the succession of generations. Flesh worms and most visceral parasites, for instance, do not as a rule get further, the human body being buried and not devoured by carnivora. Hence we have to find that host which supplies the regular path for continuance of the species.

The law of exit.—In the case of purely intestinal parasites the law of exit is simple enough ; they leave at the opposite end of the digestive tract to that by which they entered. But in the case of those which migrate to other parts of the body, unless they remain passive till set free by the death of their host, there is always some arrangement which causes them to pass out of the body during life, and enter on their next stage of existence. In many cases this is effected by suppuration ; and often the two methods are combined. Hydatid cysts of the liver may suppurate, and thus discharge the echinococcus embryos outside the body. Sometimes this is effected by the cyst discharging into the bowels through the bile ducts. Hydatid cysts of the lungs discharge their contents through the air passages. The embryos of Bilharzia or Distoma hæmatobium make their way either into the urinary passages or into the intestines, and pass out by either channel. An extraordinary instinct

seems to guide the embryonic *Filaria sanguinis hominis* into the blood, and especially at that time, in the evening when its human host is visited by the mosquito which carries off the embryonic filaria to the water where it is to reach maturity. Such a tendency seems only explicable on the supposition that embryos having this habit of nocturnal migration would be preserved while others would be lost.

Another remarkable instance of the determination of a parasite to the most advantageous part of the body, is seen in the guinea-worm (*Dracunculus medinensis*), the mature female of which is found in the subcutaneous tissue of man, especially in the leg, and there produces numerous embryos, which are discharged, if left alone, by suppuration. Now, according to Fedschenko, this worm does not enter the body, as used to be thought, by the skin, but is taken in with drinking water, with its intermediate host, a small species of cyclops. From the intestinal canal, the female worm makes her way to the surface of the body ; and always in a *downward* direction. Why *downward* ? The only apparent reason is that it is better for the worm to take this direction ; that by reaching the surface of the lower limbs, it will give its progeny a better chance of getting into the water where their next home is to be. Putting aside the hypothesis of intelligent selection, we can only explain the evolution of this instinct by supposing, on Darwin's principles, that those individuals which have taken a downward course, have given to their progeny a better chance of survival, while those which have moved in other directions have been lost, and their race extinguished. Thus the downward instinct will have become fixed in the race. A similar explanation applies to many cases of vegetable parasites or the microbes of specific diseases.

3. Reciprocal Action of the Parasites and the Host.

We have now to consider the third condition of parasitic life, namely the action of the parasite upon its host, and the reaction of the latter. How far are these results beneficial or otherwise to the parasite ? These actions and re-

actions constitute the symptoms of the presence of the parasite, and, if considerable are called a disease. Now one large class of parasites, the intestinal worms, do not usually cause any disease, or if any, merely such as diarrhœa, which, though it may be of a defensive action on the part of the host, and remove some worms from the bowels, in the end favours the continuance of the race.

The only instance of an intestinal worm producing serious disease is the *Ankylostoma duodenale*, which brings its victims into a profoundly anæmic state; but this does not prevent the worm from multiplying abundantly. In general it is not in the interest of the intestinal parasite to cause a disturbance or to injure his host in any way. Sometimes on the contrary, for instance in the case of tapeworms, the parasite has an interest not only in the health, but even in the longevity of its host. This is because the longevity of the tapeworm itself is one of the factors which tends to preserve its race. For though tapeworms cast out enormous numbers of eggs, the opportunities for their development are so occasional and precarious, that a short-lived tapeworm has a very small chance of propagating its race, and hence, there will always be a natural selection operating in favour of longevity, till we arrive at tapeworms supposed to live ten or fifteen years in the intestines. It is evident then that early death of the host would be injurious to such a parasite.

But it is quite otherwise, or indeed the contrary, with the parasites of solid organs, flesh-worms, or trichinæ, cystic or bladder-worms, and so on. It has always been recognised that these are far more dangerous to life than any intestinal worms, their presence in the body constituting a serious, and often fatal disease. This, of course, arises from their attacking vital parts as the brain; or else producing in other organs, as liver and lungs, severe suppuration or other changes which endanger life. But if it were advantageous to these parasites as it is to tapeworms to preserve the life of their host, doubtless natural selection would have evolved corresponding instincts; whereas the fact that death is so often produced by them, shows that this result must generally be some advantage to the parasite. Evidently, this is so in the case of those encysted worms like trichinæ which await the

death of their host to start them on their new course of development—for them truly *Mors janua vitæ*—and the sooner it happens the better. Where the parasite produces an abscess, discharging externally, it is, of course, no advantage to the parasite that this should be fatal to the host, but also no detriment. Even if the host be thus liberated from his parasite, the parasitic race goes on. In parasitic diseases which are largely fatal, such as trichiniasis, or the liver-fluke disease of sheep, the continuance of the parasitic race by means of the dead body must be at least possible. It is well known how this happens in the case of trichinæ, and the more speedily death occurs, the more rapid will be the spread of the disease. The ova of the flukes of sheep get out through the bile ducts, and thus by the intestines during life; but evidently a dead carcass, rotting on the grass would spread about the parasites in such a way as to enable them to pass into their next home, the water. In general, great mortality from a parasitic disease, if a constant occurrence would point to a possible, if not actual propagation of the disease from the dead body. How this applies to the specific diseases produced by vegetable parasites, will be seen further on.

Of all the other actions and reactions constituting a parasitic disease some are directly in the interest of the parasite, some in that of the host. The former, at least those directly beneficial, need hardly be considered. Inflammation, often set up by parasites, would seem to be a defensive reaction on the part of the host; but the remarkable fact is that such processes, though they may be fatal to the individual parasite, assist in the continuance of its race. These defensive reactions are the elimination by diarrhœa, expectoration, suppuration, &c., and also the surrounding the parasite with a cyst or capsule which renders it inert. But all eliminative processes, provided the parasite be eliminated alive, as is generally, though not always the case, may help to continue the parasitic race. The other symptoms produced by animal parasites have no great importance. Nervous symptoms, such as convulsions, have no significance except as sometimes indicating a fatal result. Irritation may be considered as a conservative or protective reaction on the part of the host

as showing him where to attack and remove the parasite; but really in such cases as those of Acarus and Oxyuris, scratching, though it may remove the parasite from one spot, becomes the means of dispersing it to others. Fever is not often produced by animal parasites. When it is so, it is a part of a grave and often fatal disease, such as Trichiniasis, but it has no special significance except as leading to a fatal termination of the disease; the importance of which will be discussed presently.

The general conclusion is, that all the laws of parasitic life, that is of the relations of the parasite to its host, are adapted to secure the continuance of the race. In passive submission, and in its own active movements, the parasite shows a minute adaptation, which if it were regarded as instinctive would be marvellous, to the necessary conditions of its entrance into the body, its migration to a certain part, and its exit. Its struggles with its host, whatever may be the as regards the latter, equally tend to the preservation either of the individual parasite or of its progeny. The fate of the host himself may be either a matter of indifference to the parasite; or it may be in the interest of the parasite that the host should live long; or it may happen that the death of the host is necessary or auxiliary in bringing the progeny of the parasite into the next stage of its existence. Only when the latter condition is fulfilled is the parasitic disease likely to be frequently fatal.

Vegetable Parasites.

Evolution of parasitic species.—It must be supposed that vegetable, like animal parasites, have been evolved from free living forms, since they must have come into existence later than the animals on which they are parasitic. For their line of descent we must look to those forms which they most resemble, and which inhabit the medium from which the animal body derives each class of parasites respectively; viz. water, air, earth, &c. As examples of bacteria derived from and returning to water, we may take the bacillus of typhoid fever and the spirillum of cholera. The former is directly

allied to aquatic species, since it is mobile, provided with flagella to help its movements in a liquid medium, and probably spends an intermediate existence in water; though there is no evidence of its multiplying in that medium. It requires, therefore, no great stretch of imagination to suppose that it was originally developed from an aquatic species living in foul liquids, and that selected individuals of such a species became adapted to living in the intestines, where their multiplication would be favoured by high temperature, and by this adaptation they would be carried from one place to another, and thus when discharged from the bowels would be able to colonise fresh localities. As this appears to be an exclusively human parasite, its evolution must have been connected with human systems of disposing of excrement, and has become indissolubly associated with these arrangements.

The cholera-spirillum or vibrio, again, has evidently its nearest congeners among the spiral forms of bacteria so common in marshes and stagnant pools. This species appears also to be an exclusively human parasite, but its natural history could only be traced in those localities, in India where it is endemic. In our climate it is evident that the local conditions are not favourable to its becoming permanently established, since the European epidemics always die out after a year or two.

Bacteria which are transmitted through the air are, according to the researches of Percy Frankland and others, predominantly micrococci, and hence there is a strong presumption that the contagia of air-borne diseases are mainly micrococci. It may turn out that the contagious exanthemata diseases are chiefly caused by such forms; though at present research has thrown little light on the micro-organisms of this class of diseases. Koch and others have suggested that they may be caused by minute forms of animal life. If so this would still be in favour of an air-borne contagium. For it is well known that low animal species such as Infusoria are eminently liable to be dried up, and capable of being carried away by the air in this form without losing their vitality.

Another group of pathogenic bacteria, the bacilli of solid tissues, such as those which cause tubercle, glanders, and

many more, seem to have their nearest allies in truly saprophytic bacilli; those which live in dead animals or vegetable substances, which are not mobile and not specially adapted to living in water. If such species should have acquired the habit of growing in living bodies with a higher temperature and the opportunity of being carried about to a new nidus, it is clear that they would have advantages in the struggle for existence over those which remain at ordinary temperatures and fixed to one spot. Hence, out of saprogenic species, pathogenic species might be evolved. Such an evolution would show a remarkable analogy to the evolution of parasitic out of free Nematoids.

A remarkable instance is supplied by the anthrax-bacillus if it be compared with the hay-bacillus which it so much resembles. A hay-bacillus which acquired the faculty and habit of living inside a warm-blooded animal to which it gained access, would multiply far more rapidly than one which remained confined to the cold and comparatively scanty nourishment of the soil of the pasture. Its spores would be, by elimination or after the death of the animal, returned to the soil in greatly increased numbers. Such spores would be present in immense numbers on the soil, and have an increased chance of returning to a parasitic life in other animals; and thus a parasitic species would be established.

Another instructive comparison may be made between the structure of parasitic bacteria generally, and those of the allied forms in external nature. The former class are remarkable for the simplicity of their organisation even as compared with many free-living forms of a class which shows itself a high degree of simplification. For instance, among the free-living species we find many examples of pleomorphism, that is, of species which pass through a succession of different forms. Such are, for instance, the *Bacterium rubescens* of Lankester (*Beggiatoa roseopersicina* of Zopf), which exists in four different forms of development. But among pathogenic bacteria no clear instance of pleomorphism has yet been found. At least we may say that the pathogenic bacteria are among the simplest members of their class.

It might seem at first sight that this simplicity is a proof that these bacteria were among the earliest forms of life, and that the more highly organised species were developed out of them. But this is not a necessary conclusion, for zoologists have shown that simplicity of structure may result from degeneration. This subject is very ably treated in Professor Lankester's essay on "Degeneration;" where examples of simplification by degeneration are given from parasitic animals.[1] So we may presume that bacteria generally are more likely to be degenerated descendants of higher plants, perhaps of fungi, than an earlier stage, out of which those higher forms were developed. Indeed it is an unavoidable conclusion that saprophytic bacteria, which live on the dead materials of other organisms, must be posterior in development to the organisms whose death supplied them with food. Parasitic bacteria seem to represent the lowest stage of a similar degenerative retrogression. They exhibit, in fact, the degeneration induced by a parasitic life; another point which shows their strong analogy to animal parasites.

The same considerations evidently apply to parasitic fungi, as, for instance, the Trichophyton of ringworm. This so much resembles the common moulds that it has often been regarded as identical with one of those species. Its development when cultivated shows it to be a distinct species, but it may be described as a mould which has become by natural selection specialized to a parasitic life.

From a mass of facts of which the above is a cursory exposition, we may deduce the following inclusions:—

1. Species nearly allied to the parasitic forms of bacteria are found in the outer world in these media from which the different classes of parasites respectively enter the body of their host, and to which they return.

2. The conditions of parasitic life are such as to favour the rapid multiplication and diffusion of the species, and hence would give such species an advantage in the struggle for existence.

3. Parasitic bacteria as compared with many free-living species shew a simplicity of structure such as is produced

[1] See 'The Advancement of Science,' by E. Ray Lankester. London, 1890.

by degeneration ; and such as might therefore be the result of that degeneration which is associated with a parasitic life.

I do not for the present draw any distinction between those parasitic micro-organisms which are pathogenic and those which are harmless, or, as they are usually called, saprophytic ; since both classes have to live a parasitic life, and the conditions of that life must, therefore, be conformable to their requirements.

Conditions of Parasitic life as applicable to vegetable parasites.—It now remains to show that the life history of vegetable parasites, including the bacteria of specific diseases, conforms to the same rule as that of animal parasites, and that the *laws of entrance, of migration, and of exit,* are adapted to secure the continuance of the race ; also that the symptoms of specific diseases, whatever their effect on the health, recovery or death of the patient, are many of them likewise adapted to secure the same end.

Conditions which Secure the Continuance of the Parasitic Species.

These considerations will only apply when the disease is one kept alive and continued by the communication of a specific virus, that is by direct or indirect contagion. The virus of such a disease is comparable to a true or necessary animal parasite, since, on the conditions supposed, it must necessarily pass through a human (or other animal) body as a phase or the whole of its life history. And it is not even necessary that we should know what the virus is, provided it is something capable of conveying the disease, and also undergoing multiplication in the body. All that we have to say would apply, for instance, to the virus of smallpox, though we are still ignorant of its nature.

But it is also necessary to be sure that the human disease is the necessary arrangement by which the disease is actually kept alive, and not merely an accidental episode in its life, the true law of succession being elsewhere. For instance, glanders, hydrophobia, and favus are diseases which are not, and could hardly be kept alive as exclusively human diseases,

so to understand their life history we must look to their occurrence in other animals, as with many animal parasites. Such diseases are called zoonoses, a term which if correct, ought to have a much wider extension than it has. Also, there are diseases truly specific, like ague and perhaps others, which are not transmitted from one person to another, and the virus of which must, therefore, have an independent mode of existence in external nature, its temporary parasitic life being only an episode. These are comparable to occasional or accidental animal parasites.

Making these allowances, the laws of specific diseases are comparable to those of parasitism.

The one class of diseases as well as the other is subject to what we have called the law of entrance, the law of migration, and the law of exit; while the struggle of the body with the disease, of which the symptoms seem sometimes favourable to the patient, sometimes to the disease, are comparable to the struggle of the host or victim with the parasite. It now remains to speak of these laws separately.

Law of entrance.—Parasitic bacteria like animal parasites, enter the body by various channels, viz. (1) With the breath into the respiratory organs; (2) with food or drink into the digestive organs; (3) by simple implantation on the skin or mucous membranes; (4) by inoculation into a wound; (5) by direct inheritance with the generative elements of either parent. Some of them enter in more ways than one. They may be derived directly from another body, as in the diseases strictly called contagious; or indirectly from an intermediate stage in external nature, as in the diseases which are only indirectly communicable.

1. The micro-organisms or specific viruses which are certainly or presumably received with the breath are those of smallpox, and the acute exanthemata generally; of influenza; possibly of pneumonia, and under some circumcumstances those of tubercle and diphtheria; beside the saprophytes of the air passages.

2. Those received by the digestive organs are such as those of typhoid, cholera. dysentery; and under certain circumstances those of scarlatina and diphtheria, as by milk;

beside the numerous saprophytes of the mouth and digestive canal.

3. Those received by implantation are the fungi of parasitic skin diseases, and the bacteria of the skin, and the coccus of gonorrhœa on mucous surfaces.

4. Those received by inoculation are such as the bacilli of anthrax and glanders, and the viruses of rabies and syphilis. Occasionally the tubercle bacillus.

5. Those directly inherited are the virus of syphilis, and at least in cattle, the tubercle bacillus, possibly others.

Now when these various microbes or viruses containing microbes yet unknown, arrive in or on the body, some of them remain in the part they first enter as harmless parasites or so-called saprophytes, internal or external. These are strictly comparable to intestinal entozoa or to the epizoa of the skin, respectively. Others begin at once to migrate either directly through the tissues, or by the blood, after the manner of animal parasites, to some other part or parts of the body. This migration is generally accompanied by a great increase in numbers (as is the case with animal parasites, filaria, trichina, &c.), and the generalisation of the bacteria mostly produces severe constitutional symptoms, fever and general disturbance; in fact, just what we regard as the symptoms of an acute general disease or specific fever. This reaction produced by the generalisation of bacteria is a very frequent symptom, and probably never actually wanting, though less noticeable when the process is gradual. Thus, in syphilis there is a febrile reaction comparable to those of the specific fevers, except in being more chronic, and even a disease so usually local as gonorrhœa may exhibit a generalisation of some kind, in which febrile symptoms are not wanting. Now these facts have a distinct parallel in animal parasitism, namely in the febrile condition produced by the migration of the embryoes of *Trichina spiralis* through the tissues; which so strangely resembles typhoid fever. But the predominance of these results in vegetable parasitic diseases is a striking point of difference as compared with the diseases produced by animal parasites. The cause of this difference is plain. It depends upon the production by parasitic bacteria of ptomaines and proteid poisons, such as

albumoses and ferments. The action of these substances on the body is deleterious or fatal; and it does not at first sight appear what advantage this should be to the bacterium; but this point will be discussed later on. The advantages to the bacteria of these migrations are, however, two-fold. First, they pass into situations of more abundant nutrition and more perfect protection, so that they multiply enormously. Compare, for instance, the case of some micro-organisms living on the surface or producing a local inflammation only such as a tonsillar ulcer, a soft chancre, or a furuncle of the skin, with the case of others which pass inwards from these situations, and become distributed through the body, producing general diseases, such as scarlatina, syphilis, or pyæmia. It is clear that in the three latter cases there will be a much more abundant multiplication of the micro-organism than in the former. In the second place, the bacteria which get into the blood and tissues have a better chance of avoiding destruction than those which live as saprophytes on surfaces, or in local inflammations. We know how much more difficult it is to destroy internal parasitic bacteria than those which are accessible to attack from the outside.

Hence on both these grounds we see that the generalisation or internal distribution as opposed to saprophytic life, is a pure gain to the parasitic bacteria, as regards the multiplication and continuance of their species.

Finally, another important end for parasite bacteria (as for animal parasites) in their migrations through the body, is that they pass into a situation which is favourable for their passage to the next stage of existence; either by elimination from the body in some way, or by passive continuance in some organ from which after the death of their host they will be received into their next host, either directly or indirectly. Hence the determination of bacteria after internal migration to any special part of the body would be an indication of the route, or line of development by which the species is continued. This point will be considered in relation to the law of exit. Or, if they remain passively in some part of the body till set free after the death of their host, this will be

an indication that the vitality of the parasite, that is, the infectivity of the disease, remains after death.

Law of exit.—In many instances of bacterial or vegetable parasites, as of animal parasites, the law of exit is very simple, being merely the correlative of the law of entrance. Thus, acute exanthematic diseases, which are acquired, at least, among other ways, by the breath, are communicable by the breath ; though often by other ways also. Tubercle and whooping-cough, received by inhalation are transmitted by the sputa. Other diseases, received by the digestive organs, as cholera, dysentery, typhoid, are also transmitted by the evacuations from the other end of the alimentary canal and so into the water, or objects contaminated with it, from which the infection was originally received. Diseases received by inoculation are communicable by the lymph or pus resulting from the inflammation thus set up, *e. g.* all contagious suppurations, vaccinia, syphilis, and chancroid. In all these cases the parasitic microbe, or whatever the contagium may be, is returned directly to the same medium from which it came.

But in very many diseases nature is not content with this simple means of transmission; but provides that the microbe or contagium shall after growth and multiplication pass out of the body by another channel, equally or still better adapted to secure the continuance of the species.

First, as to the acute exanthemata. Here we have the remarkable fact that diseases of which the contagion is received through the breath give rise in so many instances to a cutaneous eruption. In other words, the parasitic microbe migrates through the body in such a way as to reach the surface, where it excites inflammation of such a kind as causes it to be thrown off into the air, and thus acquire a chance of further development. This elimination of the specific virus by the skin has always been regarded as an "effort of nature," to free the patient from the *materies morbi*. It may or may not have this salutary effect as regards the patient, but even if it be so, its great significance is that it is a means provided in the order of nature to secure the continuance of the parasitic species. It is just as if, like animal parasites, the microbes were guided by some instinct, leading them to adopt the means best adapted to continue

their race. Smallpox and scarlatina are undeniable instances of this habit, if we may call it so. In other diseases, as measles, it is not clear that the eruption contains the contagium, since it does not desquamate. But the propagation of disease by dried-up scales would be evidence of itself that these contagia are air-borne and receivable by inhalation. For it is notable that this cutaneous propagation of virus takes place by whatever channel the infection is received, in smallpox inoculated, and in scarlatina acquired from milk. In both these diseases there is most positive evidence of the transmission of contagion through the air, and in the case of smallpox it has been shown to be transmissible through considerable distances.

Another method by which the contagium of specific diseases allied to the exanthemata leaves the body is by natural or morbid secretions of the respiratory tract, that is by the mechanical processes of sneezing and coughing, which accompany inflammations of those parts. Hence we may regard these processes as means by which the specific micro-organisms are distributed, and their continuance secured; and are as exactly adapted to that end as if they were inspired by deliberate purpose. These are chiefly, but not entirely, diseases of the respiratory organs.

Many of the so-called common colds, or catarrhs, are doubtless infectious. In whooping-cough, and pulmonary tuberculosis we see still more striking instances. The former has been regarded by many authorities as a nervous disorder, since it is clear that the nervous system is affected by the poison as well as the respiratory, and it has also been classified as a "general" disease. But, however this may be, it is clear that all the symptoms tend to elimination of the virus from the respiratory surface. This elimination, again, has been regarded as an effort of nature for the protection of the patient; but whether it has or not this result, it is equally clear that the process tends to multiply cases of the disease, and thus to propagate and continue the living micro-organism which we believe, though we do not positively know, to be the cause of the disease.

The case of tuberculosis is still more striking, because it has now been shown that, in whatever way the bacillus is

received into the body, disease of the lungs is the commonest complication, and the expectoration thus induced, tends to propagate the bacillus species. Even in inoculated tuberculosis this special determination to the lungs is almost constantly observed, if the inoculated animals live long enough. Hence, the expectoration of phthisis indicates the natural method by which the bacillus *leaves* the body (whether or not it entered by the respiratory channels) and thus continues its species. The lungs then constitute for the tubercle bacillus, its chief *organ of exit;* and this special determination to the lungs is an inherited habit, by which the possibility of its passing on to other individuals, and thus continuing its race, is maintained.

In certain very general diseases, such as syphilis and anthrax, the virus may be communicated, not only by the primary lesion, namely, chancre or malignant pustule, but by a variety of channels. All the secondary lesions of syphilis in which there is any discharge are now known to be contagious, though at one time this was denied; and it is evident that this multiplicity of the channels of exit is a great advantage to the contagium or supposed micro-organism; and thus, whatever the effect upon the individual patient, all these modes of elimination are means by which the species syphilis is propagated and continued. The anthrax bacillus, by whatever channel received, is known to be eliminated by various channels which need not here be enumerated, but which evidently contribute to the further propagation and multiplication of the bacillus.

A very special instance of the importance of the law of exit is presented by the disease rabies in dogs. In whatever part of the body a dog is bitten, it appears to follow inevitably that the virus is contained in the saliva, and thus is communicated to the next animal bitten by the rabid dog. Now we can hardly suppose that the profuse salivation which occurs is any advantage to the dog itself in the way of eliminating the virus, but it is clearly an advantage to the supposed microbe of rabies in its struggle for existence. Hence the determination of the virus to the salivary glands is clearly a means to the continuance of the species, and if it were shown by a higher organism, might even be regarded

as an instinct, producing the same effect as deliberate purpose. Without this special habit the disease rabies might probably come to an end, since when the disease occurs in human beings, among whom it is not propagated by biting, it ceases to be communicated ; and when herbivorous animals which have not the habit of biting, are affected by it, the disease is more rarely transmitted ; though it may be so, in consequence of the ferocity, foreign to their usual habits, which the disease engenders in them.

There is still one other mode of exit of the specific micro-organism or virus which has an important bearing on the life history of some species, namely by the genital organs, so as to produce direct inheritance of the disease. This appears to occur only in a few diseases. Syphilis is an undoubted instance. The ascertained laws of inherited syphilis show beyond a doubt that the specific cause of this disease may be eliminated from the body by the semen of the male parent, or by the ovum produced by the female parent. It is inconceivable that this method of exit can be of any advantage to the diseased parent ; but it must be regarded as an arrangement conducive to the propagation of the unknown pathogenic organism producing the disease. The inheritance of tubercle has not generally been regarded as effected in the same way ; but there are facts which show that at least in the bovine race, there is a direct transmission of bacilli by inheritance. For the number of instances is now considerable, in which it has been shown that newly-born calves are affected with tubercular products containing bacilli, and in some the inheritance was clearly traced to the male parent, so that the only other conceivable agency, namely, infection from the mother through the placenta, could be excluded. One, or perhaps two, similar cases have been recorded in human infants. But I do not here dwell upon the precise evidence by which these facts have been established, only pointing out that this direct hereditary transmission is at least possible ; and if so, the determination of the bacilli to the reproductive organs is an arrangement adapted to secure the continuance of their species. Affections of the testicle in both tubercle and syphilis, which show that this organ contains the bacilli, are certainly very common.

The mode in which many specific microbes leave the body is still unknown, and hence their life history as parasitic organisms is not completely traced. But the general result of an examination of the law of exit, is to show that specific microbes are discharged from the body in a way favourable to the continuance of their species; that the channel of exit is not necessarily the same as the channel of entrance; but that they naturally tend to pass to that part of the body best adapted for this purpose; and a special determination to one part may generally be taken as an indication of the route by which they or their progeny pass into their next stage of existence. Now all these laws were found to be true of animal parasites.

Reciprocal Action of the Parasite and the Host, or Symptoms of Specific Diseases.

All the symptoms of a specific disease may be regarded as expressing a sort of struggle, or reciprocal action between the body and the cause of disease, some phases of which are in the interest of the patient, tending to expel or destroy the specific cause; others are in the interest of the pathogenic organism, tending to establish its position or favour its development. And very often the same symptom or morbid process may, as in the case of elimination by natural channels, serve both these ends, may liberate the patient from the parasite, but at the same time help the further development of the latter.

It is often difficult to say in which light such symptoms ought to be regarded; and certainly no general principle can be laid down, but each case must be studied on its own merits.

Without attempting an exhaustive examination of such symptoms, it may be worth while to speak of the more common results of specific infections, such as inflammation, fever, delirium, and see how far these act in the interest of the patient or of the pathogenic parasite.

Inflammation.—With regard to inflammation, at least when local, there can be no question of its being in the main a conservative process. Its tendency is to expel, and some-

times to destroy the specific cause of disease. The body deals with a pathogenic parasite as with any other noxious foreign body. It sets up an inflammation which may be figuratively said to be intended to expel it. This is a part of the machinery of self-preservation without which living beings could not exist. It is a manifestation of what is very rightly called (if the phrase be understood in a metaphorical sense) the *vis medicatrix naturæ*. But the significant fact with regard to the expulsion of pathogenic bacteria, is that they are often expelled without being destroyed, and hence in a state fit to prey upon other bodies. This is especially true in the case of suppuration, which may be regarded as the eliminative form of inflammation. Consider the instances of gonorrhœal and syphilitic pus, the pus of impetigo, of glanders, or of tubercular abscesses. All these contain the specific parasites in a living state, and they are ejected in greater numbers than if there were no inflammation. Probably, as Metschnikoff holds, many bacteria are destroyed by the living cells, or as others hold, by healthy serum ; but still a very large number escape destruction, and are merely placed outside the body in a condition favourable for further development. So that the production of inflammation, or at least of suppuration, by these pathogenic organisms tends to spread them about, and thus acts in their interest. There are, no doubt, a few instances in which suppuration destroys a pathogenic parasite, and thus puts an end to the disease. Ringworm, for instance, is one, for when this assumes the suppurative form or kerion, the fungus is killed, and the disease spontaneously cured. But really this is not quite a simple case. The suppuration is produced, not by the fungus but by micrococci, which getting the upper hand destroy the fungus. It is really a replacement of one parasite and its disease by another parasite and its corresponding disease. And with regard to the micrococci of the skin, it is certainly true that if they succeed in setting up copious suppuration, this quickly aids their multiplication and development. So that even here, the production of local inflammation acts in the interest of the pathogenic parasite producing it.

Fever.—The problem of fever is an extremely difficult one. We do not yet know whether the high temperature of

specific diseases tends to favour or to hinder the growth of pathogenic bacteria. On the one hand, it is possible that when the bacteria of specific diseases enter the body, the febrile reaction which they set up helps them to multiply more rapidly. If this were the case the fever-producing individuals or races among them would tend to have an advantage over those which did not produce this reaction, and thus a fever-producing species would be produced by natural selection.

If we examine the relations of pathogenic micro-organisms to temperature, it is difficult to get any evidence that a temperature which we regard as febrile is specially favourable to their growth, or at all events more so than the normal temperature of the human body. Micrococci, which have so much to do with suppuration and inflammations in which the temperature is raised, will grow even at the ordinary temperature of the air; and I have seen no evidence that their growth is more luxuriant at higher temperatures. Pathogenic bacilli, on the other hand, grow best at or near the temperature of the body, from 95° F. upwards, but not generally above 107° to 109° F. The anthrax bacillus grows and forms spores up to about 109° F. (43° C.), but the growth of the tubercle bacillus is entirely stopped at 107·6° F. (42° C.), and apparently the typhoid bacillus is subject to the same law. These facts show that pathogenic bacilli are able to live at febrile temperatures, but do not show that so high a temperature is specially favourable to them.

If, on the other hand, it were found that febrile temperatures were unfavourable to the growth of pathogenic bacteria, that would be a reason for regarding fever as a defensive reaction on the part of the body against the bacteria, that is, an effort of nature to combat the disease. But this would not be the case unless the temperature reached the height of what we call hyperpyrexia, that is over 106° or 107°. At such temperatures most of the known bacteria probably cease to grow and produce spores; but they are certainly not killed by this degree of heat, and hence even hyperpyrexia would not give the body any real advantage in its struggle with bacteria. Moreover, clinical experience supplies no evidence that hyperpyrexia does anything to

check the progress of the disease in which it occurs. On the whole, therefore, it must remain uncertain whether fever produced by pathogenic parasites is favourable to the host or favourable to the parasite in their struggle.

This question, however, though unsolved, is of great interest, for its solution would have much practical importance. If we were certain that febrile temperatures foster the growth of bacteria this conclusion would be a great support to the antipyretic treatment of fevers. But the absence of such proof strengthens the position of those who are sceptical as to the beneficial results of simple antipyresis, that is, of means used to lower the temperature in specific diseases, such as typhoid, pneumonia, &c. If this method of treatment is to be defended it must be on the ground that a febrile temperature in itself is deleterious to the human body, a position for which there is much to be said. At the same time, it is not at all certain that the bad effects attributed to pyrexia are not due rather to the general toxic and necrotic influence of bacterial products, while fever is merely one of their deleterious effects. Fever may be a concurrent result of such products, though not the most important; but it would be beside our present object to discuss this question fully.

Delirium.—There is, however, one symptom of fever which seems in some cases to have a distinct relation to the propagation of contagious diseases, and thus to the continued propagation of pathogenic bacteria, namely, *delirium*. In the present state of things, when patients are carefully watched and tended, we do not see the application of the law which is here suggested, but it is evident that in less regulated conditions of society, a patient with a contagious disease, such as smallpox, scarlatina, plague, if he is affected with furious delirium, will be likely to run about and spread the contagium to healthy persons whom he may encounter. In the histories of epidemics in former days there are many instances of this recorded. It was thought a real danger in the old plague epidemics. And even now if one sees, as I have seen, some years ago, in a French hospital, a patient in the violent delirium of smallpox, leap from his bed and run about among the other patients before

he could be restrained, will understand that the risk might be a serious one if it were not guarded against.

But the most striking instance is that of canine rabies, in which the production of furious delirium or mania in the dog is a really essential part of the machinery by which the disease is continued. The rabid dog begins to shun or else to attack those to whom he was most attached. After biting all persons or dogs within his reach, he leaves his home and wanders about, spreading the disease far and wide. Looking at the disease in its whole course, we see how precisely the symptoms are adapted to secure the continuance of the rabid virus. The virus, as has been said before, is specially determined to the saliva. It affects an animal naturally prone to biting, and thus specially prone to communicate the virus in this way. The disease alters the dog; he bites in such a way as to give it the greatest number of chances for spreading by this means. In fact, if the bacillus of rabies were endowed with reason, or with instincts of self-preservation and for the propagation of its race, it could not more precisely adapt its activities to these ends than it does. First, by finding its way to the saliva, and rendering that poisonous; then by affecting the brain so as to impart to the dog ferocity, the instinct of biting, madness, and the habit of wandering. The whole machinery is complete from the point of view of continuing the race of the bacillus. There is only one saving feature, and that is that sometimes dumb-madness or paralytic rabies is produced, in which the animal is helpless and cannot attack others. But this form of rabies is known to be less common than the other, and for obvious reasons is more easily kept in check, so that though one dog or a whole kennel may be affected, it does not usually spread unless the furious form of madness is produced.

Pathogenic significance of death.—There is one, the ultimate consequence of many specific diseases, which would seem at first sight to have no connection with the propagation of the disease and the continuance of the pathogenic species of micro-organisms producing it, that is the death of the host. In speaking of animal parasites I pointed out that intestinal worms, which cannot profit by the death of

the host, are very rarely fatal ; but that visceral and muscular parasites such as Trichina, many of which retain their vitality and pass into their next stage of existence after and in consequence of the death of the host, are far more frequently fatal. On examination, the same law will be found generally, or at least widely true of vegetable parasitic micro-organisms. There are numerous saprophytic bacteria of the intestinal canal and other parts which produce no disease, and, therefore, have no tendency to cause death ; but the bacteria of many mortal specific diseases retain their vitality after the death of the host, and are capable of being transmitted from the dead body so as to give rise to new cases of the disease. If the death of the host involved the death of the parasite, as in the case of tapeworms and saprophytes, this event would be a loss to the bacterium and would not be likely often to happen. But if death is a usual or frequent consequence of any parasitic disease, it raises the presumption that the vitality of the bacterium is not destroyed, or even that the continuance of the species may be favoured by this event. This fact would be ordinarily expressed by saying that the contagium still remains in and is communicable from the dead body. I believe, too, it may be shown that in most contagious diseases which are attended by a large mortality, contagion from the dead body is possible, and in some cases is an important means of propagating the disease, just as it is, for instance, in the case of animal parasites, such as Trichina.

On the other hand, another possibility is that the death of the host may be neither favourable nor unfavourable to the parasite, but a matter of indifference, death resulting as a sort of accident. In such diseases we should expect death to be only an occasional termination of the disease ; that is, it would be a disease not frequently fatal, or to large numbers.

As an example of a disease extremely fatal, contagious from the dead body, and in which post-mortem contagion is a frequent and important means of transmitting the contagion, we may take the cattle disease Anthrax. This appears to be almost invariably fatal, as the inoculated disease malignant pustule is in man, unless radically extirpated. It is generally agreed that, though contagious, it is

not often transmitted among living cattle, though it may be conveyed by objects contaminated with their blood or secretions. But if the animal dies of the disease, the chances of propagation become much greater for the bacillus. In the first place, the secretions, sputa, &c., containing the bacilli escape from the dying animal, rapidly form spores, and infect the soil, from which other animals may be infected. If the carcase falls to pieces on the ground, or is devoured by carnivora, or is cut up by men for the sake of the bones, horns, and hide, there is still greater chance of contaminating the soil. Besides this, all the parts removed may contain the bacillus or spores, which by these means may be transported to distant places—for instance, from South America to London or Bradford, and there have new opportunities for development. On the whole, it seems clear that the death of the animal multiplies opportunities for dispersion of the bacilli or spores, and is thus advantageous to the pathogenic parasite. It will, therefore, have been an advantage to the *Bacillus anthracis* in the struggle for existence to have acquired the habit of killing its host.

Among other diseases causing a large mortality are other contagious animal diseases, such as cattle plague. With respect to these it seemed to be generally admitted that the contagium exists in the living form in the dead body. Hence dead carcases lying about in the fields, unless removed by the care of man, will spread the disease. Of human diseases, probably the most fatal of all is plague, and in this disease there is most conclusive evidence of contagion being communicated from the dead body.

This is clearly shown in all the histories of plague epidemics. I myself became acquainted with a remarkable instance in the epidemic in Astrachan of the year 1879. When the plague spread to a certain village, and the first fatal case occurred there, the question arose, who should undertake the dangerous office of burying the dead. To avoid an invidious selection, all the men of the village drew lots; and by this means two were chosen for the task. These two men caught the disease and died of it, and from them the infection spread to their families.

In the histories of many epidemics it is clear that the

infection of dead bodies was an important means of spreading the plague, and hence not only the fact that there were fatal cases, but that the mortality was very great, would have helped the continuance of the disease and the vitality of the bacillus species.

One of the most fatal of our ordinary diseases is exanthematic typhus, and there is little doubt of this being contagious from the dead body. In considerable epidemics, or where many persons in one place are affected, the conveyance or intensification of contagium by emanations from the dead will doubtless be a factor in keeping alive the disease. The unknown microbe of typhus evidently flourishes in putrefying animal matter; hence the death of the patient, and especially the deaths of many at once, so as to produce a poisoned atmosphere, will evidently contribute to the vitality of the microbe. The microbe, indeed, by the very mortality it produces, supplies its race with the most appropriate soil.

Now in the case of typhoid, which is much less fatal on the whole than typhus, there is no evidence of communication of contagion from the dead body. And even though the bacilli do retain their vitality, as is shown by the possibility of cultivating them from the dead body, still the chance of their getting out into free nature, especially into water, is obviously less than while the patient is alive, and eliminating bacilli from the intestines. So that we cannot trace any advantage to the bacillus of typhoid in causing the death of its victim.

There is another class of diseases which are very fatal, and also occasionally cause a very large mortality, in which the contagion is undoubtedly and very specially connected with the dead body, namely, the septic wound diseases, pyæmia, septicæmia, and the like. It is generally recognised that the occurrence and spread of these diseases is favoured by putrid and septic materials, although the ordinary bacteria of putrefaction are not the organisms which produce the disease. There can be no doubt, therefore, that the causation of death, and especially the production of a large mortality by the disease, would favour its spread, and actually does. But it seems probable that the bodies of those who have died of the disease spread contagion in a more special manner

still, where those who have to do with the patients also have to do with post-mortem examinations, or are in any way brought in contact with the bodies of the dead. This would be the case especially in hospitals where surgeons and students attend post-mortem examinations, and thence bring back to the wards the infection derived from the dead bodies of those who had recently succumbed to septic diseases. The classical experiences of Semmelweiss, in the Lying-in Hospital at Vienna, show how real this danger may be. For the puerperal septicæmia which he combated so successfully was evidently not propagated so much from one *living* patient to another (though this of course may occur), but from the *dead* (whether dying of this or of other diseases) to the living.

The Law of Duration of Specific Diseases.

The question of the duration or chronicity of specific communicable diseases is also well worth studying from the point of view of the vitality or continued existence of the specific cause of disease.

In the case of diseases which, though specific, are not communicable, this question evidently does not come into play. In a miasmatic disease, such as ague, for instance, the phenomena of the disease in the human body will make no difference to the chances of the continuance of the specific cause, since the virus never passes out of the body into free nature again. But in all diseases in which there is an elimination of the virus—that is, which are communicable—it is evident that the longer the disease with its eliminative processes continues, the more numerous will be the chances of the virus finding its way into another organism.

It was pointed out above that the longevity of intestinal worms is a factor tending to preserve their race, and when the opportunities for transmission are, as in the case of tapeworms, very occasional and precarious, it is only a somewhat long duration of the parasite in the intestine and a corresponding long continuance of the elimination of its ova or ripe segments that will supply sufficient opportunities for the transmission of the species to another host.

Now the case of vegetable parasites is really the same in

this respect. The longer a vegetable parasite lives in the body, eliminating spores or new individuals which carry on the race, the greater will be the chance of its continuance as a pathogenic species. And it is evidently only stating the same fact in other words to say the same of specific diseases which these parasites induce. The longer a specific disease which eliminates an infective virus continues in the body, the greater will be its chance of propagating itself.

Since the law constitutes a natural selection operating in favour of chronicity, it will, on Darwinian principles, help to explain the existence of chronic specific diseases, or how, in the course of evolution, specific diseases tend to become, and many of them have become chronic.

It is a plausible supposition that virulent or specific inflammations, for instance, may have been originally developed out of what we call simple inflammations.[1] The latter, supposing them not communicable, will have no power of propagating their species by transmission. But let the faculty of communicability or contagion once be introduced, the chances of continuance for the disease-species are enormously increased. A contagious inflammation has the power of propagating its species ; its chances of survival are much greater than those of a non-contagious disease, and thus the disease-species becomes established. And when this is the case, the longer the disease lasts, the greater will its chances of continuing its species become. Hence among cases of contagious disease, the most obstinate and chronic will be most likely to continue the species.

As an illustration let us take the case of catarrhal inflammation of the urethra or conjunctiva, gonorrhœa or ophthalmia. The non-contagious forms of these affections, if there are such, will have their existence limited to the individual in which they occur, and will not be produced in another individual except by the action of the same causes as produced the first case. A contagious catarrh, on the other hand, will be transmitted to other individuals, and become established as a specific disease. But if such diseases are very short-lived, the opportunity for transmission may

[1] See note on Dr. Creighton's hypothesis of the origin of specific infections at the end of this paper.

never occur, and the disease-species, so far as that case goes, will become extinct, especially if the opportunities of transmission are, as in the case of gonorrhœa, only occasional, and for obvious reasons, less likely to occur in the case of an acute attack. But the chronic forms will survive long enough to give many opportunities for transmission, and thus have an advantage in the struggle for existence, and tend to supplant the shorter lived forms.

It may be asked, Is there any evidence that this has actually happened, and that diseases such as gonorrhœa tend to become more chronic, or that obstinate forms of the complaint are commoner than they were at one time? By the observations of one generation it would be difficult or impossible to establish such a change of type; but looking at the question historically, I think there is some reason for believing that such is the case. We do not now admit, as was once thought, that this disease is peculiar to modern times. There is evidence of its existence in ancient times, and still more strikingly perhaps in the Middle Ages, notwithstanding the low level of medical science and the inaccurate methods of observation which then prevailed. But I do not find in the ancient writers, though they were in many respects most accurate observers, any record of a disease so severe, obstinate, and striking in its symptoms, and requiring such persevering treatment, as the gonorrhœa of modern times. Considering that the social conditions among the Greeks and Romans were decidedly favorable to the propagation of contagious sexual disorders, this silence seems to have some significance. Perhaps it may be solely due to inaccurate observation that the arthritic and conjunctival complications of the disease have only been recognised in this century, while the gravity and extent of its effects on the female sex are a matter of still more recent investigation. But unless we assume as an axiom that all diseases have always remained the same, it is difficult not to suppose that this disease, at all events, has become in the course of ages more obstinate and more deeply rooted in the human frame.

If, further, we consider the case of slighter but very obstinate affections, such as granular conjunctivitis or

"ophthalmia" and ringworm in children, it seems clear that their chronic and obstinate character, which make them the despair of therapeutics, also contributes to their spread. If ringworm were an acute disease, limited, say, to six weeks, we might hope, without attempting to "cure" it, to stamp it out by isolation. But it is the longevity of the ringworm fungus which renders it so difficult to deal with, not only as regards the cure of a particular case, but as making it so difficult to prevent its spread. The same is true of the obstinate chronic form of conjunctivitis, which is also an opprobrium of our pauper schools.

If there is any force in this argument, it would seem that the long persistence of certain specific diseases, that is, of micro-organisms producing them, might explain their continuance and dissemination, even when the chance of actual transmission to other persons, that is their contagiosity, as generally understood, is slight.

I will therefore consider the phenomena of certain chronic specific diseases, and see whether they bear out the doctrine here suggested. First let us take the case of tuberculosis.

Tuberculosis as a communicable disease.—We cannot doubt that this disease is in some way, directly or indirectly, transmitted; either from one human being to another, or from some of the lower animals to mankind. I can here only just allude to the great number of facts supporting this view which have been collected of late years, such as are summarised, for instance, in Dr. Heron's instructive work.[1] I might also refer to Baumgarten's Jahresbericht *passim*.

This transmission or dissemination must take place chiefly through the bacilli discharged by expectoration from the lungs of phthisical persons, or from other tubercular lesions. Another source is the conveyance of bacilli from tubercular bovine animals through milk, and possibly through meat. The possibility of transmission by direct inheritance, as in the case of syphilis, cannot be actually denied, but there is no evidence that it is at all a common mode of acquiring the disease in the human subject.

[1] 'Evidences of the Communicability of Consumption,' by G. A. Heron, M.D., London, 1890. Baumgarten, 'Jahresbericht über Pathogene Mikro-organismen,' 1885—1890.

On the other hand, instances of direct contagion are doubtless very rare; and negative experience on a very large scale, as in the case of the immunity of the nurses at the Brompton Hospital through many years, supplies cogent arguments on the other side. Hence many eminent pathologists still deny the contagiosity or communicability of the disease. But not, I think, on good grounds. The fair conclusion from the facts seems to be that tuberculosis is a contagious disease, but that its contagiosity is slight. Stated from the biological point of view, this amounts to saying that the bacilli discharged from tubercular lesions have only a small chance of establishing themselves and continuing their race by setting up new cases of the disease. It must, however, be in this way that the species *Bacillus tuberculosis* is kept in existence; for though the bacilli or their spores are able to keep alive outside the body for a certain time, there is no evidence that they multiply in external nature, or that they have an important ectogenic or miasmatic existence.

Nevertheless the race is kept up; and this fact is explained, first, by the enormous numbers of bacilli discharged, and in the next place by the long continuance of the diseases in which bacilli are thus discharged. Out of many millions of spores thus set free, only one here and there takes root in the human body again and starts a new race. In this there is nothing incredible, or contrary to the laws of other parasitic diseases. A similar waste, though on a smaller scale, is seen in the propagation of animal parasites. To recur to the case of intestinal worms: a tapeworm sets free enormous numbers of ova, for which the chances are many thousands or possibly millions to one against their ever reaching a destination where they can continue their race. The rarity of this event is shown by the rarity of the cysticercus disease which would result from their passing into an animal body again. The discharge of bacilli and their spores doubtless takes place on a still more gigantic scale; but the law of the waste of the many, the survival of the few, is the same in the two cases.

The conclusion is that the chronicity of phthisis, or the long continuance of the bacilli in the phthisical individual, is

a necessary factor in the continuance of the species *Bacillus tuberculosis*. If phthisis and other tubercular diseases were acute or short-lived, the probability is that tuberculosis would soon die out among the human race, and the species of bacillus would come to an end.

Leprosy as a communicable disease.—Another disease presenting a still feebler degree of contagiosity, a still higher degree of chronicity, is leprosy. The transmission of this disease from one individual to another must be an extremely rare event. We believe it to be a possible event, on the evidence of a small number of recorded instances of inoculation or contagion, and on the further ground of the conformity of this mode of transmission to the general laws of bacillary diseases, and the difficulty of explaining the continuance of the disease in any other way. In a disease which lasts for a lifetime, and where elimination of infective material occasionally takes place, the chances are that from time to time, when favoured by negligence and want of cleanliness (as shown in the sad example of the heroic Father Damien), inoculation will take place, and thus the disease is propagated, and the species *Bacillus lepræ* continues to live. But so small are the chances of transmission of the disease, and so easily is contagion prevented by ordinary precautions, that only the very long persistence of the malady makes it possible that it should continue to exist. If leprosy were not a life-long disease, the probability is that it would long ago have become extinct.

It is to my mind a very striking fact that precisely those parasitic pathogenic organisms which find it most difficult to pass from one host to another should have developed extraordinary tenacity of life in themselves, and at the same time have acquired the habit of sparing the life of their victim for a period sufficiently long to afford them their rare opportunities of perpetuating their own race by contagion.

Acute specific diseases.—But it may be thought that in dwelling on the advantages of chronicity in the perpetuation of specific contagious diseases we have lost sight of the fact that most contagious diseases are not at all chronic, but on the contrary decidedly short-lived or acute. This fact has, however, not been forgotten. In speaking of acute specific

diseases, I hope to show that they also illustrate the law of self-preservation on the part of the pathogenic organism; though the factors of its propagation present themselves in an inverse order of importance.

If we consider the case of the short-lived parasitic diseases generally known as the acute specific fevers, it is evident that they have, generally speaking, a far higher degree of contagiosity than any chronic disease. This contagiosity is so great as to be almost inevitable. It may be taken for granted that a case of measles or scarlatina, for instance, if left alone among susceptible individuals, will give rise to new cases of disease. That is to say, the pathogenic organism has great facility in passing from one individual to another, and setting up new centres for the continuance of its race. Hence it is not necessary for the disease to last a long time in order that the race of the pathogenic organism should be continued. Conversely, a high degree of contagiosity is essential to the continuance of a short-lived disease, for it has to concentrate into a few days the chances of dissemination, which in chronic diseases are spread over some years, or over a lifetime. If measles, for instance, had only the same degree of contagiosity as tuberculosis, its existence would be precarious, and it would probably soon die out. The same is true in varying degrees of the other acute specifics, scarlatina, diphtheria, smallpox, typhus, and so on, which are kept in existence by their great contagiosity, as well as by the vitality of the contagium when detached from the body. Even among these we see a certain difference, in that those in which the contagium is given off for a longer time, such as scarlatina and smallpox, are the most difficult to eradicate. And on comparing two diseases which are in some respects alike, namely, typhus and enterica, we see that the former, which is the more contagious, is the more acute; while the latter, which is only slightly contagious, maintains itself by its longer duration, and by a special mode of transmitting its contagium. If, again, there were a disease with a contagiosity equal to that of smallpox or measles, and a duration equal to that of tuberculosis, it would be more destructive than anything we know, and would probably

exterminate the human race, unless it were itself exterminated by the most thorough-going system of isolation.

So far, then, as the diseases already spoken of are concerned, it would seem that the properties of contagiosity and chronicity are to one another in an inverse ratio; that is, the same degree of vitality in the disease may be maintained by a high degree of one of these factors, even if the value of the other is low.

This law of inverse proportion is, however, not universal. There is still another combination possible, that of slight contagiosity with short duration. An acute disease with a low degree of contagiosity, if such there be, would, however, be in continual danger of failing to continue its species. There would be always a risk of the contagium falling to the ground, so to speak, and the disease becoming extinct, unless there were some perennial source of fresh infection in external nature. Now this is by no means an imaginary case. We have examples in cholera, as seen in climates where it is not endemic; and also in such occasional epidemic maladies as influenza and the sweating sickness.

Cholera.—This disease, though not in the ordinary sense contagious, that is readily transmitted through the air, is no doubt communicable, so that one case gives rise to others. But as this transmission takes place for the most part through infected objects, and especially through soil and water, the chance of transmission is not great unless these media become permanently infected. When, therefore, as in our climate, this does not happen, the chance of transmission, *i. e.* the contagiosity of the disease, must be regarded as low, or at least only temporarily high. This fact, taken in connection with the short duration of the disease, makes its existence precarious in countries where it is not endemic; and hence we see that it continually dies out, and does not recur except by a fresh importation. In India, and especially in the delta of the Ganges, where it has its home, it seems impossible to doubt that there must be some reservoir of contagium in the soil, from which fresh cases of the disease are generated.

So with *influenza*. The contagiosity of this disease is still disputed; and though I think there can be no doubt of its contagious nature, it must be admitted that the contagion is

not very strong, or at least by no means inevitable. Every one must have known instances (I could myself quote several) where one case only has occurred in a family, even when there has been no attempt at isolation. This is equivalent to saying that its degree of contagiosity is low. Hence, its duration being at the same time short, the vitality of the disease germ is, at least in these climates, precarious, and epidemics easily die out. History shows us that this has happened again and again. It is possible that it may become as permanent a denizen of Europe as measles or scarlatina. It is possible, on the other hand, that there may be only one part of the world where the disease is endemic, and that from this all our epidemics are derived.

A remarkable instance of a disease of precarious vitality is the old *sweating sickness*, as well as its modern congener or representative, the French "suette miliaire." The accounts of sweating sickness in the sixteenth century show that it was a remarkably acute disease lasting only a very few days, and its contagiosity, though sometimes well marked, was extremely variable. Thus its chances of being communicated were uncertain, and its vitality was precarious, so that it died out again and again, till at last it vanished altogether. The same short duration and uncertain contagiosity are described in the "suette miliaire" which has occurred in numerous occasional though transient epidemics in certain parts of France, but has continually disappeared for long intervals, only to be revived from some source of infection at present quite unknown.

Thus it appears to be true that diseases which are short-lived, and at the same time have a low or uncertain degree of contagiosity, have a precarious vitality. It is possible that the same law applies to others of our acute contagious diseases, and that they would often die out if preserved by contagion alone; so that there may be some permanent source of infection either in the lower animals or in external nature, from which fresh epidemics originate. But it would be premature to speculate on this possibility.

Summing up the conclusions above arrived at, it seems permissible to divide specific contagious diseases into three classes.

1. Chronic diseases, with low or occasional contagiosity, which maintain their vitality by their long duration.

2. Diseases of short duration, which maintain their vitality by their high degree of contagiosity.

3. Diseases of short duration, with slight or occasional contagiosity, of which the vitality is very precarious.

It may be worth while to attempt a representation of these laws in a symbolical form.

Let the *vitality*, or, better, the *viability* of the disease be represented by the symbol V.

Let the chances of communication or transmission of the disease be called *co-efficient of contagiosity*, and represented by the symbol C. This co-efficient includes all factors influencing the communicability of the disease—the vital properties of the pathogenic organism, the effect of external conditions on it, and the susceptibility of the individual.

Let the *duration of the disease* be represented by T. Then V will be a function of the two variables C and T; or, in mathematical language, $V = f(C\ T)$.

Now in order that the disease should exist at all, V must have a real value; and hence both variables C and T must have a real value. Even if one of them have a very small value, the value of V may still be real or even considerable, if the value of the other variable be large. But if both variables are very small, the value of V will be very small or even infinitesimal, that is, tend to vanish altogether.

In chronic diseases, T is large, and hence C may be very small without causing V to become infinitesimal. Hence the viability of the first class of diseases.

In acute contagious diseases, T is small, but C being large, V will still have a real value. Hence these diseases preserve their continued existence or viability.

According to this law, all specific communicable diseases might be arranged in a scale, at one extreme of which would stand leprosy, with the longest duration and the lowest co-efficient of contagiosity; at the other extreme would stand, perhaps, measles, with a very high co-efficient of contagiosity, and a very short duration; while the other diseases of this class would occupy intermediate positions.

Practical Corollaries.

It may be thought that the views set forth above are merely speculative and have no practical bearing, but I think it will be found, on consideration, that some important practical deductions may be drawn from the laws above stated.

The great problem of general medicine as applied to this class of diseases is, apart from the treatment of particular cases, to exterminate, or at least to keep within narrow bounds, the living causes of disease. Unless there be some way found of rendering the human body inaccessible to infection, this is the only way in which specific diseases themselves can be prevented.

According to the laws stated above, this object will be brought nearer in proportion as we diminish one or both of the two factors, contagiosity and duration, on which the vitality of the disease depends.

The importance of diminishing contagiosity, that is of preventing the communication of disease, has always been recognised ; but the importance of the factor of duration has not been considered. Acute diseases, the course of which is typical, we are generally powerless to make longer or shorter. But in the case of certain contagious chronic diseases, for instance, whooping cough or ringworm, it is evident that to cut the malady short, if possible, must be an important means of limiting its contagiosity, and thus of contributing to the extirpation of the specific germ. Hence in all such contagia, where absolute cure is impossible, preventive medicine ought to aim not only at limiting C but with the same object, at reducing T to a minimum. In the case of horses affected with glanders or farcy, this principle is indeed acted upon by killing infected animals at once, which reduces T to zero ; but this method is obviously inapplicable to human disease. There is another class of infectious diseases represented by phthisis and leprosy, which have no natural termination except death, and in which T therefore represents the whole life of a patient thus affected, since humanity forbids us to accelerate the course of the disease and shorten the lives of the unfortunate sufferers. Here, then, it would

seem that the problem of diminishing T is one which we are forbidden to attempt. All our efforts, on the other hand, are directed to prolonging the lives of consumptives and lepers, and if their diseases are communicable, we are thus prolonging the existence of a source of danger to the community ; and unless very vigorous measures are taken to limit or prevent contagion, the spread of the disease is likely to be rather favoured than hindered by the measures adopted for the relief of the sufferers.

This consideration seems to me so important, that I shall attempt to present the conditions of the problem more fully in the light of recent statistics.

Decrease in the mortality from phthisis.—The statistics of mortality from pulmonary consumption show, as is generally known, a gratifying diminution in recent years. According to the Registrar-General's returns, the mortality from consumption in England has fallen from 2565 per million in the years 1858–60 to 1542 per million in 1889, or in the proportion of 5 to 3. The rates from other tubercular and scrofulous diseases have been reduced from 739 to 671, so that for this whole class of diseases we have a reduction from 3304 to 2213, or in the proportion of 3 to 2. Even supposing that greater accuracy in assigning the causes of death may account for a little of this apparent decrease the broad fact cannot be explained away.

Now it is generally assumed that this decrease in annual mortality shows a corresponding diminution in the number of cases of disease. The assumption is, however, by no means warranted. For, let us suppose that the causes to which this diminished mortality is assigned, viz. improved sanitation of towns, better food and dwellings for the working classes, improved methods of treatment, and so forth, have the effect of prolonging the lives of consumptive persons, the annual rate of mortality would then be reduced, even if there were no diminution in the number of cases of disease. If these measures had the effect of prolonging the average duration of consumptive lives in the proportion of 3 to 5, the diminished death-rate would be entirely explained, without any diminution in the prevalence of the disease. If we take tubercular diseases as a whole,

a prolongation in the proportion of 2 to 3 would suffice. These are extreme suppositions, but it admits of proof that therapeutic and sanitary measures must have the effect of prolonging life in consumption, even more than in most diseases, and thus that the assumed diminished prevalence of the disease is, to a certain extent, less than it appears to be.

Sanitation prolongs consumptive lives.—Louis and the older writers on phthisis put the average duration of a consumptive life at about two years. Later statistics give a higher average. Dr. Pollock, from experience at the Brompton Hospital, puts it at more than two and a half years. Bowditch's American statistics give an average of two and three-quarter years. The above figures are chiefly taken from hospital patients belonging to the poorer classes, in whom poverty and unsanitary surroundings accelerate the progress of the disease.[1] They seem, however, to show that, even in this class of patients, there is a tendency towards increased longevity.

In striking contrast with these results is the experience of Dr. C. T. Williams,[2] founded on the statistics of private patients collected by his father and himself. He puts the average duration of life in fatal cases of phthisis at seven and three-quarter years or more.

Dr. Williams's figures have been much criticised, and it is probable that many of the more rapidly fatal cases may have been withdrawn from observation, and thus his statistics show an inevitable selection of the more favorable; but the broad result is to show that consumptives of the upper classes enjoy a far higher longevity than those of the lower classes. If we take for hospital patients the high average of *three* years, and reduce Dr. Williams's average to *six*, the duration of the disease would in the upper classes be double what it is among the poorer classes of society; and this estimate seems to be by no means an exaggerated one.

[1] These statistics are collected in Fagge and Pye-Smith's 'Principles and Practice of Medicine,' 3rd ed., vol. i, p. 1078.

[2] 'Medico-Chirurgical Transactions,' vol. liv, "Pulmonary Consumption, its Nature, Varieties, &c.," 2nd ed., 1887.

Now the general effect of sanitary and social progress is to approximate the condition of the poorer classes to that of the richer. I do not, of course, imagine that such improvements will ever equalise social conditions. The poor will always be poor, workers will always suffer from over-work and exposure; over-crowding is an evil against which sanitarians wage a doubtful war; but, nevertheless, the poorer classes of to-day are in many respects better protected against disease, and able to live a healthier life than was possible fifty years ago for those far above them in the social scale. It seems, then, fair to conclude that a poor consumptive patient has decidedly a chance of living longer than he would have done in the last generation.

Another important factor in prolonging unhealthy lives is the increase of hospitals, and especially of children's hospitals, which keep alive many children suffering from tubercular or 'scrofulous' diseases, who would otherwise die early. Now infantile mortality is a large part of the general mortality; and some good authorities hold that the diminution of late years in the death-rate is chiefly due to the diminished mortality of children.

All these influences must tend to keep alive consumptive and tubercular patients, whether children or adults.

Again, if we see reason to believe that the prevalence of tubercular disease is not diminished in the same proportion as the mortality, and possibly even not diminished at all; it is further to be remembered that, owing to the increase of population, the absolute number of tubercular persons dying in England is nearly as great now as it was thirty years ago.[1]

Furthermore, these centres of disease are, owing to the concentration of population in great towns, collected into denser masses than formerly, a circumstance which increases the chances of dissemination of any communicable disease.

Another consideration is, that by prolonging the lives of consumptives, we permit a larger proportion to marry, and thus have the chance of bringing into the world offspring predisposed to the disease.

[1] In 1865 the deaths in England from phthisis and other tubercular and scrofulous diseases were 70,642. In 1889 the deaths from the same diseases were 64,235, being almost exactly 91 per cent of the former number.

From all these considerations it appears that therapeutic measures which prolong life, though they alleviate the lot of the individual patient, do not at all tend to diminish the prevalence of tubercular disease, but rather tend to increase it, and will certainly do so, unless the dissemination of the infective organisms is checked in other ways.

Even sanitary improvements also, in so far as they prolong the lives of consumptives, will have the same effect. It is only fair to say, on the other hand, that such measures may tend in some ways to check the dissemination of the disease. It is probable, though not certain, that the infection spreads more rapidly in dirty, ill-ventilated houses, and in an undrained soil, than in conditions which are the opposite of these[1] Again, it can hardly be doubted that healthy persons are less likely to acquire the disease than those in a low state of health. So that the influence of sanitary measures tells in both directions. But at all events, it must not be assumed that sanitary improvements, even if they diminish the mortality from tubercular disease, necessarily diminish its prevalence, or at least in the same proportion.

The practical inference from these considerations is not that we should in any way desist from endeavours to prolong

[1] See Dr. Arthur Ransome's Milroy Lectures on the 'Causes and Prevention of Phthisis,' p. 65. "In a paper on 'Tubercular Infective Areas,' read two years ago before the Epidemiological Society, I gave the details of an inquiry made into the incidence of phthisis in some of the worst districts of Manchester and Salford. Its results showed that the portions of those districts most affected by the disease were the close courts and alleys, the shut-in or blocked-up lanes, and above all, the houses built back-to-back, with no thorough ventilation. I especially noted the cases in which, in the space of five or six years included in the inquiry, double or treble occurrence of the disease had taken place in the same houses, and I found them very numerous." These results have been confirmed by other observers, as Dr. Niven, of Oldham. Dr. Ransome also quotes Dr. Flick, of Philadelphia, who, from similar researches draws somewhat similar conclusions, finding that while case after case of consumption may occur in the same house, and that neighbouring houses are considerably exposed to contagion, still "houses in localities where endemic after endemic has existed, have nevertheless, escaped the disease, and that during twenty-five years scarcely 20 per cent. of the houses of the ward were so affected." He also found that tuberculoses of different kinds occur in the same localities and often on the same lots as consumption. He ascribes these results to contagion in the houses themselves. [It is not stated whether the affected houses were specially unsanitary.]

the lives of consumptive patients by therapeutics or hygiene; but that measures should be adopted to prevent them from becoming a source of danger to others. One method of doing this is evidently to cure the patient. If the disease can be brought to an end, the contagion of course ceases; and I do not at all deny the "curability" of consumption as a general principle. But it must be admitted that the proportion of cases of definite phthisis which are thus "cured" is not large. The best result to be looked for in most cases is to render the disease stationary. Another way in which therapeutics may be of service is by limiting the amount of expectoration, which evidently *pro tanto* lessens the chance of communication. But a more important and more certain means of doing this is by immediate destruction of the bacilli in sputa and in all objects which may be contaminated with them. The necessity for this precaution is already recognised in theory, and to a certain extent carried out in practice, and it is not my object here to dwell upon the methods by which it may be effected.[1] But I desire to call attention to the enormous gravity of the issues at stake. Disinfection is the indispensable corollary of therapeutics. Unless this be admitted and acted upon, all our measures for the relief of tuberculous patients may only be aiding, instead of checking the dissemination of the disease through the community. The highest aim of medicine, I venture to repeat, is not only the relief of the sufferer, but the limitation and, if possible, the extermination of the living causes of disease in human societies.

Conclusion.

The above remarks are an endeavour to consider the specific diseases of man with reference to the conditions of

[1] The necessary precautions are very fully dwelt upon in Dr. Arthur Ransome's able Milroy Lectures, especially in Lecture IV, pp. 125 to 136. "Let us have 'war to the bacillus' by all means" (says Dr. Ransome), but it must be "war carried on outside the body, not within it." These words, with which I most heartily agree, contain the gist of the whole question of the diminution of factor of contagiosity. They do not touch the question of the diminution of the other factor—duration.

existence of the organisms producing them ; or, in other words, to look at the subject from the point of view of the bacterium. Bacteria have, it must be remembered, as much as higher organisms, their place in the order of things. There is a great impartiality in nature. If we regard it as designed that higher forms of life should exist by the destruction of the lower, it must be designed also that, in in some instances, the lower should flourish at the expense of the higher. Or, if we admit merely that destructive species generally maintain themselves by the right of the strongest, then it is by the same right that these destructive organisms live through human death and suffering.

Man has, in the course of his development, destroyed or overcome the stronger and fiercer foes which, in an earlier stage may have threatened his existence. Carnivorous animals are no longer a danger to him, and in most parts of the world, he has got his foot well on the head of his ancient enemy, the snake. But the combat remains with these subtle and pervading enemies, more terrible and fatal by far than the tiger or the serpent; and in this combat the first essential is to know thoroughly the laws governing that life which is antagonistic to our own.

Note.—The hypothesis here suggested has some analogy to that enunciated by Dr. Creighton, in his address "On the Autonomous Life of the Specific Infections" ('British Medical Journal,' August 4th, 1883). Dr. Creighton also supposes that specific infective diseases may have originated from simple non-contagious diseases, and has given some ingenious, though imperfectly supported, instances of such supposed evolution. But it seems to me that in discarding the doctrine of living external causes of such diseases, that is, of pathogenic micro-organisms, he has thrown away the only key which can be applied to solve such problems. Evolution, to be a real objective fact, must attach to some material thing capable of evolution. It cannot attach to a mere "process" or "state of the body." Such a process, considered apart from the body itself or apart from a material cause of disease, is a merely subjective product existing in the human mind. There may be an evolution of such mental products, as, for instance, in the case of mathematical functions, many complicated forms of which may be evolved from one simple form. But these forms have a merely subjective existence in the mind of the mathematician who works them out, or in the mind of another to whom his symbols convey the same ideas. Just so with "processes of disease" such as inflammation, contagion, "autonomous life," &c. These, apart from the causes producing them, have no objective existence, being merely generalisations to express our knowledge of the relations of certain observed

facts. They have no coercive force over the material with which they are concerned, and cannot therefore be admitted as the true cause of any objective occurrence. It is only when the cause of such processes is shown to be some material thing that they become subject to the Law of Evolution. When once their causes are shown to be susceptible of evolution, it inevitably follows that these causes are capable of growth, that is, they are living. Hence the cause of any disease or morbid process which is capable of evolution must be some living thing, that is, an organism, such as the bacterial theory of specific disease assumes.

I need not dwell upon the enormous mass of facts which prove that the actual thing transferred from one human body to another in many specific contagious diseases is a living organism with a life independent of the life of the body, and the strong consequent presumption that the same is true of all communicable diseases. I only here contend that anyone who rejects the doctrine of living causes in specific diseases must inevitably reject also the fact and even the possibility of evolution in such diseases.

CYSTS OF THE JAWS

OCCURRING IN RELATION WITH THE ROOTS OF FULLY DEVELOPED TEETH.

By H. BETHAM ROBINSON, M.S., M.D.Lond., F.R.C.S.

All the cysts occurring in connection with the jaws, excluding the rare cases of cystic change in the lining membrane of the antrum, have some relation to the teeth or to their antecedent germs.

Of these cysts we recognise (1) the multilocular cystic tumour; (2) cysts in relation with defective eruption, or dentigerous cysts; and (3) cysts in association with the roots of fully developed teeth.

It is to the last class I wish to draw attention in the following paper, because the condition is not fully recognised, and errors in diagnosis are accordingly somewhat frequent.

These cysts occur as a rule in the alveoli, and are usually connected with the retention of diseased fangs.

Delpech in 1816 first described them as "kystes dentaires;" and following him Dupuytren recognised the condition, which he discussed in the following words:[1]—"Morbid changes in the roots of teeth give rise to the formation of serous cysts, which are most frequently met with in the alveoli of the upper canines, and in some instances acquire a very large size, even equal to that of the antrum. In such cases the root of the tooth is found diseased, and en-

[1] 'Leçons orales.'

closed within the cyst, which adheres to the alveolar cavity and (when small enough) usually accompanies the tooth in its extraction; but if left behind, a suppurative process is established, which continues for a long time. The fluid yielded by these cysts is sometimes very thick, and in some instances of a serous nature, and their inner surface is as smooth as that of the serous membranes" (Sydenham Society's translation). However, the paper from which this quotation is taken is not accompanied by any cases illustrative of these changes, and we have to skip about two decades before finding any definite literature of the subject. Our knowledge has since been enriched by the researches of Forget, Duplay, Malassez, and others; but it is by the writings of Magitot that attention has been particularly attracted to these lesions, although the terminology suggested by him, "periosteal cysts," is not now accepted by those who have studied their pathology.

The cases given in detail below came under the notice of the writer, and illustrate the subject of this paper.

Case 1.—William H—, æt. 28, had a tumour over the left side of the upper jaw, which had been gradually increasing during the preceding three years, and had caused marked fulness of the cheek. Inside the mouth was a large swelling which extended from the canine fossa in front to the last molar tooth, and from the malar bone above to the alveolar margin. Between the cheek and the alveolus a tense cyst with marked fluctuation projected. The soft parts over the swelling were quite healthy. Above the first molar tooth and over the upper part of the alveolus there could be felt an everted bony rim, which was circular, the central part being quite soft. The left first and second molars were carious, and only the stumps remained. There was no pain or tenderness in the swelling. Having incised the cyst, a very large quantity of an almost clear straw-coloured fluid drained away, which on examination was found to contain cholesterin crystals in suspension. On examining the inside of the cyst with the finger it was discovered that it was situated in the substance of the alveolus, the posterior wall being natural, but the anterior wall much expanded, so that absorption had

taken place in its centre, giving rise to the everted bony margin. There was no communication with the cavity of the antrum. No further treatment of this case was permitted, as the patient refused admission into the hospital.

Case 2.—Angelina B—, æt. 20, for three years had suffered with toothache, and had only carious stumps remaining of the upper second bicuspid and first molar teeth on the left side. During the twelve months before she sought advice she had noticed a swelling over the gum, which had gradually enlarged. This swelling, of the size of a walnut, was over the alveolus above the decayed teeth, fluctuating, with a bony rim, and with the mucous membrane intact over it. The fluid in this case was of a yellowish colour, and contained cholesterin.

Case 3.—Ann F—, æt. 59. Swelling over the upper jaw coming for five years, but no pain until recently, and now on the right side of the head. The swelling projects on the right side between the alveolus and the cheek, fluctuates, and the margins of the swelling are bony and everted, with a soft centre. There is a carious first molar tooth, of which only the stumps are left. Cyst was tapped, and clear fluid with cholesterin in it drawn off.

Case 4.—Ann S—, æt. 52. Cystic swelling on the outer side of the alveolus of the lower jaw in the region of the right molar teeth, the second molar being carious. The cyst has everted bony edges, and its centre is soft and fluctuating. A history of tooth trouble of two years' standing present. The cyst on incision proved to contain a clear yellowish fluid, which contained a large quantity of cholesterin.

Case 5.—Alfred S—, æt. 45. He had had for some years a swelling over the alveolus of the upper jaw in the region of the first and second molar teeth. There was no pain, but the pressure of the cyst caused considerable discomfort. The lump, which projected between the cheek and alveolus, had an everted bony margin, with a softened centre. On

incising this cyst a thin purulent fluid drained away, which contained cholesterin. The cavity was proved to have a distinct connection with the carious molar teeth, which were at the same time removed.

A consideration of the details of the above group of cases will give a fairly accurate idea of the clinical signs of these cysts. They develop in the alveolus in relation with the roots of teeth which are generally carious, and in their growth they cause expansion of the alveolus, particularly of its anterior wall, which becomes in many of the cases absorbed by the pressure of the accumulating fluid. The fluid as a rule is clear, containing cholesterin, but in some instances it is purulent, due to inflammatory changes arising in the cyst-wall. The fulness over the antrum, when in the upper jaw, has led to the diagnosis in many cases of expanded antrum, but later we shall see how in many ways they differ from this lesion. They occur mostly in adults, developing painlessly. They are more frequent in the upper than in the lower jaw, and they are said to arise more often in connection with the incisors and canines than with the molars, but the value of this statement is rather negatived by the collection of cases quoted before. They are necessarily of slow growth. The antrum has in rare cases been perforated in consequence of the absorption of the posterior bony wall and rupture of the soft tissues. In some cases the cyst cavity may be filled up with fungating growths springing from its walls, as is seen in the under-mentioned example.

Sarah C—, æt. 21. Six months before admission she had first noticed a swelling over the lower jaw below the bicuspids on the left side. Four months later, having some pain, she had the bicuspids drawn, which caused a thin purulent fluid to be set free. A couple of weeks before admission the gum was lanced, and as the swelling did not in any way diminish, she came into the hospital.

On the outer side of the alveolus below the bicuspids was a swelling about the size of a walnut. It was hard, and firmly adherent to the bone. Its upper and anterior surface presented a sinus from which a thin purulent fluid escaped,

and the introduction of a probe determined the presence of a cavity. There were no enlarged glands. Since the extraction of the teeth there had been no pain.

An incision was made over the cyst and the bone gouged away, when a cyst-wall was extracted with granulations springing from its interior.

As to the origin of these cysts several views have been held. Tomes regarded the process as identical with suppuration, but more chronic, the inflammatory action about the tooth fang, instead of causing an alveolar abscess, giving rise to a cystic cavity with a well-marked lining membrane and clear fluid. Magitot, who called them "periosteal cysts," considered that they were the result of an inflammation of the periodontal membrane, pus being formed between the membrane and the fang if acute, but if chronic resulting in a serous collection. Objections to this view are that in many cases the fluid is separated from the tooth fang by a well-marked membrane; and another, perhaps the more important, is that the cysts are lined by epithelium.

Now it is not rare to see small cysts attached to the roots of teeth on extraction; sometimes they are close to the fang, either situated laterally or round the tip of the root, or by a long pedicle. These, the appendicular cysts of Albarran, have a fibrous wall continuous with the periodontal membrane, which is covered by a lining of flattened epithelium resembling the enamel organ. They cannot be derived from any inflammatory process, and as the periosteal cysts of Magitot have been shown to have a cyst-wall between the fluid and the fang, which cyst-wall has an epithelial lining, the probability of a common origin of these two forms of cyst is strongly suggested. Verneuil says that there are many epithelial downgrowths at the time of development; and those that do not form teeth may remain in apposition with the fangs to form cysts. Malassez has made similar observations. This, then, is the probable explanation of these cysts, that they are derived from fœtal remnants, and the reason that they are found attached to carious teeth is that these only as a rule are extracted. If suppurative changes ensue in these cysts, they are probably infected by the inroad of septic germs along the carious fangs. In these cases the

wall between the teeth and cysts may become destroyed, leaving the cyst surrounding the carious fangs. Proliferations from the lining membrane may be epithelial, or may be simply granulation tissue arising from the altered surface.

Diagnosis.—(1) From *alveolar abscess* or *necrosis* these cysts may be diagnosed chiefly by their chronicity. The abscess gives rise to less expansion of the alveolus, and tends as a rule to point along the alveolar margin.

(2) From *dentigerous cysts* they may easily be separated by examining the teeth, as the former occur in relation with defective dentition, the tooth or its representative being enclosed in the cyst cavity.

(3) In *empyema of the antrum* we should have discharge from the nostril, probably offensive, without expansion of the jaw. For the latter to ensue, it is necessary that the opening into the nose should be blocked, and that the pus should accumulate to such a degree of tension as to expand the bone. But such a pressure would break down the flimsy barrier between it and the nostril rather than expand the jaw, so that a sign held by some as diagnostic of antral empyema, namely, expansion, may be considered untenable, and, if it should exist, indicates that the antrum is only involved secondarily to inflammatory mischief in the bone itself.

(4) In *cystic disease of the antrum* we have the production of mucous cysts in the lining membrane of the antrum, and as the fluid is not free in the space, these cysts may expand the bone. This condition may, however, be distinguished from the tooth cyst, as there is not the marked circular gap in the anterior wall of the expanded bone, and the teeth may be quite sound.

The *treatment* of these cysts is to lay them freely open inside the mouth, extracting the carious tooth, and scraping out the lining membrane of the space. The cavity should be stuffed from the bottom, and allowed to fill up by granulations.

For the use of the cases quoted I am indebted to the surgeons whose patients they were.

ON

ALBUMINURIA AND THE CONDITION OF THE KNEE-JERKS

DURING AND AFTER

DIPHTHERIA;

WITH TABLES AND CASES.

By HECTOR W. G. MACKENZIE, M.A., M.D., F.R.C.P.

1. Albuminuria has for many years been recognised as a frequent accompaniment and sequel of diphtheria. Opinions, however, vary very much as to what significance, if any, is to be attached to it in regard to prognosis and diagnosis. Many believe that albuminuria has no prognostic value, while others consider its presence as a danger signal. The diagnosis of diphtheria is frequently so difficult, and it is often a matter of such grave importance to arrive at a correct conclusion, that it is worth while to try at least to estimate its diagnostic value.

The large number of cases of diphtheria which have been in the hospital wards during the last few years have given me opportunities of studying the subject of albuminuria in diphtheria, and in the hope that these observations may

assist in the solution of a difficult question I publish them here.

I shall first give some tables showing, at different periods of the disease, the numbers of cases on which observations were made, and the condition of the urine as regards albumen. No selection of cases was made, except that cases where the diagnosis of diphtheria was doubtful were excluded.

TABLE I.—*Showing the Occurrence of Albuminuria in Non-fatal Cases.*

	Day of disease.	Total number of cases.	No alb.	Trace.	Definite amount.	Much alb.	Percent. with alb.
1st week	1	—	—	—	—	—	—
	2	44	31	13	—	—	29·5
	3	66	48	12	5	1	27·3
	4	69	44	16	6	3	36·2
	5	79	48	16	14	1	39
	6	77	53	14	9	1	31
	7	66	36	17	11	2	45
2nd week	8	86	55	14	16	1	36
	9	62	34	13	13	2	45
	10	64	26	20	15	3	59
	11	50	17	17	12	4	66
	12	59	23	13	19	4	61
	13	65	32	15	14	4	50
	14	51	21	13	14	3	59

In 158 out of 237 cases no albumen in the 1st week ; in 78 albumen, or in 33 per cent.

In 95 out of 191 cases no albumen in the 2nd week ; in 96 albumen, or in 50 per cent.

3rd week.—In 60 cases no albumen ; in 62 albumen, or in 51 per cent. Of these, 32 trace, 25 definite amount, 5 much.

4th week.—In 31 cases no albumen ; in 15 albumen, or in 33 per cent. Of these, 6 trace, 8 definite amount, 1 much.

5th week.—In 17 cases no albumen ; in 13 albumen, or in 43 per cent. Of these, 4 trace, 8 definite amount, 1 much.

6th week.—In 9 cases no albumen ; in 5 albumen, or in 35 per cent. Of these, 4 trace, 1 definite amount.

7th week.—In 11 cases no albumen; in 4 albumen, or in 26 per cent. Of these, 2 trace, 2 definite amount.

8th week.—In 10 cases no albumen; in 2 albumen, or in 16 per cent.

9th week.—In 8 cases no albumen; in 2 albumen, or in 20 per cent.

In 167 cases no albumen out of 328, or albumen present in 49 per cent. In 22 cases much albumen. In 65 only a trace.

TABLE II.—*Showing the Occurrence of Albuminuria in Fatal Cases.*

Day of discase.	Total number of cases.	No alb.	Trace.	Definite amount.	Much alb.	Percent. with alb.
1	3	3	—	—	—	—
2	36	27	6	2	1	25
3	47	30	11	5	1	36
4	52	22	11	15	4	57
5	50	19	15	15	1	62
6	37	8	9	14	6	78
7	45	8	10	19	8	82
8	42	11	6	17	8	74
9	29	8	4	6	11	72
10	28	4	2	11	11	86
11	23	4	1	7	11	82
12	24	7	1	7	9	71
13	19	3	—	8	8	84
14	18	1	1	10	6	94

In 47 out of 145 cases there was no albumen in the first week; albumen was present, therefore, in 98, or in 67·6 per cent. (in 14 noted as much, in 38 a trace only). In the second week, in 15 out of 88 cases there was no albumen; albumen, therefore, present in 73, or in 83 per cent. (in 19 noted as much, in 5 a trace only).

In 143 cases out of 187 albumen was present at some period, or in 76 per cent. (in 33 cases the albumen was noted as much).

TABLE III.—*Showing the Occurrence of Albuminuria in Combined Fatal and Non-fatal Cases.*

Day of disease.	Total number of cases.	No alb.	Trace.	Definite amount.	Much alb.	Percent. with alb.
1	3	3	—	—	—	—
2	80	58	19	2	1	27·5
3	113	78	23	10	2	31
4	121	66	27	21	7	45
5	129	67	31	29	2	48
6	114	61	23	23	7	47
7	111	44	27	30	10	60
8	128	66	20	33	9	48
9	91	42	17	19	13	54
10	92	30	22	26	44	67
11	73	21	18	19	15	71
12	83	30	14	26	13	63
13	84	35	15	22	12	58
14	69	22	14	24	9	68

Albumen was present in the first week in 177 cases out of 382, or in 46 per cent. Of the 177 cases with albuminuria 98 proved fatal, or 55 per cent. Of the 205 cases without albuminuria 47 proved fatal, or 23 per cent.

In the second week albumen was present in 169 cases out of 279, or in 60 per cent. Of the 169 cases with albuminuria 73 proved fatal, or 43 per cent. Of the 110 cases without albuminuria 15 proved fatal, or 13·6 per cent.

In 304 cases out of 515 albumen was present at some period, or in 59 per cent. Of the 304 cases with albuminuria 143 proved fatal, or 47 per cent. Of the 211 cases without albuminuria 44 proved fatal, or 21 per cent.

From the study of these tables several points come out pretty clearly. In the first place, about 60 per cent. of the whole number developed albuminuria at some time or other. This proportion, though large, would no doubt have been greater had it been possible to examine the urine more frequently than was actually done. As it is, the proportion is much the same as has been given by Eberth and other observers. Albuminuria occurred in 76 per cent. of the fatal cases, and in 49 per cent. of the non-fatal, and was thus considerably more frequent among the fatal than among the non-fatal cases.

Albuminuria was more frequent in the second week than in the first in both the fatal and non-fatal cases, and the time of its greatest prevalence appears to be about the tenth or eleventh day from the onset of the disease. It was on the whole slightly more frequent among the non-fatal cases in the third week than in the second. In more than two fifths of the albuminuric cases not more than a trace of albumen was found to be present, and in many of these the trace was by no means constant. In only 13 per cent. of the non-fatal albuminuric cases was there much albumen, while this was so in 23 per cent. of the fatal albuminuric cases. The greater frequency and earlier occurrence of albuminuria in the fatal cases comes out very strikingly from the tables.

In regard to diagnosis, it would appear that the most important time to examine the urine for albumen is about the middle of the second week of the disease. In a doubtful case it would always be worth while to examine the urine frequently, especially at this stage. While we can draw no certain diagnostic conclusion, the probability of diphtheria is considerably increased or diminished according as albumen is present or absent. In an undoubted case of diphtheria absence of albumen would seem to be a favorable sign, for the rate of mortality under such a circumstance is less than half that when albumen is present. It would also appear that the earlier albuminuria occurs the worse is the prognosis. The presence of much albumen in the urine is an especially bad sign, the mortality rate being 60 per cent.

Albuminuria was found in 92 per cent. of the fatal cases in which the urine was examined within twenty-four hours of death, and in 80 per cent. and in 72·5 per cent. of those in which it was examined on the penultimate and antepenultimate days respectively. The urine was, therefore, hardly ever found to be free from albumen when examined a short time before death.

It may be observed, too, that, as a rule, much albuminuria meant intensity of the disease, most of the cases in which there was a large quantity of albumen being of a malignant type.

As regards the duration of the albuminuria, in a large

proportion it continued until the fourth or fifth week, but after the fifth week I have not a large enough number of cases from which to draw general conclusions. In one case, which may be considered exceptional, while there was no albuminuria during the second, third, or fourth week, there was albuminuria from the fifth to the tenth week inclusive.

Occasionally the albuminuria, having disappeared for several weeks, reappeared again ; thus in one case in which albumen was present during the second, third, and fourth weeks, and absent during the fifth, sixth, seventh, and eighth weeks, it again appeared in the ninth week. Out of seventeen cases admitted at a late period for paralysis after diphtheria, six were found to have albuminuria.

It is generally stated in the text-books that casts of various kinds, hyaline and granular, are to be found in such cases of albuminuria. These are certainly sometimes present, but oftener than not they are absent. Blood was found in the urine in one or two cases. In no case have I observed any marked degree of œdema, either of the dependent parts of the body or of the face. Once or twice when there has been puffiness of the face with anæmia, such as is suggestive of albuminuria, I have found the urine normal on examination.

In the great majority of the fatal cases post-mortem examination showed no perceptible change in the kidneys. Often they were described as normal, sometimes it was said that they were hyperæmic or congested, sometimes they appeared a little swollen. In one case there were two small infarcts. In one case in which there was tubular nephritis it was probably the result of antecedent scarlatina.

I do not know of any evidence which shows that diphtheria is a cause of chronic albuminuria or nephritis. All the evidence, indeed, goes the other way, to show that although albuminuria may at times continue for a considerable period it ultimately disappears. In a very striking case which I had under observation for over a year, albuminuria continued for quite a year after the attack of diphtheria, and, what was specially interesting, took on a cyclical or intermittent character. This case I shall give in detail in the third section of this paper.

The question has often been asked whether there is any relation between the occurrence of albuminuria and paralysis. Certainly a larger proportion of the cases with albuminuria developed nervous symptoms than of the cases with no albumen. This may in part have been because the albuminuric cases were kept longer under observation than the non-albuminuric. But I think it is not improbable that the presence of albumen may be taken as a gauge of the hold the diphtheritic poison has got on the system generally. Absence of albumen makes it more probable that the patient will escape subsequent paralysis. Certain symptoms, such as vomiting, might be thought to be directly due to uræmia. Vomiting is not at all uncommon in the malignant cases with albuminuria, and is a symptom which gives cause for great anxiety. But there are two reasons against its being the result of uræmia: first, because it occurs, although rarely, when the urine is free from albumen; and second, because it is nearly always associated with other symptoms, such as cardiac failure and irregularity, increased peristalsis, and abdominal pain, which point to its being only one symptom of a neurosis produced directly by the diphtheritic poison.

Convulsions, although not very uncommon before death, are not of the kind usually seen in uræmia.

II. The Knee-jerks during and after Diphtheria.

The following tables, showing the condition of the knee-jerks both in non-fatal and fatal cases at different periods, speak for themselves. The cases on which the observations are founded were quite unselected except on the ground of diphtheria, as in the albuminuria tables. The great majority of the observations have been made by myself, and I have been at considerable pains to obtain accurate results. When the knee-jerks have been found to be absent care has been taken, by repeating the observation under different circumstances, to avoid error. There is often considerable difficulty in obtaining the knee-jerks when a patient is lying in bed; but by flexing the leg and watching the extensor

muscles when the tendon is tapped, the doubt as to whether the reflex is absent or present can generally be overcome.

In the first place it will be seen that it is very uncommon in non-fatal cases for the knee-jerks to disappear before the fifth week, that from the fourth to the tenth or eleventh weeks they are absent in a gradually increasing proportion, and that they continue absent in about the same proportion, from 62 to 69 per cent., from the tenth to the sixteenth weeks, after which the proportion absent steadily diminishes.

Next it may be noticed that from the second to about the seventh or eighth weeks the knee-jerks are brisk in about 20 per cent. of the total number of cases, after which the proportion diminishes.

The proportion of cases in which the knee-jerks were noted feeble was never large enough to be significant except in the third week when it amounted to 14 per cent.

TABLE I.—*Showing the Condition of the Knee-jerks in Non-fatal Cases.*

Week.	No. of cases.	Normal.	Brisk.	Feeble.	Total present.	Absent.	Percentage absent.
1	152	127	18	5	150	2	1·3
2	153	115	30	6	151	2	1·3
3	137	87	27	19	133	4	3
4	87	55	17	7	79	8	9
5	69	36	12	6	54	15	22
6	68	29	12	4	45	23	34
7	67	18	12	4	34	33	49
8	59	14	13	3	30	29	49
9	57	12	9	4	25	32	56
10	51	12	5	2	19	32	62
11	49	13	2	—	15	34	69
12	50	10	4	2	16	34	68
13	45	10	3	2	15	30	66
14	36	8	5	1	14	22	61
15	33	7	3	1	11	22	66
16	30	9	1	1	11	19	63
17	31	14	1	1	16	15	48
18	24	10	2	1	13	11	46
19	23	13	1	1	15	8	35
20	24	13	2	—	15	9	37
21	25	18	—	—	18	7	28
22	25	18	—	—	18	7	28

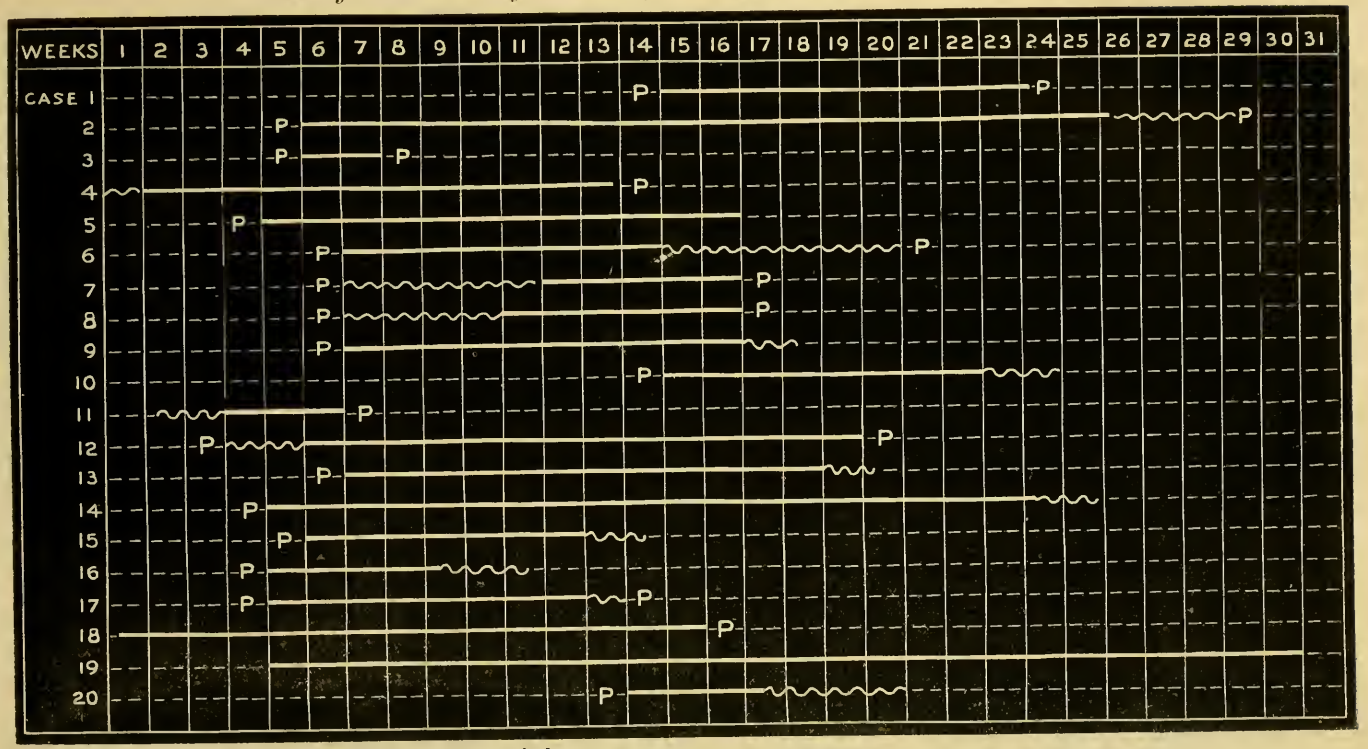
TABLE II.—*Showing the Condition of the Knee-jerks in Fatal Cases.*

Day.	No. of cases.	Normal.	Brisk.	Feeble.	Total present.	Absent.	Percentage absent.
1	—	—	—	—	—	—	—
2	68	66	—	1	67	1	1·4
3	65	52	6	4	62	3	4·6
4	63	44	4	8	56	7	11
5	65	37	14	4	55	10	15
6	41	20	7	2	29	12	29
7	31	13	8	2	23	8	27
8	24	11	7	2	20	4	16
9	19	9	7	1	17	2	10
10	18	7	7	2	16	2	11
11	13	4	6	1	11	2	15
12	12	4	5	1	10	2	16
13	12	3	5	2	10	2	—
14	9	2	5	—	7	2	—
15	6	—	4	—	4	2	—
16	6	—	4	—	4	2	—

In regard to the fatal cases it will be seen that the knee-jerks were absent in an increasing proportion up to the sixth day, when it was 29 per cent., and in a diminishing ratio subsequently. On every day except the fourth, sixth, and seventh, briskness was more common than absence. On the fifth day undue briskness was noted in over 21 per cent. of the cases.

Early disappearance of the knee-jerks is therefore extremely rare except in fatal cases. Considering in what a large number of the fatal cases death was caused by obstruction of the air-tubes, we must regard the proportion in which the knee-jerks disappeared in these cases as significant. I may add that the fatal cases in which the knee-jerks early disappeared were for the most part of a malignant type, in which there were other strong evidences of affection of the nervous system by the diphtheritic poison, such as palate paralysis, vomiting, &c. In many of the fatal cases the knee-jerks were not examined during the last day or two of life. They were found present in only two cases out of twenty-six examined on the last day of life, and in only ten out of thirty-seven examined on the day

CHART *showing the Periods of Absence of the Knee-jerks in Twenty Non-fatal Cases.*



P denotes presence of the knee-jerks.

The thick line denotes absence.

The wavy line denotes that no examination was made during this period.

Note.—In Cases 5, 9, 10, 13, 14, 15, 16, 19, and 20 the time of the return was not ascertained.

before death. It seems probable, therefore, that the knee-jerks actually do disappear in a larger proportion of the fatal cases than the figures indicate.

The chart which I have drawn up, of the condition of the knee-jerks in twenty non-fatal cases, illustrates fairly well the variability in the time at which the knee-jerks disappear and return, and in the period for which they remain absent. In twenty-eight non-fatal cases in which the time of disappearance was determined fairly exactly the following are the particulars. In 2 cases the knee-jerks disappeared in the first week, in 2 in the second, in 1 in the third, in 3 in the fourth, in 9 in the fifth, in 4 in the sixth, in 4 in the seventh, in 1 in the ninth, in 1 in the fifteenth, and in 1 in the sixteenth week. The fifth week thus appears to be the commonest week for the disappearance.

The time for which the knee-jerks were absent was found to be very variable in the cases in which it was determined. Thus in different cases the periods of absence were as follows :—Two weeks, between one and four weeks, between three and six weeks, between three and twelve weeks, between four and twelve weeks, ten weeks, between twelve and twenty-four weeks, more than eight weeks, more than eleven weeks, more than twelve weeks, between fourteen and twenty weeks, between twelve and twenty-four weeks, between fourteen and sixteen weeks, between sixteen and eighteen weeks, more than sixteen weeks, more than twenty weeks, more than seven months.

The time at which the knee-jerks returned was made out more or less exactly in 13 cases. In 2 cases it was the seventh week, in 1 the eighth, in 1 between the ninth and fourteenth weeks, in 2 between the twelfth and fifteenth, in 1 the fourteenth, in 1 between the fourteenth and seventeenth, in 1 between the sixteenth and nineteenth, in 2 the seventeenth, in 1 the nineteenth, in 1 the twenty-first, in 1 the twenty-fourth, in 1 between the twenty-second and twenty-ninth, in 1 between the eleventh and thirtieth weeks, and in 1 not until after nine months.

In some cases the disappearance of the knee-jerks was almost the only symptom of affection of the nervous system. When the lower extremities were paralysed, as a rule the

knee-jerks were lost, but in some cases the loss of the knee-jerks was delayed for a definite interval after the occurrence of paralysis—a point of some diagnostic importance.

The study of these cases leads me to the conclusion that the proportion of cases in which the knee-jerks disappear is a large one. To follow out even one case requires a good deal of patience, and therefore it is worth while bearing in mind that the most likely time to find the knee-jerks absent is from the sixth to the thirteenth weeks. The knee-jerks were found to have disappeared in fifty-one out of sixty-four cases which were followed as far as the thirteenth week, or in nearly 80 per cent.

III. Cases.

The following cases, which are given in detail, illustrate some of the points which have been brought out in the preceding two sections. I have to thank the various physicians under whom these cases were for permission to publish them here.

Case 1 is the only one which I think it necessary to publish in connection with what I have said regarding albuminuria. It is the case I referred to towards the end of my remarks on that subject in which the albuminuria continued for quite a long time after the attack of diphtheria. The patient was originally admitted for diphtheritic paralysis, and the albuminuria first became pronounced as the paralysis was passing off.

Case 1. *Diphtheria; paralysis; late occurrence of albuminuria, which was of long duration and of a cyclical character.* —Ernest T—, æt. 14, was admitted to St. Thomas's Hospital under the care of Dr. Harley on August 23rd, 1889, for weakness of the arms and legs following a sore throat fourteen days previously. The knee-jerks were absent, and the urine contained no albumen. A few days after admission regurgitation to the nose occurred, and he became troubled with coughing on drinking quickly. The arms were more affected than the legs. He remained in the hospital nearly six

weeks. His arms were still weak when he left, and continued so for a few weeks after leaving. The urine was examined on several occasions while he was in the hospital, although certainly not every day, but no albumen was ever found. On October 16th, a fortnight after he had left the hospital, I saw him again, and found that the boy was anæmic, and that the urine now contained a small quantity of albumen. On October 30th, a large quantity of albumen having been found present in the urine, on my suggestion he was readmitted. In the evening, after lying in bed all the afternoon, he passed urine which contained only a trace of albumen. On November 2nd there was no albumen detected. On November 4th, although there was no albumen in the urine of the previous evening, there was a trace both in the morning and evening specimen. November 6th no albumen in the morning, but distinct trace in the evening. In short, the urine passed in the early morning was examined on sixteen occasions; twice a trace of albumen was found, twice a definite small quantity, and twelve times no albumen was present. On nine occasions that passed at 11 a.m. was examined; on five of these no albumen was discovered, three times a trace was present, and once a definite small quantity. On sixteen occasions that passed at 7 or 8 p.m. was examined, with the result that on eight occasions there was no albumen, seven times there was a trace, and once a definite quantity. There was, therefore, more commonly albumen present in the evening and in the middle of the day than in the morning. Differences of diet had apparently no effect.

The patient left the hospital after a month's residence. I saw him at intervals of a fortnight for several months, and always found a small quantity of albumen in the urine passed at midday. Four times I examined the urine passed at early morning, and there was no albumen, and the same number of times that passed on going to bed, and in that I only once found a trace of albumen present.

On the 31st May, 1890, I admitted him under my care to the Royal Free Hospital, and the urine passed at 3 a.m., at 6 a.m. after early breakfast, before and after the midday meal, and at bedtime was regularly examined as in the annexed table.

TABLE *showing the Condition of the Urine as regards Albumen at Stated Intervals.*

	Urine at 8 a.m.	At 6 a.m.	At noon.	At 1.30 p.m.	At bedtime.
June 1	—	—	—	$\frac{1}{16}$ alb.	$\frac{1}{64}$ alb.
2	— Faintest trace.	Sp. gr. 1026. $\frac{1}{16}$ alb.	— Trace of alb.	— $\frac{1}{16}$ alb.	— $\frac{1}{64}$ alb.
3	Trace.	$\frac{1}{32}$ alb.	Trace.	$\frac{1}{32}$ alb.	$\frac{1}{32}$ alb.
4	Sp. gr. 1006. Trace.	— No alb.	Sp. gr. 1018. No alb.	1010, neutral. No alb.	1020. Trace of alb.
5	1024. $\frac{1}{64}$ alb.	— $\frac{1}{32}$ alb.	1022. Trace.	1033. $\frac{1}{16}$ alb.	1034. $\frac{1}{64}$ alb.
6	1024, alkaline. No alb.	1030. $\frac{1}{32}$ alb.	— No alb.	— $\frac{1}{16}$ alb.	— Not saved.
7	1030, alkaline. No alb.	1024. No alb.	— —	— —	— —
8	— —	— —	1020. $\frac{1}{64}$ alb.	1020. $\frac{1}{32}$ alb.	1030. No alb.
9	1024, alkaline. No alb.	1025. No alb.	1024. No alb.	1026. $\frac{1}{32}$ alb.	1020. Trace alb.
10	Alkaline. No alb.	1022. $\frac{1}{16}$ alb.	1022. No alb.	— —	1024. —
11	1004, faintly acid. Trace of alb.	1022. Trace of alb.	— Not saved.	1024. $\frac{1}{32}$ alb.	1020. $\frac{1}{32}$ alb.
12	1025, faintly acid. No alb.	1016. No alb.	1026. $\frac{1}{64}$ alb.	— $\frac{1}{32}$ alb.	— $\frac{1}{32}$ alb.
13	— $\frac{1}{32}$ alb.	— $\frac{1}{10}$ alb.	1021. $\frac{1}{32}$ alb.	1016. $\frac{1}{64}$ alb.	1016. Trace alb.
14	1020. No alb.	1020. $\frac{1}{64}$ alb.	— —	— —	— —
15	— —	— —	— —	— —	1020. Trace alb.
16	1016, alkaline. No alb.	1020. $\frac{1}{8}$ alb.	1020. $\frac{1}{64}$ alb.	— Not saved.	1020. Trace alb.

	Urine at 3 a.m.	At 6 a.m.	At noon.	At 1.30 p.m.	At bedtime.
June 17	1012, faintly acid. No alb.	1020. Trace alb.	1010. Faint tr. alb.	1020. $\frac{1}{12}$ alb.	1024. Trace.
18	1010, acid. Trace alb.	— $\frac{1}{16}$ alb.	1018. Trace alb.	— Not saved.	1008. Trace alb.
19	1014. No alb.	— $\frac{1}{32}$ alb.	— $\frac{1}{64}$ alb.	— $\frac{1}{4}$ alb.	1010. $\frac{1}{64}$ alb.
20	1012. No alb.	— $\frac{1}{12}$ alb.	1010. $\frac{1}{64}$ alb.	1026. $\frac{1}{8}$ alb.	1018. $\frac{1}{64}$ alb.
21	1010. No alb.	1022. $\frac{1}{16}$ alb.	— —	— —	— —
22	— —	— —	1022. $\frac{1}{16}$ alb.	— Not saved.	1016. Trace.
23	1010. No alb.	— $\frac{1}{32}$ alb.	1016. Trace alb.	1024. $\frac{3}{32}$ alb.	1024. $\frac{1}{16}$ alb.
24	1012. No alb.	— Trace alb.	1006. Trace alb.	1024. $\frac{1}{32}$ alb.	— $\frac{1}{32}$ alb.
25	— No alb.	— $\frac{1}{16}$ alb.	1020. $\frac{1}{32}$ alb.	1026. No alb.	— $\frac{1}{10}$ alb.
26	— No alb.	— $\frac{1}{16}$ alb.	— Not saved.	1024. No alb.	— Not saved.
27	1022, alkaline. No alb.	— $\frac{1}{8}$ alb.	1022. —	1026. —	1022. Trace alb.
28	1012, alkaline. No alb.	— —	— —	— —	— —

NOTES.

Breakfast	5 a.m.
Lunch	9 a.m.
Dinner	12 noon.
Tea	4 p.m.
Supper	7 p.m.
Goes to bed . . .	8 p.m.

June 1st.—Ordinary full diet.

June 11th.—Patient began milk diet at 6 p.m.

June 16th.—Milk diet stopped. Ordered fish, eggs, gluten bread.

June 21st.—Allowed toast instead of gluten bread.

The following were the results :—The urine collected at 3 a.m. was examined on twenty-four occasions ; seventeen times there was no albumen, five times a trace, and twice a definite small quantity. That passed at 6 a.m., after

breakfast, was examined on twenty-two occasions; on only four of these was there no albumen, three times there was a trace of albumen, and fifteen times there was a definite quantity. That passed at noon before dinner was examined on nineteen occasions, on four of which there was no albumen, on seven a trace, and on eight a definite quantity, never, however, so large in amount as after breakfast. That passed at 1.30 p.m. was examined on eighteen occasions; on three of these there was no albumen, on fifteen albumen was present, and as a rule in larger quantity than at any other time. At bedtime, after supper, the urine was examined on twenty occasions, and only once was no albumen found to be present, nine times there was a trace, and eleven times there was a definite quantity.

Sometimes the patient was kept in bed, but as a rule he was allowed to be up and about. For one week he was given food consisting entirely of milk and carbo-hydrates. Another week he was cut off the carbo-hydrates, and limited to diabetic diet, but the alterations of diet made no appreciable difference. Exercise and differences of temperatnre seemed also without effect. The chief factor which influenced the amount of albumen was the digestion of food of any kind. I may add that the knee-jerks remained absent in this case about nine months, but they had returned before his admission to the Royal Free Hospital. The boy is now (September, 1891) in good health and at work, and I have recently found no albumen present in the urine, either in the morning or evening specimen.

The next two cases are types of the usual course of the disappearance and return of the knee-jerks, the former taking place from the fifth to the seventh weeks, the latter about the fifteenth week. The patients were brother and sister, and their cases were watched at the same time.

Case 2. *Diphtheria; paralysis of accommodation preceding paralysis of palate and legs; "pins and needles" in hands, &c.; loss of knee-jerks at end of five weeks, return about the fifteenth week.*—G. C—, a boy æt. 7, admitted May 15th, 1889, discharged June 16th, 1889.

Ill for twelve days before admission. At first headache,

sickness, and languor. On the 10th of May he first complained of sore throat. Two others of the family were admitted with diphtheria along with him.

On admission.—Delicate looking. Voice husky. Tonsils much inflamed, ragged and sloughy, but no membrane visible. Tongue furred.

Progress.—The urine contained small quantities of albumen during the first fortnight of his stay in the hospital. He became very anæmic. He complained first of "pins and needles" in his legs and feet on May 25th and several times afterwards in the hands. His voice was hoarse and gruff during the first fortnight. His accommodation was tried repeatedly. On May 22nd he could read No. 1 Jaeger without difficulty. On May 28th he read only a few words when he said he could hardly see it, and that the words had run into one another. On June 4th he said No. 1 J. looked like a lot of lines, but he read No. 8 with little difficulty. On June 7th he could only read a few words of No. 8, when he said it became hazy. The knee-jerks were repeatedly tried and were quite brisk until the second week of June, when in the course of a few days they disappeared, and they were still absent when he left on the 16th. No other paralytic affection was noticed.

June 22nd.—The boy was seen again on 19th. There was quite definite paralysis of palate. Fluids regurgitated to nose, and there was coughing on swallowing, and the knee-jerks were quite absent.

28th.—Accommodation ;—A few words of No. 8 can be read, not anything lower. Pupils act well to accommodation. His mother reported that very often fluids ran from the nose on drinking, but that there was no coughing on swallowing. On trial there was no regurgitation, but a little coughing. Knee-jerks not obtained. Voice very nasal. Only sick once since he went home.

July 3rd.—Regurgitation has ceased. Can read a few words of No. 1. Knee-jerks still absent.

10th.—No paralytic symptoms with exception of absence of knee-jerks.

17th.—Knee-jerks still absent. No other abnormal symptoms. Sight good.

31st.—Knee-jerks still absent. Mother has noticed that the legs, especially the left, sometimes give way under him and that he falls down on his knees.

August 14th.—Anæmic. Knee-jerks still absent. Still sweats much at night. Legs still give way at times suddenly, so that he goes down on his knees. No sickness.

28th.—Knee-jerks not obtained. Walks fairly well, but still weak on legs. No tingling or numbness.

September 10th.—Boy has had several fainting attacks, four or five last week, generally in the evening. He still sweats very much at night, so that his mother is obliged to change his night-shirt. He is also very restless. He is still anæmic. Pulse regular. Complains of weakness in legs. No tingling. Knee-jerks only occasionally, and then very doubtfully elicited.

25th.—Two fainting attacks in last fortnight. Still anæmic, sweating and restless at night. Walks badly. Knee-jerks still only occasional.

October 9th.—With the exception of "pins and needles" in legs occasionally during the last fortnight he has been pretty well. The knee-jerks are now present, occasionally a very brisk response to the tap.

23rd.—The knee-jerks again only occasionally obtained. Many taps produce no result at all. Eats enormously. Fairly well in other respects.

December 10th.—Legs still sometimes give way. Knee-jerks only occasional.

Case 3. *Diphtheria of fauces and nose; paralysis of palate and of accommodation; disappearance of knee-jerks between forty-seventh and eightieth day, return about the fifteenth week.*—A. C—, æt. 5, admitted May 15th, discharged June 12th. Taken ill May 13th with sickness; May 14th, sore throat.

On admission.—Anxious looking and miserable, thick discharge from nose, membranous patch on fauces. Great difficulty in swallowing and some difficulty in breathing, but no retraction. Voice thick. Knee-jerks normal.

Progress.—The discharge from the nose lasted nearly a fortnight after admission, but the membrane cleared off the throat more quickly. Albumen was present in the urine

during the first fortnight. Regurgitation of fluids to the nose was noticed as early as the 20th, the seventh day of the illness. It was only occasional, but generally occurred if the child drank at all quickly, when coughing was also excited. Accommodation was beginning to fail at the end of the third week. On May 28th I noted : "Threads needle with ease," while on June 5th she was unable to thread the same needle, although she could thread one with a larger eye. The knee-jerks remained present while she was in the hospital.

June 28th—Knee-jerks present. Threads needle well. No difficulty with swallowing since going out.

July 31st.—Child had not been seen for nearly five weeks. The reflexes were now absent. At times the legs give way under her. Profuse perspirations.

August 14th.—Knee-jerks still absent. Profuse perspirations. Sight very good. Never sick. Legs never give way under her.

28th.—Knee-jerks just obtainable. Rather weak on legs. No tingling or numbness.

September 10th.—Right leg is said sometimes to give way under her. Knee-jerks obtained with difficulty. Very restless at night ; much sweating at night.

25th.—Knee-jerks now fairly normal. Still rather weak on legs. Still sweating and restlessness at night.

October 21st.—Knee-jerks somewhat erratic. Falls down occasionally from giving way of legs.

December 10th.—Knee-jerks present.

The next case is an illustration of the delay of the loss of the knee-jerks after the occurrence of paralysis. It shows that there may be diphtheritic paresis of the lower extremities with, for a time, normal or brisk knee-jerks.

Case 4. *Diphtheria ; paralysis of palate and of muscles of deglutition and of accommodation ; double vision ; numbness in lips, tongue, tips of fingers, &c. Paresis of lower extremities ; disappearance of knee-jerks at end of three months ; return of knee-jerks and complete recovery at the end of six months.* —J. L—, a carpenter, æt. 26, admitted February 25th, discharged May 1st, 1889.

He was taken ill with "sore throat" on the 6th of January,

his wife and child having been taken ill a week or so before, the child dying of diphtheria on 1st of January. He was ill with the throat about three weeks.

About the beginning of February he commenced to have difficulty in swallowing. He first noticed that liquids occasionally went up to his nose when he swallowed. Solids seemed to stick in the pharynx and had to be brought back into the mouth and be re-swallowed. Soon coughing was excited by swallowing liquids. These symptoms continued until his admission.

About the 10th of February he noticed his sight was getting bad. When he tried to read a newspaper all the lines ran into one. A few days later he had quite definite double vision.

Almost as soon as the throat got well he had a numb feeling in the tongue and upper lip, and soon after the tips of his fingers felt numb. These symptoms also persisted.

When admitted, which was seven weeks after the onset of his illness, the following was his condition :—Thin and anæmic. Nose narrow, ' adenoid vegetations ' type.

Voice nasal. When he spoke air could be felt to come through the nose.

When he swallowed he said the food stuck in his throat.

He could only read No. 20 J. partly at about two feet, the accommodation being as thus shown much affected. The pupils acted well both to light and accommodation.

He complained of some numbness in the tips of the fingers and in the tip of the tongue. No anæsthesia as tested by touching.

Knee-jerks brisk but no plantar reflexes were obtained.

No affection of bladder and rectum.

On March 5th I noted : " Can read No. 14 J. but nothing smaller than that. Says that two days ago he still saw double after looking steadily at an object for a few seconds, and this still occurs occasionally. Swallowing seemed more difficult yesterday. Throat felt stiff. Tongue still feels numb. No difficulty with micturition, but he feels a want of power to strain when at stool."

On March 9th I again noted : " Solid food appears to stick in the pharynx and there is a difficulty in passing it on into the

œsophagus. Liquids still excite coughing when swallowed, and on taking a long draught he is apt to get regurgitation to the nose. As the latter sensation is so unpleasant, he drinks slowly and deliberately. Still 'pins and needles' in the tips of fingers and toes."

He soon recovered the power of accommodation, but the left eye recovered more slowly than the right.

During all the two months he remained in the hospital, he continued to have various sensory phenomena, sometimes "pins and needles," or tingling about the hands, legs, and feet, sometimes what he described as an uncomfortable feeling of grit about the hands, sometimes a prickling and itching feeling towards the mid-line of the face and neck. Nearly always there was more or less numbness at the finger-tips, so that he could not perform some actions which required precision of touch, such as buttoning his shirt or picking up a small object. When the arm- or leg-muscles were tapped he sometimes got "pins and needles" in the hands or feet in a very marked degree.

Some weakness of the left upper extremity developed about the beginning of March, but this soon passed off, and towards the end of March he was complaining of increasing weakness in the legs. *The knee-jerks continued brisk during March, but on April 9th, for the first time, they were found to be absent,* and continued absent after this date while he was under observation in the hospital.

He frequently complained of a want of power in the abdominal muscles, principally experienced when he attempted to strain at stool. Occasionally he experienced difficulty in expelling his urine, which flowed slowly and only after straining.

At no time was there any visible weakness of the diaphragm, and the intercostals were not affected.

On April 18th I noted: "No difficulty in swallowing now. Still partial anæsthesia of soft palate. 'Cold feeling' in roof of mouth."

By the end of April he was much better. He was able to walk fairly well, although he staggered a little on turning round. His troubles when he left were principally sensory, such as those mentioned.

August 10th.—The patient was not seen between May 1st and this date. The knee-jerks were now quite brisk, and the patient stated they had returned about the beginning of July, he having been in the habit of trying them for himself. Since their return he had been able to walk quite well. He continued to suffer from "pins and needles" and numbness for six weeks after leaving the hospital. His only trouble now was aching pains in legs.

Case 5 illustrates the disappearance of the knee-jerks at a still later period, four months after the original disease.

Case 5. *Nasal and tonsillar diphtheria; late onset of nervous symptoms; disappearance of knee-jerks after four months.* —F. W—, æt. 8, girl, was taken ill on June 3rd, 1889; next day the breathing became bad, and on the 5th she was brought up to the hospital and admitted under the care of Dr. Ord. She was a well-nourished child but looked pale and ill. There was a thin muco-purulent discharge from both nostrils, the fauces were reddened and there was membrane on both tonsils. The glands were enlarged and tender. The knee-jerks were present.

In two or three days the throat had cleared and the nasal discharge had ceased, and the patient was better in every way. She made a good recovery and was able to leave the hospital on the 3rd of July. No paralysis developed at this stage either of palate or of accommodation. The knee-jerks were quite brisk on the 2nd of July.

On August 3rd she was seen again. The knee-jerks were still present, the accommodation good, and there was no trouble of any kind.

On August 14th I noted: "Occasional slight difficulty with swallowing. Complains of pains in legs. Accommodation good. Walks well. Knee-jerks present."

I did not see her again until September 18th when I noted: "Mother says the child is weak on her legs and walks badly. Frequently the child falls down from the legs giving way under her. Formerly a very good walker. Knee-jerks present and fairly brisk. Accommodation good."

On September 25th: "Still walks very badly, going slowly and becoming very soon tired. Complains of pains in calves

and tingling in the fingers. Knee-jerks erratic, some taps producing no jerks and others brisk ones. Accommodation good."

October 2nd: "Walks badly, sometimes falls and hurts herself. Still pains in the calves. Knee-jerks almost completely absent, only occasional response."

16th.—Knee-jerks almost completely absent.

28th.—Knee-jerks now quite absent.

In Case 6 the time for which the knee-jerks were absent was unusally short, being only fourteen days.

Case 6. *Laryngeal and tracheal diphtheria; tracheotomy; paralysis of palate and of accommodation; aphonia; transitory disappearance of knee-jerks at end of five weeks.* —E. S—, female, æt. 9, admitted December 26th, 1888, under the care of Dr. Stone, discharged February 20th, 1889.

She had had measles followed by whooping-cough sixteen months previously.

On December 20th she was taken ill with fever, headache, and anorexia. Four days later a croupy cough came on, which continued to get worse and was attended with very difficult breathing.

On admission.—In great distress from difficulty of breathing. Marked retraction of lower ribs. Hoarse, metallic cough. No membrane on tonsils. Glands of neck enlarged and hard.

Tracheotomy performed at once and a large quantity of membrane coughed up with immediate relief.

Progress.—The urine at first contained much albumen, about half, and there was still a small quantity at the end of the first week. *Coughing on swallowing* was noted on December 29th, and this symptom lasted for some days. The tracheotomy tube was removed on December 30th. The knee-jerks were repeatedly examined and always found brisk during the early stage.

January 9th.—The tracheotomy wound quite closed and healed. Aphonia present. Some paralysis of soft palate, as shown on attempts at phonation. Accommodation good. Heart's action slightly irregular.

January 14th.—Considerable failure of accommodation. Cannot read smaller print than No. 8 J. Still aphonia and paralysis of soft palate.

21st.—Voice returning but gruff and deep. No improvement of accommodation.

28th.—Food occasionally comes through nose on swallowing. *Knee-jerks, which had hitherto been found to be brisk, now absent.*

30th.—Palate paralysis more marked, air always coming through the nose on phonation. Only type No. 16 J. and larger can now be read. Pupils still react to accommodation. Knee-jerks quite absent. No anæsthesia.

February 1st.—Knee-jerks occasionally present but not after every attempt.

4th.—Occasional and feeble response when tried for knee-jerks.

9th.—Knee-jerks much more marked.

12th.—Knee-jerks present. Accommodation so much improved that she can read No. 1 J. at about ten inches. Voice much improved.

June 28th.—Knee-jerks present. Has been perfectly well since she left.

The remaining cases are all instances of the early disappearance of the knee-jerks and of the early onset of paralysis in fatal cases.

Case 7. *Severe pharyngeal diphtheria ; early disappearance of the knee-jerks (fifth, or sixth day), and early onset of paralytic symptoms. Death on the fifteenth day.*—A. E—, female, æt. 11, admitted under the care of Dr. Bristowe, March 16th, 1889, died March 29th.

On March 14th she had headache, rigors, vomiting, and general malaise. A sore throat afterwards came on, which increased in severity and caused pain and difficulty in swallowing.

With the exception of measles when quite young, she had never been ill before. A brother had died a year previously from "sore throat," and another had just recovered from a similar illness.

When admitted the child, who was delicate looking, was flushed and complained of a bad throat. The right tonsil and the right arch of the palate and uvula were covered with a thick coherent membrane. On the left side the affection was much slighter. Nose not affected. The cervical glands were enlarged. The voice was thick but the breathing was unembarrassed. Some râles were to be heard over lower part of right lung. The knee-jerks were not obtained. P. 108, small.

Next day, March 17th, the patient seemed better, more cheerful, and there seemed no extension of the disease. I noted: "Knee-jerks difficult to obtain on account of the stiff position in which the patient holds her legs. Certainly present in left but not obtained in right."

March 19th.—The throat has been sprayed with a solution of bicarbonate of soda and some membrane removed. Swallowing difficult. Urine albumen. Slight discharge from nose. Knee-jerks absent after this date.

21st.—Very exhausted. *Frequent vomiting.* Fauces and tongue covered with black patches. Urine $\frac{1}{5}$ albumen.

23rd.—*Copious nasal discharge.* No difficulty in swallowing. No return of milk by nostrils. Fauces and soft palate almost free from membrane. Urine $\frac{1}{6}$ albumen.

25th.—Food returned through nose for the first time last night. Pulse very feeble but regular. Vomited twice in twenty-four hours.

27th.—Aphonia since 25th. Extreme weakness. Continued regurgitation through nose.

29th.—Still complete aphonia. Tingling and "pins and needles" in fingers. Frequent, painful, and sometimes involuntary micturition. Pulse almost imperceptible. Vomiting several times. Great prostration. A few hours later she died.

Post-mortem examination.—Ulceration of both tonsils. Larynx much injected, but not ulcerated. Lungs: tubes full of frothy fluid, bases collapsed and airless. No membrane anywhere.

Case 8. *Diphtheria; paralysis of palate on eighth day; vomiting and nausea; disappearance of knee-jerks on fifteenth*

day; death on seventeenth day from cardiac failure.—Annie E. W—, æt. 10, was taken ill on September 8th, 1889, with difficulty of swallowing and swelling of the neck. She was admitted to the hospital on September 10th under the care of Dr. Harley. The fauces and tonsils were much swollen and congested. Membrane on right tonsil. Nasal discharge. The throat and nose continued bad for a week. There was considerable difficulty in swallowing.

On the eighth day of the illness she began to have coughing and regurgitation to the nose when she swallowed, and this continued. Vomiting commenced on the seventh day and occurred twice or thrice a day subsequently. The urine contained albumen from the eighth day onwards. *The knee-jerks, which were at first present and brisk, disappeared on the fifteenth day.*

She became weaker, more anæmic, and more restless. On the seventeenth day of the illness she was extremely prostrate and very restless. She had a distressing feeling of nausea, and tried to make herself sick by putting her finger down her throat. Pulse almost imperceptible. She had several attacks in which she became blue, and in one of these she died quietly.

Case 9. *Malignant diphtheria; disappearance of knee-jerks on the third day; paralysis of the palate and death on the fourth day.*—A. L. W—, æt. 8, the sister of A. E. W— (Case 8), was taken ill on September 26th, 1889, with pains in limbs, vomiting, &c. Next morning the throat was swollen and painful, and she was brought up to the hospital and admitted under Dr. Ord.

The child was well-nourished but she looked very ill. She had a waxy pallor. The fauces were swollen and reddened, and there was membrane on both tonsils. The glands at the angles of the jaw were much swollen and very tender. The tongue was thickly furred and the breath was offensive. *The knee-jerks, though present, were very feeble.* She was very restless. Swallowing was very painful. The pulse was 92, weak but regular. The temperature was 100·4°.

On September 28th it was noted: "She has been very

restless and has slept badly. Breath very offensive. Much membrane on the tonsils and the posterior wall of the pharynx. Muco-purulent discharge from nose. *Knee-jerks absent.*"

On September 29th the child was worse. The waxy pallor was even more marked than on admission. There was much thin watery discharge from the nose. I noted: "Great difficulty in swallowing. Food pours through nose when she attempts to do so. Child was violently sick this morning. Vomit very offensive. Pulse 88, very weak. *Knee-jerks still quite absent.* Urine, trace of albumen." The same day the child died. I obtained the following account of the last hours from the nurse :—"All day it was very difficult to get her to swallow at all. About 3 p.m. she suddenly became blue and appeared collapsed. This condition lasted till about 6 p.m., when she rallied somewhat and took ℥ss of brandy with water by mouth. Two brandy enemata previously given were not retained. She became very restless and her extremities became cold. About 10 o'clock the blueness returned, and she died about midnight in a strong convulsion."

Autopsy.—Thick membrane on tonsils which were very large. Membrane on uvula, epiglottis, interior of larynx, and upper two inches of trachea.

Case 10. *Diphtheria following measles; tracheotomy; early disappearance of knee-jerks and onset of paralysis. Death. Autopsy.*—F. C. W—, æt. 5, admitted January 2nd, and died January 9th, 1889. Measles about the beginning of December. He was suddenly attacked with difficulty of breathing on December 31st, and when admitted on January 2nd, tracheotomy was indicated and performed.

On January 4th the knee-jerks were found to be absent, and feeding by mouth was followed by regurgitation through the tracheal tube, on which account the nasal tube was ordered.

On several occasions he had violent attacks of dyspnœa followed by great exhaustion. Several times also he coughed up a quantity of membrane.

Post-mortem examination showed inflammation of the

larynx and trachea, the mucous membrane being thickened, red, and irregularly and very superficially ulcerated.

Case 11. *Early onset of paralysis with disappearance of knee-jerks. Vomiting; cardiac failure. Death on fifteenth day.*—W. V. C. N—, æt. 3, was taken ill with a sore throat on December 7th, 1886. She developed a nasal discharge. She refused food and wasted rapidly. On the 18th she was brought to the hospital and admitted. The tonsils and pharyx were covered with decomposing membrane, and there was a purulent discharge from the nose. The glands of the neck were enlarged. Liquids freely regurgitated to the nose when she swallowed. The knee-jerks were absent. The urine contained a large amount of albumen. She was violently sick the same day and on the day following.

On the 21st she was sick once without relation to food or medicine, the vomiting coming on while she was asleep. She became collapsed, extremities cold, pulse very feeble, and she died next morning.

At the post-mortem I found membrane on the under surface of the epiglottis and on the epiglottic folds, and there was a good deal of mucus on the surface of the trachea and bronchi. There were a few hæmorrhages on the surface of the lower lobe of the right lung.

THREE CASES

OF

EARLY TUBAL GESTATION

SUCCESSFULLY TREATED BY

ABDOMINAL SECTION,

TWO OF THE CASES AFTER, AND ONE BEFORE, RUPTURE OF THE TUBE.

By CHARLES J. CULLINGWORTH, M.D., F.R.C.P.

The subject of tubal gestation has recently been surrounded with fresh interest by the new light thrown on its pathology. It is now known that the condition is much more common than it has hitherto been supposed to be, and that many of the lives sacrificed, from the accidents to which it is liable in all its stages, might have been saved by the timely interference that a fuller knowledge would have ensured. Its early detection is now, therefore, a matter of, in the strictest sense, vital importance, and it becomes a duty to record any cases that are likely to assist in rendering such detection easy. The three here given do not embrace all the instances of extra-uterine gestation that came under my

care in Adelaide Ward during the period they cover, but they form so distinct and interesting a group that they may, with advantage, be studied by themselves.

For the convenience of the reader and to facilitate reference, I have prefixed, as a heading to each case, a short summary of its main features.

Case 1. *Slight hæmorrhage, followed by recurrent attacks of pain, in a married woman who, sixteen years after her last child, had missed two menstrual periods; distension of abdomen, with increase of pain and extreme tenderness; uterus displaced forwards, canal 3½ inches; diagnosis of ruptured tubal gestation; abdominal section: blood in peritoneal cavity; ruptured gestation—sac in left Fallopian tube; fœtus in abdominal cavity, attached by umbilical cord to placenta, which was partially protruded through the rent; right tube occluded and distended with mucus and altered blood; both tubes removed; peritoneum flushed; persistent vomiting for four days, latterly stercoraceous; pneumonia seventh day to eleventh; some suppuration from wound; recovery.* (From notes by Mr. Duke.)—Annie J—, æt. 37, married, an ironer in a laundry, residing in Lambeth, was admitted into Adelaide Ward at noon on the 25th of June, 1890, complaining of acute pain in the abdomen, with distension and intense tenderness.

Previous history.—The catamenia commenced at thirteen. The patient was married at twenty, and was confined of her first and only child when twenty-one. Labour was natural; patient was up on the ninth day and at work again in three weeks. Menstruation was re-established in six weeks, and from that time has been accompanied with pain, which, before marriage, it was not. For the last two years the flow has appeared irregularly, the intervals having been sometimes six weeks in length, at other times three months.

Eight years ago patient was laid up for fourteen weeks with acute rheumatism; she has never been well since.

Present illness.—After having missed two menstrual periods, she had a slight blood-stained discharge for two days, at the end of which time, namely, on the 11th of June, she was suddenly seized with severe pain whilst in the

act of micturating. She had to leave off work and go home. During the next ten days the pain continued sufficiently severe to keep her awake at night, but although she felt very ill she continued to get about in the daytime. She complained of headache, thirst, nausea, loss of appetite, and pain during micturition and defæcation. On June 19th she came to the casualty department of the hospital and, on the 21st, was entered as an out-patient and examined. The abdominal walls were too rigid for anything to be made out bimanually. The uterus, however, was felt to be displaced forwards and enlarged, and the sound showed the canal to be three inches and a half in length. When she reached home the pain had become so much worse that she was obliged to go to bed. The vomiting was relieved by the medicine, but in every other respect she became worse day by day, the pain spreading over the whole abdomen, and on the 25th, she was admitted as an in-patient.

State on admission.—A fairly well-nourished woman, with blanched appearance and anxious expression of countenance, lying on the back with knees drawn up, and complaining of severe pain all over the abdomen, which was greatly distended and tympanitic, and so excessively tender that the slightest touch caused her to cry out. Nothing abnormal could be detected on vaginal examination, and bimanual examination was altogether impracticable. The skin was hot and dry; temp. 100°; pulse 116; respirations 30, thoracic. Tongue moist, coated with white fur. Heart and lungs normal. Urine sp. gr. 1012, highly coloured, acid, free from albumen.

I saw her the following day. She had slept some hours during the night after a subcutaneous injection of morphia, but was evidently extremely ill. On learning the history, I came to the conclusion that the case was one of ruptured tubal gestation, and decided to open the abdomen as soon as the consent of the patient's husband had been obtained. The patient herself had not suspected that she was pregnant.

The following is the record of the temperature from admission up to the hour of operation :

June 25th, Noon	100°	26th, 8 a.m.	101°
4.30 p.m.	101·8	4 p.m.	100·8
8 p.m.	101·2	Midn.	100·2
Midn.	99·8	27th, 4 a.m.	100·6
26th, 4 a.m.	100	8 a.m.	102·8

Abdominal section was performed at 9.30 a.m. June 27th, Mr. Osburn assisting. An incision, three and a half inches in length, was made half way between the umbilicus and the symphysis pubis. On opening the peritoneum, there was a gush of thin dark blood, suggesting a wound of a large vein. No vein could be detected, and it soon became apparent that the flow came from within the peritoneal cavity. The opening was enlarged and blood poured out freely. On introducing the hand, a large, tense, oblong tumour was felt extending behind the uterus and right broad ligament; this was recognised as the Fallopian tube, occluded, distended with fluid, and attached to the parts around by recent and easily separated adhesions. The tube was enucleated without difficulty, and removed along with the normal right ovary. The contents of the distended tube proved to be a dark brown viscid fluid, consisting of mucus and altered blood.

The left appendages were now examined and brought into view. The tube was distended in its central portion, and rupture had taken place into the peritoneal cavity. Through the opening, which was $1\frac{1}{4}$ inches in length, the placenta was partially protruding. The placenta had a diameter of $2\frac{1}{4}$ inches, and attached to its margin was the umbilical cord, 2 inches in length and one line in diameter. A small fœtus, $2\frac{5}{16}$ inches long, attached to the other end of the cord, was lying in the abdominal cavity, in front of the intestines. All these parts gave off an offensive smell of commencing decomposition. There was no evidence of general peritonitis. The anæsthetist now announced that the patient was seriously collapsed, and the operation was concluded with all possible speed. The left broad ligament was transfixed, and the tube tied off and removed. The lower portion of the omentum, being thickened, and having blood-clot firmly adherent to it along its whole length, was tied in sections and removed.

The peritoneal cavity was irrigated with three gallons of hot solution of boric acid ; a number of small clots and a quantity of dark fluid blood being thus washed out. More fluid and clots were removed by sponging, and, a glass drainage-tube having been inserted, a large flat sponge was placed beneath the incision, and the silkworm gut sutures were introduced. On removing the sponge, it was found saturated with blood-stained fluid. There being, however, no appearance of fresh hæmorrhage, the sutures were tied, and the usual dry dressings applied.

The operation lasted an hour and a half. The patient, at its conclusion, was cold and her pulse was feeble and running. In about thirty minutes she became warm ; her pulse improved, and she perspired profusely. On regaining consciousness, she was sick, and complained of severe pain. A subcutaneous injection of morphia was therefore administered. This was repeated at 1.15 p.m. and at 4 p.m.

Next morning, the quantity of blood-stained discharge, which had been considerable the previous day, was much less. There was some abdominal distension with pain and vomiting. At 8 p.m. she passed some flatus.

At 1.45 a.m. on the 29th, there was vomiting of brown fluid with a stercoraceous odour. A little brown fluid also escaped from the rectum along with some flatus.

At 3 a.m. the patient passed six fluid ounces of urine naturally.

At 11 a.m. there was constant vomiting of brown fluid, with a distinctly fæcal odour. The drainage-tube was removed. Small doses of magnesium sulphate were ordered. There being no result after the second dose, an enema was administered at 7 p.m. The fluid returned, stained with fæces. At 8 p.m. there was constant vomiting, without effort, of yellowish, highly offensive fluid.

On June 30th the vomiting continued, but the fluid ejected became less offensive. An enema was administered at 10 a.m. with very little result. At 6.30 p.m. a castor-oil enema was given, with the result that a large quantity of flatus escaped with a little fæcal matter. After this, the vomiting ceased and the distension diminished.

On July 1st at 4 a.m. there was a slight spontaneous

action of the bowels, and four hours later the patient suddenly passed a large evacuation involuntarily into the bed. In the evening, there had been no return of the vomiting. The patient had been able to take barley-water freely, and some tea and bread and butter.

5th.—The stitches were removed. The patient was taking food well. The temperature having risen the previous afternoon and respiration having become rapid, the chest was examined. Crepitation and tubular breathing were heard at the base of the right lung, where there was also impaired resonance.

On the 7th the dulness was more marked, the breath-sounds were feeble and the voice sound œgophonic.

On the 10th patient was able to sit up whilst the chest was being examined; the dulness had diminished and the abnormal sounds on auscultation had disappeared.

On the 12th the abdomen was slightly distended, tympanitic, and painful. There was a slight discharge from the centre of the wound.

20th.—Some tenderness and pain over an indurated patch to the right of the upper part of the cicatrix.

26th.—Upper angle of wound reopened and exit given to a small quantity of thick pus.

August 5th.—Patient left the hospital with a small sinus at the lower angle of the incision, but otherwise well. She was to report herself in three weeks, but has not since been seen.

Temperature Record First Week after Operation.

	Temp.	Pulse.		Temp.	Pulse.
June 27, noon	100°	124	June 29, Noon	99°	136
4 p.m.	99·4	108	4 p.m.	101	128
8 p.m.	98·4	112	8 p.m.	101	130
Midn.	99	112	Midn.	100·4	124
28, 4 a.m.	98·4	130	30, 4 a.m.	99·8	120
8 a.m.	99·6	124	8 a.m.	100·2	128
Noon	99·6	130	Noon	99·2	120
4 p.m.	100	138	4 p.m.	100·2	124
8 p.m.	100·6	136	8 p.m.	100·8	130
Midn.	100·2	128	Midn.	100·2	128
29 8 a.m.	99·4	120			

	Temp.	Pulse.	Resp.
July 1, 4 a.m.	99°	120	24
8 a.m.	99·2	124	24
Noon .	98·8	110	26
4 p.m.	99	110	26
8 p.m.	99·8	116	26
Midn.	99·4	112	24
2, 4 a.m.	98·8	112	24
8 a.m.	98	108	22
Noon .	99·8	122	26
4 p.m.	99·6	112	28
8 p.m.	99·8	110	24
Midn.	99·4	108	26
3, 4 a.m.	99·2	104	

	Pulse.	Temp.	Resp.
July 3, 8 a.m.	99	102°	
Noon	99·4	104	28
4 p.m.	100·4	104	28
8 p.m.	100·2	92	28
Midn.	100·4	106	24
4, 4 a.m.	100	104	26
8 a.m.	100	100	
Noon .	99·6	104	
1.30p.m.	101·4		
4 p.m.	102	109	34
8 p.m.	101·8	112	32
Midn.	101	106	30

Unless the bulk of the ovum is accidently increased by hæmorrhage (in which case the limits of the distensibility of the tube are reached at an earlier stage), rupture of the tube usually occurs between the eighth and twelfth weeks. In this case, two monthly periods had been passed when the first serious symptoms occurred, so that we may infer it to have been about the eighth week. The hæmorrhage accompanying the rupture was not so profuse as to lead to a rapidly fatal issue, and the alarming condition of the patient a fortnight later seems to have been due, not to the loss of blood, but to septicæmia, consequent upon absorption of the products of the decomposition which was taking place in the extravasated blood and in the contents of the ruptured gestation sac. It is a well-recognised fact that tubal gestation is often preceded by a long period of sterility. In this case sixteen years had elapsed since the last pregnancy ; in the next case the interval was four years. In neither instance was there any history of pelvic peritonitis, puerperal or non-puerperal, to account for the failure of the oviduct to fulfil its function.

The condition of the tube on the side opposite to that in which gestation had occurred, though by no means unusual under such circumstances, is worthy of more than a passing notice. It was occluded and distended, so as to form a large oblong tumour, its contents being mucus and altered blood. Whether this condition existed previously, or was in some way or other a consequence of the abnormal gestation, is a matter for speculation. The fact that a somewhat similar

condition of the opposite tube is often found in hæmatosalpinx is in favour of the latter supposition ; for all recent researches, especially those of Mr. Bland Sutton, tend to support the view that almost all cases of hæmatosalpinx are in reality cases of tubal gestation in which the ovum has become apoplectic, and, in consequence, more or less completely destroyed at a very early stage.

The complications and anxieties that attended the after-progress of the patient in this case, were in marked contrast to the uninterrupted recovery that usually takes place when the patient has no other symptoms than those due to profuse internal hæmorrhage. The septic condition that existed at the time of the operation fully accounted for the troubles that followed.

Case 2. *Slight hæmorrhage and pain for a month, after missing two monthly periods ; sudden aggravation of the pain with more severe hæmorrhage, and pyrexia ; ill-defined, firm swelling in lower part of the abdomen ; uterus retroverted, apparently normal in size ; diagnosis of ruptured tubal gestation ; abdominal section three days from commencement of acute attack : blood in peritoneal cavity, ruptured gestation-sac in right tube, containing fœtus, placenta, membranes, and blood-clot ; right tube and ovary removed after separating adhesions ; severe broncho-pneumonia ; bursting open of wound and escape of intestines, during a paroxysm of coughing, after removal of sutures ; intestines replaced and wound re-sutured ; slight suppuration from lower angle of wound for a few days ; recovery.* (From notes by Mr. T. H. Kellock.)—Emma B—, æt. 24, married, ironer in a laundry, residing in Bermondsey, was admitted into Adelaide Ward, September 1st, 1890, complaining of severe pain in the abdomen. She considered herself to be about three months advanced in pregnancy.

Previous history.—Married at the age of 19, *i. e.* five and a half years ago. She had borne but one child, eighteen months after marriage. The child was stillborn. Convalescence was uninterrupted. After that, patient menstruated regularly until May 1890, when her last normal period occurred. She missed her period in June, and again in July. Early in August she suffered a good deal of pain

in the lower part of the abdomen, and began to have a discharge of blood, attended with the passage of clots. The flow was considerable for a fortnight; during the second fortnight it was still present, but was slighter in amount. There was no sickness. Patient continued at her work until August 30th, when she was suddenly seized with hæmorrhage and a severe pain in the lower part of the abdomen. The pain continued the whole of the next day; vomiting also occurred, but only once.

On admission.—Patient is a thin, sallow-complexioned, ill-nourished woman. She lies on her right side, with her knees drawn up, and complains of severe abdominal pain. She has a troublesome cough, and her breathing is laboured.

Loud rhonchi are heard over the whole of both lungs. The heart sounds are normal. Pulse 124, small. Respirations 44 in the minute.

The whole abdomen is extremely tender; a firm, ill-defined swelling can be felt reaching from pubes upwards, half-way to the umbilicus. The uterus is retroverted, the cervix being directed forwards and the body felt posteriorly. The latter is hard, extremely tender, and fixed, but is not obviously enlarged. The sound not passed. Bimanual examination is impossible on account of the tenderness.

Mammæ tense and tender; no milk can be pressed out.

Urine, dark in colour, sp. gr. 1026, contains a deposit of mucus. No albumen or sugar.

Temperature.

September 1st, 3 p.m.	104°	September 2nd, 4 a.m.	99·4°
8 p.m.	103·4	5 a.m.	101·2
Midn.	100·4	9 a.m.	101·4

Ruptured tubal pregnancy being diagnosed, it was arranged to perform abdominal section without delay.

September 2nd, 9.30 a.m.—*Operation,* Mr. Osburn assisting. The peritoneal cavity contained a large quantity of blood, fluid and clotted. The parts in the pelvis were matted together, and the viscera in many places had blood-clot adhering to their surface. In the right Fallopian tube was found a ruptured cyst, the contents of which escaped

during the manipulation necessary to bring it to the surface. They consisted of blood-clot, placenta, membranes, and a fœtus, *minus* its head, which had become separated and was not found. The umbilical cord was in two parts; one portion being attached to the placenta, the other and longer portion to the fœtus.

The cyst having been completely separated from its surrounding adhesions, the broad ligament was transfixed and tied, and the tube and ovary were removed.

At this stage it was announced that the patient had ceased to breathe. She soon recovered, and the operation was proceeded with, chloroform being substituted for ether. There being some free bleeding, which did not come from the pedicle, the abdominal incision was enlarged upwards and downwards, until it measured 5 inches. No special bleeding point was discovered. The peritoneal cavity was therefore douched with hot solution of boric acid and well sponged. The lower edge of the great omentum being thickened, rolled up and infiltrated with blood-clot, was removed. The left tube and ovary were adherent, but otherwise appeared healthy; they were not disturbed. A glass drainage-tube was inserted, and the edges of the abdominal wound were brought together by means of nine sutures of silk-worm gut. The operation lasted an hour and three quarters.

Description of parts removed.—The fœtus (*minus* the head) measured three quarters of an inch in length and was softened. The limbs were formed. The placenta was broken up into several pieces. The fimbriated end of the tube was covered by adhesions. The uterine end was of normal diameter at the point where it had been divided. The distended portion of the tube was close to the uterine end and was three inches in length. The walls of the contained cyst were lined by shreds of blood-clot; it presented two openings, one ragged, the other crucial in shape. In the ovary there was a well-marked *corpus luteum* three quarters of an inch long. The divided tissues of the broad ligament were thickened and were seen to contain large blood-vessels.

The patient was somewhat collapsed at the close of the operation. In the afternoon, her cough became very

troublesome, and she eventually expectorated a quantity of ill-smelling muco-pus.

Temperature.

11 a.m.	99°	8 p.m.	100°
Noon	100·2	Midn.	99·4
4 p.m.	100·6		

September 3rd.—Much better; still expectorating thick purulent mucus. No sickness. Tube removed at 5.30 p.m.

Temperature.

4 a.m.	99·2°	4 p.m.	100·2°
8 a.m.	98	8 p.m.	101·4
Noon	98·4	Midn.	100·6

8th.—Stitches removed on account of a little redness around the suture-tracks. Later in the day (7 p.m.), during an attack of coughing, the edges of the wound burst asunder and the intestines protruded. The resident immediately returned the intestines and introduced fresh sutures, the patient being anæsthetised.

12th.—The sutures were removed and the wound made secure by plaster.

23rd.—Patient has had a very severe attack of broncho-pneumonia, attended with very profuse muco-purulent expectoration. There was a little suppuration from the lower angle of the wound from the 15th to the 22nd. To-day the condition is greatly improved, and there is scarcely a stain on the dressings.

October 5th.—Gaining flesh and moving about the ward. No dyspnœa; no rhonchus; bases clear; dulness and increased expiration at right apex; very slight amount of expectoration, muco-purulent in character. There has been no discharge from the wound for a week; all dressings discontinued.

7th.—On vaginal examination, the uterus was found normal in size and freely moveable; there was nothing abnormal to be felt in the sides of the pelvis.

10th.—Sent to a Convalescent Home, well.

Record of temperature, pulse, and respirations.

	Temp.	Pulse.	Resp.
September 4th .	99·4° to 102·2°	112 to 140	32 to 36
5th .	99·8 to 102·6	106 to 136	32 to 36
6th .	100 to 102·2	130 to 148	38 to 46
7th .	100 to 101·8	108 to 132	30 to 40
8th .	99·8 to 101·8	120 to 138	30 to 44
9th .	100·4 to 102·6	130 to 136	40 to 45
10th .	100·4 to 102·4	128 to 130	34 to 44
11th .	99 to 101·8	100 to 124	30 to 40
12th .	99 to 102	110 to 126	38 to 40
13th .	100 to 102	100 to 102	36 to 40
14th .	100 to 101·4	112 to 138	36 to 40
15th .	99·3 to 101·2	112 to 126	38 to 40
16th .	98·8 to 99·8		
17th .	98·4 to 100·4		
18th .	98·4 to 101·2		
19th .	98·8		

It is probable, from comparing the history in this case with the condition found on opening the abdomen, that hæmorrhage took place in the membranes, at about the eighth week, destroying the vitality of the ovum, and that, a month later, rupture of the tube occurred, with effusion of blood into the peritoneal cavity. As in the last case, symptoms of septicæmia were present when the patient was admitted, in addition to those of internal hæmorrhage. The temperature was 104°, the pulse 124 in the minute, and the number of respirations 44. Loud rhonchi were heard over the whole chest, and the patient had a very troublesome cough. It was not, therefore, surprising that, again, convalescence was interrupted. The patient developed a severe attack of broncho-pneumonia, and, as if that alone were not a sufficient cause for anxiety, on the day the sutures were removed the recently-united abdominal wound suddenly gave way along its whole length, during a paroxysm of coughing, and when the house physician reached the bedside, a number of coils of intestine were found to have escaped, and were lying exposed outside the abdomen. Thanks to this officer's promptitude, no harm resulted from this unfortunate incident, and the patient was well and able to leave the hospital in less than six weeks after the operation.

Case 3. *Recurrent attacks of pelvic pain for two months with absence of menstruation; no previous pregnancy for seven years; sudden attack of severe abdominal pain with discharge of clots* per vaginam; *uterus enlarged, canal four and a half inches in length; soft swelling in Douglas's pouch, rounded, not very tense, connected with left uterine appendages; abdominal section; left Fallopian tube elongated and adherent fimbriated extremity dilated into a cyst, which had become adherent in Douglas's pouch, and contained, besides blood-clot, an ovum with chorionic villi over its entire outer surface, and a distinct amniotic cavity; umbilical cord found, but no fœtus; right tube occluded, enlarged, and adherent; corpus luteum in each ovary in different stages of development; both tubes removed with the ovaries; decidual cast of the uterine cavity passed the day after operation; uninterrupted recovery.* (From notes by Mr. Cuthbert Wyman.)—Harriet O—, æt. 27, married, a dressmaker, residing in Walworth, was admitted into Adelaide Ward, March 16th, 1891.

She was married to her first husband when she was seventeen, and to her second, three years ago. Her only child was born seven years ago; she has had no miscarriages.

Her present illness began early in January, when she had a profuse flow at her menstrual period and great pain. She has not menstruated since. She has had attacks of pain during the past two months at intervals of a few days. During the past fortnight the pain has been almost constant, and has been especially severe during coïtus. She never had any puruleut vaginal discharge. Two or three times during the last week or two she has observed a little discharge of mucus. She attended at the out-patient department on March 14th on account of constant pain in the left iliac region. The following note was then made: "Uterus felt above pubes, slightly enlarged and flaccid, cervix directed backwards. In Douglas's pouch is a rounded swelling, firm, not very tense, connected with the left cornu of the uterus by a broad tense band." Two days later she was suddenly seized, whilst cleaning a pair of boots, with a very severe pain in the lower part of the abdomen, and an urgent desire to pass water. When she had relieved the bladder, she

found that she had passed two dark blood-clots. Fearing that she had had a miscarriage, or was about to have one, she came up to the hospital, where she was at once admitted.

On admission, the uterus was measured and found to be four and a half inches in length, the tap of the sound being felt four inches above the crest of the pubes, and three and a half inches below the umbilicus. The retro-uterine swelling was still present.

The diagnosis was either recent abortion with cystic disease and prolapse of left ovary, or extra-uterine gestation.

On March 23rd abdominal section was performed, Mr. Carter assisting.

The pelvic contents were found matted; the uterus enlarged. The left tube, long and expanded, was traced outwards, and then downwards, backwards, and inwards to a soft swelling in Douglas's pouch. The tube, having been separated from its adhesions and brought into view, was ligatured and removed. The removed portion measured four inches; its outer end was open and the margin torn. On attempting to remove the cystic swelling in Douglas's pouch, the thin wall gave way and the finger passed into some dark clot, which was removed, along with an ovum, equal in size to a walnut, with a distinct amniotic cavity, and covered over its entire outer surface with chorionic villi. An umbilical cord was found, but no fœtus. The ovary was now shelled out, with the torn cyst, which had contained the ovum and blood-clot. The cyst proved to be the expanded fimbriated end of the left tube, from which the portion of tube already removed had been torn away. The removal was executed with much difficulty, owing to the firm adhesions and friable nature of the sac. The ovary contained a corpus luteum, with a distinct yellow lining. There was some fairly free hæmorrhage until the pedicle was secured.

The tube and ovary of the opposite side were universally adherent, and being both enlarged, and the tube occluded, were removed. The removed portion of the tube was at least twice its normal size; it measured $4\frac{1}{2}$ inches in length; its mucous lining was greatly congested; its muscular walls were not thickened. The ovary contained a large

corpus luteum, with thick wall, not pigmented, and dark central clot.

The peritoneal cavity was douched, a glass drainage-tube was inserted, and the edges of the incision were brought together by sutures.

The operation lasted an hour and a half. No sickness followed and the tube was removed in twenty-five hours. On the 24th, *i. e.* the day after the operation, a thick decidual membrane, forming an entire cast of the uterine cavity, was expelled *per vaginam*. The patient made a rapid and uninterrupted recovery. The sutures were removed on March 31st. The patient left her bed on April 11th, and went home well on the 22nd.

She was last seen on February 20th, 1892. She had not menstruated since the operation, and was complaining of "flushes" and palpitation. She had gained flesh, however, and looked remarkably well. The uterus was small and freely moveable, and both posterior quarters of the pelvis were perfectly empty.

The first two cases were diagnosed before operation, with comparative ease and certainty. When rupture and extravasation have taken place, the diagnosis, indeed, seldom presents serious difficulty. But it is far otherwise in cases of early tubal gestation, where rupture has not yet occurred, and the one here recorded was no exception to the rule. When I opened the abdomen, I was not sure whether I should find a tubal gestation, or a cystic ovary. I knew that the uterus was enlarged and empty, and that there had been a considerable amount of uterine hæmorrhage, but whether this enlargement and hæmorrhage were merely symptomatic of extra-uterine pregnancy, or were the consequence of a normal pregnancy terminating in abortion, I did not feel competent to decide. Indeed, I am inclined to think that, even with this case fresh in my mind, I should, if a similar case were to present itself tomorrow, again hesitate to give a positive diagnosis. Had the decidual membrane been good enough to come away the day *before* the operation, instead of the day *after*, the diagnosis would of course have been established beyond dispute.

With regard to the propriety of operating in suspected cases of unruptured tubal gestation, I have elsewhere expressed my conviction that where the diagnosis is satisfactorily established, the only proper and adequate treatment is abdominal section. For although the patient may, by a bare possibility, pass through the perils and dangers of extra-uterine gestation without losing her life, the chances are so tremendously against her, that no woman ought to be permitted to run such a risk without at least having had an opportunity of submitting to an operation, which experience has shown to be in itself singularly free from danger.

ON CERTAIN CARDIAC SYMPTOMS

OBSERVED IN

CASES OF GASTRIC ULCER.[1]

By WILLIAM M. ORD, M.D., F.R.C.P.

Some two years ago, at a meeting of this Society, I drew attention, in a provisional way, to certain changes in the area of cardiac dulness and in the sounds of the heart, which I had observed in association with signs of gastric ulcer. I promised then to give some day a fuller statement of these observations, and will attempt to redeem the promise to-night. I shall probably place what has interested me very greatly before you best by giving you the notes of a fairly illustrative case, abbreviated as far as possible.

Case 1.—F. B—, a woman æt. 28, and a cook by occupation, was admitted to Charity Ward, St. Thomas's Hospital, on October 11th, 1889.

Family history.—Her father was alive and healthy. Her mother, one brother, and one sister had died of consumption.

Previous history.—Had been generally strong and healthy, though always pale. Had never had any serious illness and had never had rheumatism. For nine years she had suffered from "indigestion," consisting in pain after food, a sense of fulness and discomfort over the stomach, and pain between the shoulders. With this there was no vomiting and the appetite did not fail.

[1] Read before the Medical Society of London.

Present illness.—On September 11th, 1889, that is to say, a month before her admission, she was employed in moving heavy weights. She felt none the worse for this until the next morning, when she vomited "a quart" of dark blood, and was afterwards greatly prostrated. During the next fortnight she vomited all food, and with it generally a small quantity of blood. She was fed by nutrient enemata. During the week before admission she vomited liquids, but not solids, and had no further hæmorrhage. The catamenia had been regular, always profuse.

On admission she presented the appearance usually associated with gastric ulcer in a young woman. She was anæmic but not emaciated, her skin was plump and rather transparent, the lips and conjunctivæ were very pale, and she complained of extreme weakness. Her appetite was fairly good, and she had now no vomiting nor pain after meals.

Abdomen.—There was neither distension nor contraction. No tumour could be felt, but there was localised rigidity of the muscles of the wall from the umbilicus to the xiphoid cartilage. She complained of a feeling of soreness on light pressure over the epigastrium, increasing to acute tenderness on firmer pressure. The tenderness could not be localised to any particular spot. There was no enlargement of liver or spleen.

Chest.—The chest was well formed and moved well.

Heart.—On percussion the upward dulness was found to begin at the lower border of the third left costal cartilage, extending obliquely downwards and outwards to the left nipple line, and on the right to the right edge of the sternum. The impulse was greatly diffused, and was most marked in the fourth space on the left side, half an inch internal to the nipple line. It extended in a wavy manner over the third and fourth spaces. On auscultation a soft blowing systolic murmur was heard at the point of chief impulse, and was conducted into the axilla. The second sound was reduplicated. Over the pulmonic area a blowing systolic murmur was heard conducted upwards. The second sound was accentuated and reduplicated. Over the third and fourth left spaces between the costal cartilages a harsh rubbing murmur

accompanied without replacing the first, and to some extent the second cardiac sounds. No murmurs were heard over the aortic area.

Lungs.—Apparently normal.

There were no affections of the nervous system, and the reflexes were normal.

The eyes, examined with the ophthalmoscope, presented no affections of the optic discs or retinæ.

The blood looked pale when shed; under the microscope the red corpuscles appeared to be diminished in number, and were mainly well formed; but a few were oval, and the rouleaux were not good. The white corpuscles were slightly increased in number.

The patient was kept in bed, and was placed upon milk diet, to which beef-tea and four ounces of wine were added after a few days. She was ordered to have twenty grains of the saccharated carbonate of iron three times a day.

Progress of the case.—She had no pain after food, or vomiting during her stay in hospital, and she steadily regained her colour; but meanwhile the dulness on percussion increased. On October 23rd, twelve days after admission, it had extended to the second left space, an inch higher than on admission. The rubbing sounds had disappeared, and all the valve sounds had become indistinct. There was still tenderness in the epigastrium, and still rigidity of the muscles of the abdominal wall in that region. A week later her skin had become more pink, and she felt better and stronger. The dulness had receded three quarters of an inch and the impulse was much less diffused. The murmurs were present but fainter. On November 11th her colour had further improved, the upward dulness over the heart had receded to the upper border of the fourth left costal cartilage, the impulse to the lower part of the fourth space one inch internal to the nipple line. The first sound at the impulse was prolonged, and faintly murmurous; the second pulmonic sound was slightly accentuated; the rubbing sound over the third left space was again audible. No further change was observed in the conditions of the heart.

She was discharged on November 23rd, apparently in very fair health; the blood was then normal in appearance.

The temperature was normal throughout, excepting for a few hours after admission, when it rose to 100° F.

I have notes of sixteen similar cases occurring in my wards at St. Thomas's Hospital, which have been carefully abstracted by Mr. J. P. Cowen, lately my house physician. Several of these enable me to add a record of accessory and instructive symptoms. I may say that all of them appeared to be be suffering from gastric ulcer. They were all young women, all anæmic, and mostly not emaciated. It is hardly necessary in this Society to go deeply into the question of the diagnosis of gastric ulcer, but I suppose that we may take it generally that the existence of this disease is indicated by pain occurring in the region of the stomach, at various intervals after food, and lasting for some time; by vomiting, usually relieving the pain by hæmatemesis, most commonly at long intervals and in considerable quantity; by tenderness in the epigastrium, often limited to a small area; and by rigidity of the abdominal muscles over the seat of tenderness. The absence of any sign of tumour is of course a necessary part of the diagnosis.

To proceed next to an estimation of the meaning of the cardiac symptoms. At first sight they are in this case and in the others recorded exceedingly like those observed in the endo- and peri-carditis of acute rheumatism, and chorea. We note the extension of the cardiac dulness upward on the left side of the sternum to limits reaching as high as the second left costal cartilage, or even above it; we note that while the transverse extent of this dulness at its uppermost point is not more than an inch or an inch and a half, it spreads outwards as followed downwards, taking an oblique line from the outer part of the higher left costal cartilages, which is continued either to the left nipple or to the left of it. There is also extension of the dulness to the right, less easily determined by reason of the resonance of the sternum, but to be made out by careful percussion. We note also the shifting of the impulse to the left and somewhat upwards. We note again the changes in the quality and distribution of the impulse. Instead of being confined to a limited area it extends in all directions, but more particularly upwards,

being both seen and felt in the third space and even above it. The occurrence of friction sounds more particularly recognised over the upper part of the dull area may, I admit, be open to question. In this case and in others I firmly believe that I have heard them, and have demonstrated them to friends and pupils accompanying me in my visits to the wards. To my hearing two sets of sounds have distinctly offered themselves. I could hear plainly the endocardial sounds at, and a little below, the pulmonic area. In addition to these I could hear sounds of a totally different character, and not altogether corresponding in time. They were soft murmurs, mainly audible towards the end of systole and the beginning of diastole. Putting these phenomena together, I have been inclined to believe in the existence of a pericardial inflammation producing roughening of the surfaces and effusion. The existence of a mitral systolic murmur, conducted into the axilla and balanced by a marked accentuation of the second sound over the pulmonic area, has appeared to me to lend ground to the diagnosis of the existence of an endocarditis like that observed in acute rheumatism. So far as pathological observation in acute rheumatism can form a basis this combination of symptoms would, I think, be generally accepted in any case as proving the existence of endo- and peri-carditis, but in the cases which we are considering there is no arthritic affection, and, what is more important, no pyrexia. I have, therefore, to ask myself and you how far it is possible that the lesions of peri- and endocarditis may occur without pyrexia. Here I am confronted by a very serious chasm. I have no post-mortem examination of any such case to record, and can only work upon what may be called parallel lines. It is incumbent on me, therefore, to search carefully for other possible explanation of the phenomena which I have been putting before you. It appears to me to be worthy of consideration whether, in feeble and anæmic persons, the left lung may recede upward, and leave the heart in larger contact than the average with the chest wall. Such shrinkage would certainly increase the upward extension of dulness, and would favour the upward movement of the impulse. Probably also it would favour the tilt of the impulse to the left. It would also allow of the

greater distribution of the impulse, but would hardly, I think, give rise to friction-sounds apart from alterations in the pericardium. The shrinkage of the lung would involve less than the normal pressure of the heart and pericardium against the chest wall. An increased pressure would rather be required for the production of exocardial murmurs. It appears to me improbable that a diminished pressure would have such an effect. When I turn to the endocardial murmurs difficulties worthy of solution arise. The patients are anæmic, and in anæmic people murmurs are notoriously often heard replacing at one or other position the normal sounds. Such murmurs are certainly most commonly to be heard over the aortic valve where they are systolic in time. I have certainly heard them also over the mitral valve both in systole and diastole; as far as I can remember, whenever the case has been one of simple anæmia or debility, aortic as well as mitral murmur has been present, and in simple anæmia and debility the murmurs have been much more temporary and fugitive than in the case which I have quoted. Again, in simple anæmia I have not noted the accentuation of the second pulmonary sound, markedly present in the case which I have described. Anæmia surely involves imperfectly filled arteries, and, supposing the pulmonary artery to be ill-filled, one would not expect increase or accentuation of the second sound over its valves. It is right, however, to consider what possible interpretation of this sign may be attached to a diminution in the size of the lung. If the shrinking be due to defective inpour of blood through the pulmonary artery, the accentuation would be diminished rather than increased. But it is not to be regarded as impossible that, as a part of the nerve disturbances of anæmia, there may be tension in the pulmonary artery, at once diminishing the circulation in the lung and increasing pressure in the artery.

A third possible point of view is that of the altered action of the heart, due to impaired nutrition. A left ventricle may be doing its work imperfectly, with the result that a right ventricle, itself also weak, becomes dilated. A large dilatation of this kind would certainly tend to a displacement of the impulse upwards, and probably outwards. Such a dilatation, by altering the general shape of the heart, might

produce murmurs at valves, and would certainly have, as its corollary, accentuation of the second pulmonic sound. It would also be accompanied by transverse extension of the cardiac dulness, but from all one's experience of dilated heart in old and enfeebled persons, I am of opinion that it would not materially determine upward extension of the cardiac dulness, and would determine much more dulness to the right than I have observed in my cases. Lastly, I should like to consider how far localised changes in myocardium may determine endocardial murmurs. A few years ago I was present at the post-mortem examination of a patient who had died of pernicious anæmia, and who had presented a a marked mitral regurgitant murmur. There was no sign of disease of the mitral valve, but there was a remarkable rigid prominence of the musculi papillares belonging to the mitral valve. While the rest of the heart was flabby, they were rigid and rounded. On section they were distinctly changed. In the centre of each was a yellowish area, surrounded by a fine line of a deep red colour, outside which the muscle appeared to be normal. The appearance altogether was that of an inflammation of the central portions of the papillæ. In much thinking over the whole subject, I have deemed it possible that one explanation of the phenomena which I am laying before you, might lie in the existence of a myocarditis, determined by an imperfect nutrition, extending by continuity to endocardium and pericardium, and determining incidentally by interference with the balance of muscular action within the heart, the occurrence of murmurs. In the case which I have just quoted, for instance, the rigid swelling of the musculi papillares must have interfered effectively in preventing accurate closure of the mitral valve in systole.

Since the writing of this paper has been commenced, I have read the thesis of my friend Dr. A. Foxwell, published in the 'Lancet' of October 24th, 1891, in which certain changes observed in the heart in debility are carefully stated and considered. The changes are certainly in several ways comparable to those to which I am drawing attention. They consist in increase of the cardiac dulness both vertical and horizontal, in tilting of the impulse to the left and upwards,

in the occurrence of pulmonary and mitral murmurs. The interpretation is that in weak persons the right ventricle tends to become over-distended, that as a result of this the rest of the heart is thrust upward, encroaching on the left lung and carrying the impulse upward and to the left. The upward extension of the cardiac dulness is recorded to be very considerable in some instances. It is clear that this paper must be taken into account when the meaning of the cardiac changes related with gastric ulcer is sought. But it is not clear how far the cases upon which Dr. Foxwell's observations are founded correspond with those examined in the present communication. I am discussing simply cases of gastric ulcer in which certain symptoms of cardiac change and disorder have been observed. Dr. Foxwell's observations present to us a new and very original view of cardiac changes occurring in debility. They appear to me to be worthy of careful regard and comparison. They may, indeed, go far to explain some of the difficulties to which I am introducing you, for it is clear that the whole matter is very complex.

Lastly, it must be borne in mind that in gastric ulcer the position of the heart in the vertical aspect is likely to be high. Noting in passing that tight-lacing is very often to be taken into account, the fact of the existence of gastric ulcer involves a relatively high position of the diaphragm. Such a raised position of the diaphragm would presumably oppose downward movement of the heart if enlarged, and would involve also encroachment of the heart upon the lungs. We may contrast this with the heart dilated on the right side in cases of emphysema where the enlarged lung tends to push the heart downward, and the exaggerated action of the diaphragm compensative of diminished movement of the chest walls readily allows or even facilitates the downward movement of the heart.

On review of all the symptoms presented in the case first quoted and the others of which the notes are presented, I am inclined to think that the hypothesis of the occurrence of trophic changes in the endo- and peri-cardium has much to be said in its favour. Admitting the absence of proof derivable from autopsies I am inclined to believe that we

find evidence, from the clinical side, of the occurrence of endo- and peri-carditis, unaccompanied by fever in young women suffering from gastric ulcer and anæmia, particularly where the anæmia has been suddenly produced or exaggerated by hæmorrhage. I must pray you to let me think out before you the speculations suggested by this aspect of the cases. Much has been written with regard to the causation of gastric ulcer, but little certain conclusion has been arrived at. The round or oval perforating ulcer is neither in form or character such as the ulcers which one finds in chronic gastritis. That it is due to blocking of a small artery by embolus or thrombosis is so far as I know not proved, although the suggestion that the limited area of mucous membrane supplied by such an artery would be exposed, as practically dead matter, to the action of the gastric juice is ingenious and attractive. The circular form of the ulcer would, as far as I know anything of the minute distribution of arteries towards the surface, not support this view. The outline should be rather sinuous or indented. If we look to the skin for purpose of comparison the circular forms of ulceration most frequently met with are rupial, herpetic, and bullous. With the first of these we have not here to deal. In the other two we can certainly recognise the result of perverted nerve influence as affecting nutrition. Now in the cases with which we are dealing herpes of the mouth and herpes in the conjunctiva are far from uncommon. I have no record of the occurrence of bullæ, although I have asked carefully of my patients on this point. Nevertheless, I think it fair to suggest that the ulcers in the stomach may be due to altered trophic influence of nerves. You will remember that the cases under consideration are in all but few instances those of young women, anæmic and yet apparently well nourished. It appears to me that the appearance of good nourishment is itself fallacious. The skin as compared with the skin of health is too transparent, too resistent to the touch, and too thick, as far as tactile examination can indicate. With all this appearance of delicacy it has a yellowish tinge, which is not that of health, is certainly not one of simple bloodlessness. I think you will all agree with me in recognising an absolute difference

between this skin and the skin of a woman who has lost blood in large quantities from other sources than the stomach and with other association of symptoms than those of gastric ulcer. I think that we may see here the existence of changes of a specialised kind. In the class of patients under observation functional disorders in the area of distribution of the pneumogastric nerve are undoubtedly common. I have been led to think whether these may advance to trophic disturbance within the same area. Going a step further, and accepting the existence of gastric ulcer in the cases we may approach the meaning of the heart disturbance. One might argue as to the possibility of this being determined by reflex influence passing from the stomach to the centre, and outward again through the cardiac nerves, issuing in dystrophy of the heart. My general experience of similar conditions would hardly lead me to think this very probable. To take herpes. In most, if not all, of the occurrences of herpes I have found it secondary rather than primary. The labial herpes of pneumonia and gastritis, the preputial herpes of prostatic congestion, the labial herpes of dyspepsia and uterine irritation are instances in point. I cannot forget the fact that in a large number of the cases under consideration uterine disorder exists, and may possibly in a reflex way give rise to the gastric ulcer, but on full examination I dare not put forward the idea that a gastric ulcer is *per se* capable of exciting serious trophic disturbances in a large viscus like the heart. Therefore I am impelled to take into consideration the possibility that both the gastric ulcer and the cardiac changes may be common results of a pneumogastric disturbance. Even as regards acute rheumatism there is not a little to support the idea that the cardiac inflammations may be referred to perverted pneumogastric influence. I heard an excellent observer (Dr. Buzzard) say at one of the Societies that he was incited to think whether many of the phenomena of acute rheumatism might be referred to the medulla oblongata, citing, in addition to the affection of the joints, the affections of the heart and the febrile perspirations. It is possible that in an anæmia such as we are discussing this most sensitive nerve-centre may be set into dystrophic action.

It is well known that a form of optic neuritis is found in

cases of anæmia; I do not know how far in cases of the anæmia of gastric ulcer as compared with others. In one of my cases optic neuritis was present for a considerable period; I have the authority of Mr. Nettleship for this statement. In other cases, and indeed in the case in which optic neuritis was observed, marked signs of inflammatory or hyperæsthetic affections of serous membrane have been noted. These include symptoms of meningitis, cerebral and spinal, of pleurisy, and of peritonitis. In one case particularly, where no tubercle could be detected, a most painful peritonitis with effusion lasted for many weeks, disappearing ultimately with the rest of the symptoms. Such serous inflammations have their importance when we are considering affinities with acute rheumatism. Still greater becomes their importance when we find that no other kinds of visceral lesion, save those of the heart, have been chronicled.

To sum up, in presenting this paper, I am desirous of drawing your attention to certain phenomena which, so far as I know, have not been stated before, and of which I am at present unable to give a certain explanation. I present the cases in the hope that others may, where they have opportunity, investigate the phenomena and subject them to criticism. It is a point of the greatest importance that I have had no opportunity of verification by means of post-mortem examination, and that to a certain extent my suggestions are hypothetic. I think, however, that everybody will allow that the diagnosis of pericardial effusion and of endocarditis is daily made and admitted in connection with acute rheumatism. Such diagnosis rests on well-observed pathological conditions and on experiment. The physical signs noted in the cases presented appear to me to correspond very completely with the physical signs accepted as proofs of the existence of such pericardial effusion and endocarditis, but they have attached to them, besides the fact of their not being demonstrated pathologically, the extremely important fact of the absence of pyrexia. How far it is possible that the absence of pyrexia may be explained by the particular kind of anæmia exhibited by persons suffering from gastric ulcer I am unable at present to say. In conclusion, I trust that the Society will accept my communica-

tion as a record of observations in respect of which full explanation is still to be sought.

Appendix.

Of the 17 cases on which this paper is founded, 16 were female, and 1 male. Of the female cases 5 suffered from very marked anæmia, 8 were noted as anæmic, 1 as "somewhat anæmic," and in 1 case there is no note of this condition. The catamenia in 6 cases were regular, and in 2 of these were noted as profuse. In 6 cases they were irregular and in 1 case they were recorded as occurring every fortnight. In only 2 out of the 17 cases had the patient suffered from acute rheumatism. All the cases presented, more or less, the symptoms of gastric ulcer. All had pain after food, and all but 1 had vomited, there being marked nausea in the exceptional case. There was tenderness, localised in the epigastrium in 14 cases, somewhat diffuse abdominal tenderness in 1. There was hæmatemesis in 9 cases, in the remaining 8 it was noted as absent. Melæna was noted present in 3 cases.

With regard to the cardiac symptoms, dulness commenced above at the level of the third left costal cartilage in 8 cases, in the third left interspace in 1 case, at the fourth cartilage or rib in 4 cases, at the fifth in 1 (the man), was described as normal in 2, and was absent in 1. The impulse was in 4 cases placed in the fourth space just internal to the nipple line, in 1 case in the fourth space an inch internal to the nipple line, in 4 cases in the fifth space just internal to the nipple line, in 1 in the fifth space one inch below and internal to nipple, in 1 in the fifth space in the nipple line, and in 1 one and a half inch below nipple and just internal to the nipple line. In 5 cases it was described as normal.

In 14 cases, a murmur was heard at the apex, conducted into the axilla, and in 1 case, on admission, a doubtful murmur was heard in this position. An undoubted murmur afterwards developed in this case during stay in hospital. In all these cases there was accentuation of the second over the pulmonary area. A presystolic mitral murmur existed

in 1 case. In 7 cases a systolic murmur was heard over the pulmonary, and in 4 over the aortic valves. To and fro friction murmurs along the left border of the sternum were heard in 7 cases.

With regard to temperature, it was raised on admission in 2 cases, viz. to 99·4° and 100° respectively. In the former case it rose subsequently on one occasion only to 100°. In none of the other cases was there any rise of temperature either at the time of admission or afterwards.

CLINICAL LECTURE ON SOME RECENT CASES

OF

TUBERCULAR DISEASE OF BONES AND JOINTS IN ADULTS.[1]

By WILLIAM ANDERSON.

A series of cases of tubercular disease of bones and joints that have been under my charge in Clayton Ward during the last six months illustrate many interesting features in the course and treatment of different varieties of this protean disease. Two are examples of a somewhat unusual and chronic form of caries of the head of the tibia; one is a tubercular abscess in the same position, with much condensation of the surrounding bone; one is a condition of slowly developing tubercular osteoarthritis in both knees, simulating rheumatoid arthritis; one is a rapidly destructive condition of disease of one knee; two are cases of chronic disease of the humerus and scapula; and one is a superficial necrosis of the popliteal surface of the femur with subacute inflammation by contiguity of the knee-joint. Of these patients five are before you, the remaining three have left the hospital.

Case 1. *Tubercular sinus of the head of the tibia.*—W. H—, a dark-haired man aged 39, of fairly healthy aspect and sub-

[1] Delivered March, 1892.

stantial build, and with an exceptionally good personal and family history, was admitted into Clayton Ward in August, 1891.

He had noticed from the age of fourteen an occasional pain in the right knee in cold and damp weather, but suffered no material inconvenience until about four years ago, when without obvious cause the joint became rigid and somewhat painful for some three months. He was treated in the Melbourne Hospital, and improved greatly, although the full usefulness of the articulation was not regained. In January, 1891, redness and swelling appeared over the outer side of the head of the tibia, and he entered Guy's Hospital, where the part was incised and some diseased bone removed by the curette. The condition, however, did not improve, and in August he was admitted into Clayton Ward.

On examination a sinus of about the diameter of a crow-quill was found on the outer side of the leg below the knee, extending transversely into the head of the tibia, about half an inch below the joint, for a distance of three inches. The articulation itself was unaffected.

The sinus was thoroughly curetted on the 3rd of September, and again on the 19th of October, with temporary benefit on each occasion; but in December a new extension of disease appeared, involving the head and shaft of the bone below the original focus, and extending widely into the soft parts. To remove this condition the whole of the affected bone was chiselled away in such a manner as to leave a large conical cavity with a very wide external aperture; and the affected soft parts were freely excised. The operation appeared to be a very extensive one, but no constitutional reaction followed. The gap has since been filling up by a process of granulation, and there is now only a small and shallow sinus, into which cicatrisation is extending from without.

The patient is able to walk about, and is about to leave the hospital for a convalescent home, where his recovery will, in all probability, be very soon completed.

Case 2. *Tubercular cavity in the head of the right tibia.*—This case bears very considerable resemblance to the last. The patient, J. R—, a labourer aged 48, was admitted into the

hospital in September last. He was a man of worn and prematurely aged aspect, but said he had always had fairly good health and that there was no disease of any kind, so far as he was aware, in his family. Many years ago he had received a kick in the right leg below the knee, and a piece of bone subsequently came away, after which the part was apparently cured, and remained well till about nine weeks before admission, when after a fall the old cicatrix broke down, and the wound was attacked by erysipelas.

On October 19, the erysipelas having disappeared, an exploration of the bone was made, and a large amount of disease was found in the head and upper part of the shaft of the tibia, with a sinus about an inch and a half below the joint on the inner side. A large quantity of broken-down cancellous tissue was removed by the curette, and the resulting cavity was plugged with iodoform gauze. The first effect of the treatment was good, but the benefit was evanescent, and at the end of December a second operation was required. On this occasion the seat of disease was treated as in the previous case, the whole of the diseased and doubtful tissue being gouged away, and the outer shell of the cavity removed, so as to leave a vast conical hole, corresponding to nearly the antero-internal portion of the head of the tibia, and leaving only a thin plate of bone above to support the articular cartilage. The space was plugged with iodoform gauze. The result was all that could be desired; the cavity began to granulate healthily, and the patient's health and appetite to improve.

At the present time the loss of substance is represented by a depression of about an inch in depth, into which the marginal epidermis is beginning to descend. The man is now able to get up.

In both of these cases the family and personal history was good, the focus of disease was single, and the spread of the tubercular tissue was relatively limited and spared the articular cavity. In both the most vigorous use of the curette failed to give any lasting benefit, and in both the wide opening up of the carious cavity in such a way as to leave the whole interior exposed to inspection achieved the desired end, and in all probability saved the affected limb.

Case 3. *Tubercular cavity in the shaft of the tibia, with condensing ostitis.*—The third case serves as a contrast to the two just described. The patient, H. M. C—, a clerk aged 46, was admitted on July last for disease of the tibia of two years' duration. The family and personal history was negative, and no cause was assigned for the tibial affection beyond a slight injury to the leg eight or nine years before.

On examination a sinus was found above the middle of the shaft of the tibia, extending down to a small bared area of bone, but not communicating with a cloaca. The tibia itself presented a distinct fusiform swelling beneath the sinus, and there was some pain in the bone after exertion. On the 23rd of July the sinus was opened up, and a rough area of bone of about the size of a shilling was exposed; the chisel was then applied over this, and, after passing through a mass of extremely dense bone, reached a cavity as large as a hazel-nut in the centre of the shaft, with perfectly smooth, hard walls, and containing a yellowish caseous mass of tubercular tissue. The bone immediately surrounding the cavity was chiselled away, and the sinus was plugged with iodoform gauze. The wound filled up rapidly, and at the end of six weeks the patient was discharged, and has since remained well.

It is probable that the disease began here as in other cases, but the bone, instead of undergoing a slow molecular disintegration, reacted by means of an inflammatory hyperplasia which closed in the diseased product. The surface suppuration leading to the detachment of periosteum is unusual, and not easy to explain. The principle of treatment was the same as in the other examples.

Case 4. *Acute tubercular osteoarthritis of right knee, with infection of the intermuscular planes of the thigh.*—The patient, H. B—, an iron turner aged 41, was admitted on the 19th of January. He was a man of feeble constitution, with an inheritance of tuberculosis on the father's side. Disease in the knee had then been noticed for about a year, but he was able to follow his occupation until nine months after the commencement, when acute symptoms suddenly supervened, and he was forced to take to his bed. Since this time he has

been emaciating rapidly, and the joint affection has been making rapid progress.

On examination the right knee was found to be completely disorganised, the leg subluxated backward, and the soft parts riddled with sinuses, which discharged a thin acrid pus in large quantity. The limb was drawn up and greatly wasted. No other tubercular affection was found, but the patient was reduced almost to a skeleton, and in a condition of extreme prostration.

On the 30th of January the limb was amputated by the circular method with skin flaps at the lower third of the thigh. On making the section of the muscles two long tubercular tracts were cut across, one running upwards for seven or eight inches beneath the fascia on the inner side of the limb; the other, of about the same extent, lying immediately behind the bone. These were freely scraped and irrigated, and the wound was closed.

The operation was well borne despite the prostrate condition of the patient, and at the present time all is going on well.

This case serves as a good illustration of the liability to sudden acute destructive changes in a tubercular joint which, in its earlier progress, appeared to be of a mild type. There is little doubt that, had the patient come under treatment at any time in the course of the nine months preceding the outbreak of the acute symptoms, the limb might have been saved by a conservative operation. As it is, the man has barely escaped with his life.

Case 5. *Double tubercular osteoarthritis simulating chronic rheumatoid arthritis.*—The patient, J. E. P—, a harness maker aged 22, was admitted into Clayton Ward in August last with disease of three and a half years' duration in both knee-joints.

The man was somewhat pale and delicate in aspect, but fairly well grown, not emaciated, and free from any indication of past tubercular disease. His family history showed a tendency to tuberculosis on the mother's side, and to rheumatism on that of the father.

Both knees, but especially the left, were found swollen,

hot, and rather tender and painful; the synovial cavities were distended, but there was no distinct evidence of thickening of the membrane, and on aspirating with a morphia syringe a clear serum was drawn off. The bony margins of the articulation were abruptly lipped, as though from osteophytic growths, and some obscure creaking was noticed in the joint on movements. There was slight looseness of the capsule, and motion was restricted and painful. Temperature normal.

The precise nature of the disease was not obvious, and a consultation with some of my colleagues left the diagnosis still hesitating between tubercle and rheumatoid arthritis, with a slight leaning in favour of the former. The symptoms went on from bad to worse, and it was determined to explore one of the joints.

On October 10th an opening was made into the left knee-joint, and on introducing the finger the cavity was found to be filled with sero-pus and broken-down caseous matter, and shreds of half-disorganised articular cartilage. The incision was immediately extended across the joint below the patella, and the articulation was laid freely open. The bones were found bared, the synovial membrane tubercular but little thickened, and the extra-articular capsular structures surrounding the joint margins were enormously infiltrated with semi-gelatinous material, a condition which had given rise to the apparent lipping. The diseased tissues were thoroughly removed by means of the knife, scissors, and curette, a thin slice of bone sawn from each of the opposed surfaces of the tibia and femur, the patella excised, and the bones pinned together by means of ivory pegs. The wound was then closed without drainage, and enveloped in plaster. The result was good. The splint was left untouched for six weeks, and on its removal the knee was found perfectly healed and consolidated.

On November 14th a similar operation was performed on the right knee, which had been getting much worse in the interval. The condition was very like that of the left joint, but complicated by a large abscess, which had opened a way through the upper and outer part of the capsule into the lower third of the thigh. The procedure was

as before, but considerable difficulty was experienced in dealing satisfactorily with the thigh abscess, which infiltrated the structures very widely.

The progress was less ideal than that of the previous operation, but was still very satisfactory. The only difficulty that arose was the formation of a superficial sinus in connection with the thigh abscess. All, however, is now well, the patient is able to walk, and he is on the point of going to a convalescent home.

The interest of this case lies in the simultaneous occurrence of tubercular disease in the two knees, and in the close simulation of the signs of rheumatoid arthritis.

Case 6. *Superficial caries of popliteal surface of femur, with synovitis by contiguity.*—The patient, G. C—, a cab-driver aged 25, was admitted in July last with a sinus above the right knee. Like the last patient, to whom he presented considerable resemblance in configuration, he was pale and thin, but not emaciated. His family history was negative, but he had an attack of necrosis of the right tibia at the age of nine. He had been suffering from abscesses above the knee for two and a half years before admission, and had undergone several operations with only temporary benefit.

On examination the lower fourth of the thigh was found red and swollen, and there was considerable effusion into the knee-joint. The axilla temperature was 101·4°. An exploratory aspiration of the joint withdrew clear synovia. A few days later an incision was made in front of the tendon of the biceps, about two inches above the external semilunar cartilage, and was carried down to the bone through the inflamed tissues. No pus appeared at the time, but the operation gave great relief to the pain, and about a fortnight later a quantity of pus escaped from the external opening. On further examination the popliteal surface of the bone was then found to be bared over an area about as large as a shilling. The sinus and bone were repeatedly scraped during the next few months, but without permanent good effect, and on the 2nd of January last the track was laid widely open, and the bared bone gouged away, the popliteal artery being protected by the finger during the use of the instrument. The effect

of this operation was a rapid and complete closure of the sinus, and the patient is now able to walk.

This form of superficial caries with little tendency to detachment of sequestra, or to spontaneous healing, is sufficiently frequent, but may commonly be treated with success in the manner described. In some cases, however, the process is associated with joint disease, and may travel far and wide along the bony surfaces continuous with the articulation, until it passes beyond the reach of the surgeon. In a case recently discharged, a large portion of the inner aspect of the os innominatum had been attacked as a sequel to hip disease, and persisted in spite of the cure of the articular affection. It is now in the third year of its progress, and shows no sign of yielding to treatment.

Case 7. *Caries of scapulo-humeral joint with perforation of head of humerus, but without formation of sequestra.*—The patient, J. G—, a ship's steward aged 38, was admitted in November with a sinus of the chest, and some limitation of movement in the left shoulder-joint. He was a man of robust conformation and healthy aspect, with good family history. He had, however, suffered when a child from a white swelling of the right knee, which had left the joint stiff. Four years ago, while at sea, he fell upon the left shoulder, and since that time has complained of gradually increasing stiffness of the joint, but without swelling, pain, or constitutional disturbance. Six months ago a sinus opened in the middle of the right side of the chest over the fourth rib, and another appeared in front of the shoulder two days before admission.

On examination under an anæsthetic the arm could be moved freely, and without any apparent grating in the articulation. The chest sinus ran beneath the pectoralis major outwards towards the humerus and joined the shoulder sinus. It could not, however, be traced to diseased bone. The inner half of the sinus was laid open, and a large quantity of tubercular granulation tissue was removed from the whole length of the passage with a curette. During the next three weeks the incision healed, but the outer half of the sinus remained without improvement. On exploring this a second time a tortuous passage was discovered, leading through an aperture in the upper

extremity of the humerus below the anatomical neck. The parts were curetted and drained, but without benefit. On the 9th of January the upper end of the humerus was exposed by an anterior incision, and the joint was opened. The articular surfaces of the bones were found bared of cartilage and covered with granulation tissue, and a superficial caries extended beyond the joint cavity over the neck of the scapula, while the whole synovial membrane was greatly thickened. The diseased extremity of the humerus was then sawn off, the glenoid cavity and bared portion of the neck of the scapula were gouged away, and the tubercular synovial membrane was removed by scissors and the curette.

The wound was closed after the introduction of a drainage-tube.

The case has progressed favorably, and the sinuses are now all closed, except a small one which runs for about an inch in the direction of the humerus. There is no evidence of disease in the bone.*

The case affords a curious instance of the destructive progress occasionally made by the disease without exciting either pain or constitutional reaction. No certain evidence of implication of the shoulder-joint was detected until the incision of the capsule. In connection with the wide extension of superficial caries from the tubercular focus, I may briefly refer to a somewhat similar case in a man aged twenty-four, who left the hospital for a convalescent home a month ago after the removal of the upper extremity of the humerus and nearly the whole of the scapula (head, neck, spine, upper half of body, and greater part of acromion). The result of this extensive operation has so far been very satisfactory. The case will be fully reported later.

As an appendix to these examples of adult tuberculosis, an account of two cases of tubercular disease probably due to direct inoculation may be of value. One of these is of rather old date; the other is still under treatment.

[1] About ten days after the lecture the wound, without any ascertainable cause, broke down and the sinuses reappeared, lined with tubercular granulation tissue, and leading down to bone. The condition was treated by injection of iodoform and glycerine, and the parts are now almost completely restored to health.

Case 1. R. C—, aged 65, a cattle-dealer, was admitted in July, 1889, with tubercular disease of the right foot. He was a strongly built man of healthy aspect, with good family and personal history. The disease began three years before as a result of a wound of the great toe by the hoof of a pony, the injured part remaining painful and swollen from the time of the accident, but until within a few weeks of his application at the hospital it did not prevent him from following his occupation. On admission a large sinus with sharply cut borders was found on the plantar surface of the first metatarso-phalangeal joint, discharging a large quantity of a peculiarly offensive pus. At the bottom of this a carious condition of the head and part of the shaft of the metatarsal bone and of the base of the first phalanx could be felt with the probe. In August the whole of the diseased bone was excised, and the sinuses, which presented a curious lack of demarcation, were freely curetted and cut away with scissors. In spite of the most careful antisepsis the offensive discharge quickly reappeared, and on September 8th the unhealthy tissues were again excised and the wound packed with iodoform gauze. At about the same time a little boy in the next bed suffering from a sinus of hip, but progressing favorably, became suddenly worse, and his wounds assumed precisely the same character as that presented by the foot wound of the old man. There was good reason to believe that infection had been transmitted directly from the one case to the other, and unfortunately the younger patient died within a few days with indications of acute septicæmia. In the meantime the old man progressed without much change for a week or two, then the local condition became rapidly worse, and signs of blood-poisoning with albuminuria appeared. A subastragaloid amputation was performed, but without good effect; the wound broke down, discharging foul pus, and the patient became delirious and sank into a typhoid condition, from which he died a week later.

Case 2. G. C—, a veterinary assistant aged 29, was admitted into Clayton Ward on the 11th of February with a tubercular condition of the skin over the front of the knee, and a sinus leading down to the patella.

He was a man of healthy aspect, and said that no member of his family had, to his knowledge, suffered from any form of tubercular disease, except his mother, who died of phthisis at the age of fifty. In November last a horse fell upon him, causing a wound over the front of the left knee. He was laid up for a month with pain and swelling in the affected joint, and then the condition improved sufficiently to allow him to get up, but did not become entirely well.

On admission there was considerable effusion into the joint, and the skin over the patella was dusky red, and pierced by a ragged sinus which extended to bare and rough bone.

On February 20th, the active inflammation within and outside the joint having subsided, the sinus was opened up, and a large portion of the upper half of the patella was found carious. The diseased bone and a quantity of tubercular granulation tissue were cautiously removed by the curette, and the wound dressed with iodoform gauze. Since this time the wound has done well, and is now granulating healthily. The joint is free from effusion, and the general condition of the patient is greatly improved.

In both of these cases the patients were of more than average vigour, and were attacked after a local injury by a horse. In both the affected tissues took on a very unhealthy action, tubercular in character, but differing in type from the tubercular disease usually seen in the human subject mainly in the acrid and offensive quality of the discharge, and in the tendency to diffuse infiltration of the tissues by the tubercular disease. In the older man the affection proved intractable, and was apparently transferred by inoculation to a child on the neighbouring bed; but in the younger patient the effect of treatment appears so far to be favorable. Should a recurrence take place, however, there is little doubt that the articulation will be invaded, as the caries involved nearly the whole thickness of the patella.

THE RESULTS

OF

TREATMENT OF 322 COMPOUND FRACTURES OF THE LONG BONES

IN THE HOSPITAL BETWEEN THE YEARS 1881 AND 1890 INCLUSIVE.

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Compound fracture, an accident so common, and yet in old days so serious, was the first great surgical injury to yield its special terrors to the introduction and practice of antiseptic surgery; and so complete was the apparent success in treatment by the newer method, that since the publication of the brilliant statistics of the treatment of compound fracture of the leg by von Volkmann in 1876 no large compilation of results has been made. In subsequent compilations, as in von Volkmann's, the comparatively small number of cases of compound fracture of the femur led to the inclusion of osteotomies under the heading of intentional compound fractures to fill the gap necessitated by the short period during which actual antiseptic surgery had been practised. The difference between a clean surgical wound leading down to a cleanly divided bone, and a compound fracture of the bone, uneven, splintered,

and accompanied by the insidious spread of extravasated blood in the muscle-sheaths, connective-tissue planes, and subcutaneous areolar tissue, is obvious. Hence, although as a matter of convenience it sufficed to include such cases at the time, yet, for the full confirmation of the results to be obtained by careful antiseptic wound treatment, the compilation of large numbers of identical injuries of the different bones is needed. To help to fill the deficiency thus existing the following paper has been compiled, and it is confidently claimed that results such as are here recorded are of absolute value, and represent the average to be obtained, since the cases on which they are based were spread over a period of ten years, and were under the care of at least eight different surgeons, fifty house surgeons, and a far larger number of dressers. Such results, in common with all those to be obtained from a general hospital, therefore, escape an argument often raised in the case of statistics, that success may be due to the individual skill or care bestowed by one surgeon upon them.

During the ten years from 1881 to 1890 inclusive 322 cases of compound fracture of the long bones were admitted into and treated in the hospital.

These were divided as follows:

Upper extremity.		*Lower extremity.*	
Humerus	54	Femur	31
Radius and ulna	24	Tibia and fibula	166
Ulna	9	Tibia	30
Radius	5	Fibula	3
	92		230

The fractures will be first dealt with in their regional distribution, and a short collective statement of the general results will be appended. In estimating the results, the lines laid down by von Volkmann[1] and Holmes[2] will be followed; all compound fractures dying within forty-eight hours of shock, and all those treated by primary amputation being excluded.

As was forcibly pointed out by von Volkmann, such injuries are scarcely to be looked upon as compound fractures, since the serious effects, and the indications for treatment, are the

[1] 'Sammlung klinische Vorträge,' Nos. 117 and 118.

[2] 'St. George's Hospital Reports,' vol. ix, 1877–8, p. 651.

result of extensive injury to the soft parts rather than to the bones. Besides, our object is to examine the results of the conservative treatment of fracture, and such cases in no sense directly bear upon the inquiry. Since, however, compound fractures are always accompanied by a varying degree of injury to the soft parts, it is thought well in each section and in the general statement to give side by side the result of primary amputation, and thus to furnish statistical data for general prognosis in compound fracture of every degree of severity.

Upper Extremity.

Humerus.—Fifty-four cases of fracture of this bone were under treatment; forty by conservative methods throughout, fourteen by primary amputation—35 per cent. No case died within twenty-four hours.

Among the forty cases treated conservatively eighteen may be said to have been uncomplicated, although several were severe injuries. Of the other twenty-two, nineteen (35·2 per cent.) were complicated by extension of the fracture into the elbow-joint; one (1·85 per cent.) involved the shoulder-joint; one was accompanied by dislocation of the shoulder; one involved the brachial artery; one was accompanied by a fracture of the ilium.

No case died. The average duration of treatment within the hospital amounted to 32·075 days. In the case in which the shoulder was involved, a male aged thirty-two, a primary excision was performed, and the patient was discharged cured with a good immediate result on the forty-sixth day. In one of the elbow cases, a male aged ten, the lower humeral epiphysis which was separated was removed: in this case the brachial artery was lacerated by the primary injury, and needed ligature. He was discharged cured on the seventy-ninth day. As to the present condition of the other eighteen cases in which the elbow was involved we are unfortunately not in a position to give details, owing to the lapse of time since they were under treatment; it can only be stated that they left the hospital cured as far as the fracture was concerned.

Three cases needed sequestrotomy for limited necrosis prior to their discharge.

Two cases are reported as leaving with non-union. One of these, however, was a male aged thirty-eight, a case of fracture through a carious bone; and the other, a male aged forty-eight, left at his own request on the fiftieth day with the wound still suppurating.

In no case was secondary amputation necessary.

Primary amputation.—All the fourteen cases in which primary amputation was performed were of the nature of severe smashes, except one in which the arm had been separated by a circular saw. One only of these died, and that from shock, the injury to the humerus being complicated by compound fracture of the ribs, wound of the lung, and pneumothorax in a male aged twenty. Four of the cases which recovered were complicated by severe concurrent injuries:—(1) Fracture of ulna; (2) avulsion of opposite forearm; (3) double amputation; (4) fracture of the radius and ulna of the same side. One amputation was through the shoulder-joint.

It is of interest to note that the duration of treatment after primary amputation (32·1 days) is almost exactly the same as was needed after conservative measures (32·075 days). The death-rate, 1 in 14 = 6·86 per cent., is satisfactory, the single death clearly being due to concurrent injuries.

Bones of forearm.—Twenty-four cases in all of fracture of both bones were under treatment. Two of these cases were primarily amputated—both were severe smashes; the other twenty-two were treated conservatively. Of the latter two needed secondary amputation; one, a female aged two, developed tetanus, for which the amputation was performed, and died. In the other, a female aged thirty, gangrene and cellulitis necessitated amputation on the fifth day; she was discharged cured on the seventeenth day.

In one case only was a joint implicated; this the wrist (4·16 per cent.). The patient was discharged cured on the forty-first day. In two cases necrosis needed subsequent sequestrotomy.

The one fatal case was from tetanus, a wound infection

perhaps less readily avoided than other septic infections; but this gives the high death average of 4·55 per cent.

The average duration of treatment by conservative methods amounted to 20·86 days, that by primary amputation 40 days. The primary amputations call for no further remark.

Ulna.—Of nine cases of fracture of the ulna one needed primary amputation; the other eight cases were treated conservatively. Two were fractures of the olecranon implicating the elbow-joint—22·2 per cent. of the whole number; in one, a male aged forty-one, a partial excision of the elbow was performed, and the patient was discharged cured on the thirty-ninth day, able to flex the forearm nearly to a right angle, and with perfect power of pronation and supination. One case was complicated by dislocation of the head of the radius, another by a simple Colles's fracture. In one case necrosis needed subsequent sequestrotomy. All were discharged cured, the average duration of treatment being 43·5 days, that of the single primary amputation being 43 days.

Radius.—Five cases only were admitted; all were treated conservatively, the average duration of treatment amounting to 35·6 days. One case, a male aged thirty-one, a gunshot injury, died of broncho-pneumonia on the twenty-first day, giving a death average of 20 per cent.; the local conditions, however, seem to show that death in no way resulted directly from the fracture.

Lower Extremity.

Femur.—Thirty-one cases. Five died within twenty-four hours, eleven underwent primary amputation, fifteen were treated conservatively throughout.

The cases which died within twenty-four hours were shortly as follows; they for the most part belong to the class of patient subjected to primary amputation, but in at least three instances the general condition was too serious to allow of this being undertaken.

1. Male, æt. 8, tramcar accident, thigh almost separated. Concomitant injuries, fractured ribs and left humerus. Wounds of perinæum and face, died within twenty-four hours.

2. Male, æt. 55, run over by van. Fracture of both femora in inferior third. Fracture of both legs at ankle and of fifth

metatarsal bone. On second day gangrene of right limb ensued, the thigh was amputated in the middle third, and he died from collapse.[1]

3. Male, æt. 43, run over by train. Smash of left femur. Concomitant injuries, fracture of seventh, ninth, tenth, eleventh, twelfth ribs, scalp wound, subdural hæmorrhage. Died in two hours of collapse.

4. Male, æt. 56, run over by train. Fracture of right femur. Concomitant injuries, compound fracture of right tibia and fibula, simple fracture of left fibula. Died one hour after admission from collapse.

5. Male, æt. 30, run over by train. Compound comminuted fracture of femur. Fracture of fourth metacarpal and crush of arm. Died one and a half hours after admission.

The remaining fifteen cases were treated conservatively throughout. Six of them were complicated by additional injuries as follows:—1. Simple fracture of opposite femur, and fracture of inferior maxilla. 2. Simple fracture of the radius. 3. Simple fracture of opposite femur. 4. Simple fracture of opposite tibia and fibula. 5. Severe wound in popliteal space. 6. Involvement of knee-joint.

Two cases died.

1. Male, æt. 16, compound fracture of left femur, and of right tibia and fibula. The fractured femur did well, but suppuration occurred in the opposite knee-joint about the 190th day; for this a secondary amputation was performed, and he died on the 204th day.

2. Male, æt. 5, compound fracture of the left femur which progressed favorably; developed laryngeal diphtheria necessitating tracheotomy, and died on the thirtieth day.

These two deaths, although unfortunate, can neither be referred to the primary injury to the femur; the first is included here only because the fracture of the femur was properly regarded as the more serious of the two injuries at the time of admission, the second died of an entirely separate disease.

In no case was the fracture followed by necrosis.

One patient, a male æt. 56, was discharged with the fracture

[1] It will be noted that this patient lived beyond twenty-four hours, but he strictly belongs to the class in which he is included, death resulting from the severity of the injury, to which was added the shock of an amputation.

ununited on the 305th day. He had a severe wound in the popliteal space of the same limb, the necessary dressing of which may have in some measure contributed to the result by disturbing the fracture. He was thought an unfit subject for operative treatment, and left wearing an apparatus.

The average duration of treatment in the fifteen cases amounted to 107·6 days, or if the fatal case due to the compound fracture of the leg and suppuration of the opposite knee-joint be deducted to 94·4 days.

The knee-joint was involved by the fracture in three out of the whole thirty-one cases—9·7 per cent. Two of these cases were subjected to primary amputation; the third, a male aged seventeen, was treated conservatively throughout, and was discharged cured on the eighty-ninth day with good movement of the joint, and limbs of equal length.

Primary amputation.—In the eleven cases treated by primary amputation the injuries were of a very severe nature; all were smashes occasioned either by railway carriages or street vehicles. Six cases recovered, and in these the average duration of treatment within the hospital amounted to 40·3 days, as against 94·4 needed for conservative methods.

The fatal cases were as follows:

1. Male æt. 20, tram-car accident. Compound comminuted fracture of right femur in lower third implicating knee, simple fracture of tibia and fibula. Death within twenty-four hours of shock.

2. Male, æt. 5, run over by a van. Compound comminuted fracture of left femur in lower third. Great crushing of soft parts, and considerable hæmorrhage. Amputation in mid-thigh. Died of collapse in four hours.

3. Male, æt. 42, run over by a loaded van. Compound comminuted fracture of left femur in lower third, leg also crushed. Amputation in upper third of thigh. Hæmaturia, never recovered shock, died on second day. At the post-mortem examination both kidneys were found much congested, and the bladder contained bloody urine.

4. Male æt. 52, railway smash. Compound comminuted fracture of left femur, compound comminuted fracture of humerus. Died of shock on the first day.

5. Male, æt. 6, run over by a dray. Compound fracture of

right femur in upper third, extensive wound of soft parts. Amputation at the hip-joint, sloughing of flaps, died on the thirteenth day.

All five cases therefore died from the severity of the injury, the first four of shock, the fifth of shock followed by exhaustion.

Fracture of the leg.—Fracture of tibia and fibula, 166 cases. 6 (3·6 per cent.) died within twenty-four hours. 125 (75·3 per cent.) were treated conservatively, and of these 12 (9·6 per cent.) underwent secondary amputation. 35 (21 per cent.) were subjected to primary amputation.

The six cases dying within twenty-four hours were shortly as follows:

1. Male, æt. 40. Run over, both legs fractured; death one hour after admission.

2. Male, æt. 66. Compound comminuted fracture of both legs, facial paralysis; died four and a half hours after admission.

3. Male, æt. 4. Compound comminuted fracture of both legs died four hours; after admission.

4. Male, æt. 41. Compound fracture of right leg; fractured clavicle, sternum, and costal cartilages. Post mortem, cirrhosis of liver and cysts in kidneys. Died twenty-four hours after admission.

5. Male, æt. 32. Railway smash, compound fracture of leg. Fractured fourth, fifth, sixth, seventh, and eighth ribs on right side, seventh rib on left side; injury to lung and kidney. Died twenty-four hours after admission.

6. Male, æt. 23. Compound fracture of right leg, crush of foot. Died twenty-two hours after admission.

Of the twelve cases needing secondary amputation, two died, both of septic infection.

The cases subjected to secondary amputation were shortly as follows:

1. Male, æt. 29. Compound comminuted fracture of leg. On tenth day secondary amputation in lower third. Death on the eighth day after amputation from pyæmia with visceral deposits.

2. Male, æt. 44. Compound fracture of leg, fracture of right radius; delirium tremens, wound became septic, neces-

sitating amputation on the tenth day. Died on the twelfth day.

3. Male, æt. 39. Compound fracture of leg, on eighth day secondary hæmorrhage, on ninth day amputation of leg; another attack of secondary hæmorrhage was treated by ligature of the popliteal artery. Discharged cured on the ninety-fourth day.

4. Male, æt. 56. Compound fracture with dislocation of ankle, tendo Achillis divided for reduction. Secondary amputation below knee, followed by sloughing of flaps and suppuration in knee-joint; a secondary amputation was performed in lower third of thigh, and he was discharged cured on the 141st day.

5. Male, æt. 45. Compound fracture of leg, necrosis, non-union, secondary amputation. Discharged cured on the 110th day.

6. Male, æt. 36. Compound fracture of leg. Erysipelas, secondary amputation. Discharged cured on the 130th day.

7. Male, æt. 75. Compound fracture of leg, and of right radius and ulna. Both suppurated, and secondary amputation was performed in each case at intervals. Discharged cured on sixty-sixth day.

8. Male, æt. 36. Compound fracture of leg. Sequestrotomy for necrosis was followed by secondary hæmorrhage from the posterior tibial artery necessitating amputation. Discharged cured on the 143rd day.

9. Male, æt. 22. Compound fracture of leg with much crushing of soft parts. Suppuration treated by incisions, amputation on the twelfth day. Discharged cured on the 124th day.

10. Male, æt. 63. Compound fracture of leg. Amputation on twenty-eighth day in upper third. Discharged cured on the eighty-second day.

11. Male, æt. 54. Compound fracture of leg. Gritti's amputation on fourteenth day. Discharged cured on the 135th day.

12. Male, æt. 9. Compound separation of epiphyses. Amputation on the sixty-second day. Discharged cured on the 107th day.

Among the 113 cases treated conservatively throughout

the following primary complications were noted. Severe contusion of foot, 1; extensive crushing of soft parts, 2; scalp wound, 1; lacerated wound of thigh, 1; synovitis of knee, 1; subcoracoid dislocation of humerus, 1; simple fracture of base of skull, 1; of opposite tibia and fibula, 3; of right femur and left ulna with contusions, 1; of radius with scalp wound, 1; of astragalus, 1; of femur, 1; of radius, 1; epithelioma of tonsil and secondary hæmorrhage, necessitating ligature of common carotid, 1.

Very few of the fractures implicated joints; thus of the total number of 166 the ankle-joint was involved seven times—4·3 per cent, and the knee in two cases—1·2 per cent. only. Five of the ankle cases were treated conservatively, two needing secondary amputation; two were primarily amputated. Both the knee cases underwent primary amputation.

The result of treatment in the 113 cases may be regarded as satisfactory, complications of severity being uncommon; in one case secondary hæmorrhage occurred, three had attacks of delirium tremens, eight had attacks of erysipelas, one developed a traumatic aneurysm of the anterior tibial artery, which was cured by compression; nine had limited necrosis, necessitating subsequent sequestrotomy; and one, a female æt. 65, died from suppuration accompanied by hectic temperature on the twentieth day.

Two cases were discharged with non-union of the fractures:

1. Male, æt. 45. Fracture through middle third. Left on fifty-eighth day with fracture unconsolidated.

2. Male, æt. 57. Fracture at junction of middle and inferior third. Left on fifty-third day with fracture unconsolidated.

The average duration of stay in the hospital amounted to 64·38 days.

Thus, of the 125 cases treated conservatively, three died, of these two had been subjected to secondary amputations. All three deaths were due to septic changes, although one only developed pyæmia. This gives a death-rate of 2·4 per cent. (One fatal case included under the heading of "femur" might be added here, which would increase death-rate to 3·2 per cent.)

The thirty-five cases subjected to primary amputation show

as would be expected, a far larger death-rate; thirteen died, or 37·1 per cent.

The fatal cases were shortly as follows:

1. Male, æt. 75. Tram-car. Fracture of upper third, knee-joint involved. Contusion of foot. Amputation upper third of thigh. Death on fourth day.

2. Male, æt. 40. Comminuted fracture of both legs. Double amputation. Died of collapse within twenty-four hours.

3. Male, æt. 32. Comminuted fracture of upper third. Amputation of lower third of thigh. Delirium tremens. Died on fourth day.

4. Male, æt. 52. Compound fracture. Amputation of thigh. Died of shock in fourteen hours.

5. Male, æt. 44. Compound fracture of leg. Fractured pelvis, ribs, ulna (compound comminuted), floor of acetabulum. Amputation of leg. Died in one hour.

6. Male, æt. 64. Comminuted fracture. Amputation of leg. Suppuration, sepsis. Died on eighty-third day.

7. Male, æt. 26. Double comminuted fracture in railway smash. Double amputation through condyles of femur. Died in twenty-four hours.

8. Male, æt. 45. Comminuted fracture involving knee. Amputation mid-thigh. Died in twenty-four hours.

9. Male, æt. 42. Comminuted fracture. Amputation lower third of thigh. Died on sixth day of pneumonia.

10. Male, æt. 64. Comminuted fracture of leg, simple fracture opposite femur. Amputation of leg. Died of exhaustion on the 118th day.

11. Male, æt. 35. Crush of feet, fracture lower third. Rupture of lung, pneumothorax, ruptured spleen. Died within twenty-four hours.

12. Male, æt. 31. Fracture of both legs. Double amputation. Died within twenty-four hours.

13. Male, æt. 57. Fracture of both legs in railway smash. Died within twenty-four hours.

The 13 amputations were, therefore, as follows:—Thigh 5, leg 4, double 4; and of the fatal cases, 9 occurred within twenty-four hours, as the result of concomitant injuries and shock. One case died of pneumonia on the sixth day, one with delirium tremens on the fourth day, one of exhaustion

from prolonged suppuration on the 118th day, and another from suppuration and septicæmia on the eighty-third day, the last two appearing to be the only ones from unsatisfactory causes.

The average duration of stay in hospital of the 22 successful cases was 52·6 days, and the amputations were as follows: —Thigh 8, leg 9, double 1, doubtful 4.

Tibia alone.—Thirty cases. Two underwent primary amputation, and one died within twenty-four hours (female, æt. 43, comminuted fracture, fractured base of skull, fractured ribs).

Twenty-seven cases were treated conservatively, and of these three underwent secondary amputation, or 11·11 per cent. The secondary amputations were as follows:

1. Male, æt. 19. Comminuted fracture, secondary amputation. Discharged cured on sixty-seventh day.

2. Male, æt. 35. Fracture of upper third with effusion into knee. Suppuration of knee, treated by aspiration, incision, and irrigation, and on the eighteenth day secondary amputation. Discharged cured on the forty-sixth day.

3. Male, æt. 48. Suppuration, necrosis, secondary suture. Amputation. Discharged cured on the 102nd day.

In one case, a male æt. 25, a fracture of the middle and inferior third was followed by necrosis. Sequestrotomy was followed by hæmorrhage, for which the anterior tibial artery was ligatured. He was discharged cured on the 240th day.

One case had an attack of delirium tremens, one contracted erysipelas, but both were discharged cured.

The average duration of treatment after primary amputation amounted to sixty-four days, with conservative treatment to fifty-nine days, the length being considerably increased by the case referred to above, in which sequestrotomy was followed by hæmorrhage (240 days). No death occurred.

Fibula alone.—Three cases, all treated conservatively throughout; in one case the ankle-joint was involved. The latter case resulted in anchylosis of the joint. One case had an attack of erysipelas. All were cured, the average duration of treatment amounting to 59·6 days.

General Considerations.

Table I shows the total number of cases, and Table II the ages of the patients. Table I gives also certain details as to

TABLE I.—*Table of 322 Compound Fractures of the Long Bones.*

Bone.	Sex.		Side of body.			Nature of violence.			Implication of joints.	Treatment.				Total number.
	M.	F.	R.	L.	Unstated.	Direct.	Indirect.	Unstated.		Died within 24 hours.	Primary amputation.	Conservative followed by secondary amputation.	Conservative throughout.	
Humerus	49	5	25	18	11	28	14	12	Elbow 19, Shoulder 1	—	14	—	40	54
Radius and ulna	17	7	11	3	10	6	14	4	Wrist 1	—	2	2	20	24
Ulna	8	1	7	—	2	8	—	1	Elbow 2	—	1	—	8	9
Radius	4	1	2	1	2	2	2	1	—	—	—	—	5	5
Femur	27	4	13 (1 double)	15	2	24	3	4	Knee 3	5	11	—	15	31
Tibia and fibula	139	27	71 (7 double)	48	40	78	64	24	Ankle 7, knee 2	6	35	12	113	166
Tibia	26	4	10	14	6	16	9	5	—	1	2	3	24	30
Fibula	3	—	2	1	—	2	1	—	Ankle 1	—	—	—	3	3
	273	49	141 (8 double)	100	73	164	107	51	36	12	65	17	228	
	322		322			322			9 % of whole	3·726 % of whole	20·18 % of whole	7·02 % of whole	70·80 % of whole	322

TABLE II.—*Table showing Age of* 322 *Compound Fractures of Long Bones.*

Under . .	5	10	20	30	40	50	60	70	80	
Humerus . .	4	6	19	3	7	6	3	3	2	1 unstated.
Radius and ulna	1	3	8	3	2	2	1	—	3	1 age 95.
Ulna . .	—	—	3	—	1	2	2	1	—	
Radius . .	—	—	—	—	1	1	1	—	—	2
Femur . .	6	4	3	4	1	7	4	1	1	
Tibia and fibula	10	6	15	28	39	33	19	8	6	2
Tibia . .	—	1	4	11	6	4	1	2	—	1
Fibula . .	—	1	1	—	—	—	1	—	—	6 unstated.
Total . .	21	21	53	49	57	55	32	15	12	7

sex, nature of violence, side of the body affected, involvement of joints, and the mode of treatment adopted, with the various percentages to the whole number. The first three points require no further remark. The involvement of the large joints in these injuries, however, is a matter of such great importance, that a few words must be devoted to the examination of such details as are to hand. It may be at once stated that the authors think that the given percentage occurrence (9 per cent. of whole) of this complication is somewhat lower than was actually the case. On examination of the thirty-six cases we find that twenty-four (66·66 per cent.) were treated conservatively; seven (19·2 per cent.) were treated by primary amputation; two (8·3 per cent.) needed secondary amputation, and three (5·5 per cent.) were excised. Three only (8·3 per cent.) died, and these were all injuries to knee-joint treated by primary amputation. The percentage mortality of the conservatively treated cases was therefore *nil.*

As to the mode of conservative treatment adopted in the various cases, it can only be described as antiseptic. With the numerous changes which have occurred in the method of

carrying out the great principles laid down by Sir Joseph Lister, modifications have been introduced year by year. The chief of these have been the following. In the earliest part of the decade all cases were disinfected with 5 per cent. carbolic acid lotion, and dressed with carbolic gauze in the early Listerian fashion, the wound usually being enlarged if more than a puncture to allow of free application of the lotion. Further dressings as the first were performed under the carbolic spray. A little later this method was to a certain extent modified by the addition of very free incisions to allow of more thorough disinfection. A reversion in this matter, however, slowly occurred, and during the latter half of the decade the wounds were only enlarged sufficiently for proper cleansing if at all. The spray gradually fell into desuetude, and for the last four years was employed little, or entirely dispensed with. Iodoform was largely used in the mid period in conjunction with carbolic acid lotion. During the last five years, however, 1 in 1000 mercuric perchloride lotion and some form of mercurial dressing has steadily replaced all other forms of antiseptic, and during the same period infrequency of dressing became the rule. For the very great majority, at least 90 per cent., plaster-of-Paris splints were applied outside the antiseptic dressing. At the present time bicyanide of mercury gauze, 1 in 1000 perchloride of mercury lotion, and plaster-of-Paris splints are the rule, and in successful cases the dressing is not changed more than twice or thrice.

The favorable influence of the treatment on the results attained is evidenced not only by the low death-rate, but equally forcibly by the comparative rarity of serious complications during the process of healing. The latter will now be enumerated and briefly commented upon. The only statistics with which they can be readily compared are those of a mixed series of cases published by Holmes[1] in the 'St. George's Hospital Reports.'

[1] L. c., p. 654.

Present series, 227 bones of both extremities.		
Pyæmia	1	1 died.
Septicæmia	1	1* „
Phagedæna	—	
Cellulitis	1	
Erysipelas	11	
Tetanus	1	1 „
Delirium tremens	5	1* died of septicæmia.
Gangrene (of skin only)	1	
Secondary hæmorrhage	4	
Suppuration of neighbouring joint	1	1 died.
Broncho-pneumonia	1	1 died.
Diphtheria	1	1 died.
Necrosis	13	
Non-union	6	
Traumatic aneurysm	1	

Holmes,[1] 162 cases of bones of leg.		
Pyæmia	21	All fatal.
Septicæmia	—	
Phagedæna	4	1 died of pyæmia.
Cellulitis	6	
Erysipelas	6	1 died.
Tetanus	1	1 died.
Delirium tremens	12	12 died, 2 of pyæmia.
Delirium, probably *e potu*	5	
Exhaustion	3	
Gangrene	2	
Secondary hæmorrhage	1	

It should be at once stated that only thirty-three of Holmes's cases were treated "purely antiseptically," and that at that period, by reason of the irritating nature of carbolic acid dressings, the strict treatment was only persevered with for the first three weeks. Again, the St. George's cases were treated during the years 1865—1878 inclusive, a time when the technique of antiseptic surgery was far less advanced than at present. Among the thirty-three cases treated purely antiseptically we find seven deaths[2] (21·21 per cent.), from the following causes:—Delirium tremens 2, pyæmia 2, tetanus 1, gangrene 1, visceral disease 1.

These statistics need little comment, the comparative rarity of septic infection being the most marked feature in favour of the purely antiseptic series compiled in this paper. One point, however, is too striking to escape notice, although it is more than doubtful whether the method of treatment is in the most remote way responsible for the change. In Holmes's series no fewer than seventeen patients (10·50 per cent.) suffered with delirium; of these twelve were undoubtedly *e potu*, the other five most probably so, and twelve of these patients died.

[1] L. c., p. 654.

[2] L. c., p. 655.

In our series five patients (2·2 per cent.) only suffered with this disease, and only one died. This fact probably supports merely the general inference that drinking among the lower classes is far less heavy than formerly, for in all injuries the disorder is much more infrequent.

With regard to the occurrence of non-union we find no comparative data in Holmes's series, but in the special sections details will be found of four cases in which non-union occurred. In one of these, a fracture of the femur, the patient left the hospital on the 305th day, so it may be fairly assumed that a pseudo-arthrosis had developed. Of the remaining three, one was of the humerus; he left the hospital on the fiftieth day at his own request; two were of the leg, and left on the fifty-eighth and the fifty-fifth days respectively; these cases may possibly, therefore, be cases of deferred union only. Assuming, however, these cases to be instances of non-union, we have a total of four in 227 (omitting the case of caries of the humerus referred to in the special section), or 1·76 per cent. In von Bruns'[1] monograph, in 5221 fractures collated from various sources, seventy-eight cases of non-union occurred (1·49 per cent.). In the same compilation sixty cases of delayed union occurred 1·15 per cent. If these be added we get a combined percentage of 2·64 per cent. The numbers in our table, therefore, scarcely warrant any direct inference being drawn to the disadvantage of antiseptic measures, although it has frequently been stated that the absence of suppuration exerts an unfavorable influence in this particular. The occurrence of necrosis in only thirteen cases (5·72 per cent.) must be regarded as a favourable result.

Secondary amputation.—In Holmes's series of 162 this measure was needed thirteen times (8 per cent.); in von Volkmann's series of seventy-three fractures of the leg, eight times (10·9 per cent.). In our series of 227 it was needed seventeen times (7·5 per cent.)—an almost identical proportion. Holmes, however, found that in the first half of his list secondary amputation was performed ten times in eighty-one cases (12·3 per cent.), in the second half three times (3·7 per cent.), the first half including fifteen cases treated purely

[1] Von Bruns, 'Die Lehre von den Knochenbruchen,' 1886, p. 559.

antiseptically, the second half eighteen. He draws, however, no very definite conclusion from this division.

Of our seventeen cases three died (17·65 per cent.). Particulars of the cases will be found in the special sections. Amputation was indicated by general septic infection in 2, tetanus 1, cellulitis 2, suppuration of soft parts 6, suppuration of neighbouring joint 2, necrosis 2, and secondary hæmorrhage 2. These indications point to failure in antiseptics, or the maintenance of asepsis, as the most prominent factor in necessitating this measure. The amputations were of arm 1, thigh 5, probably leg 11. The results are slightly better than those obtained in sixty-six secondary amputations for surgical injury of all sorts performed in St. Thomas's Hospital between 1876 and 1885 inclusive. Of these sixty-six, sixteen died (24·24 per cent.).[1]

A word must be added regarding the practice of sealing the wound. Holmes speaks thus on the subject:—"I am by no means sure that in the slighter cases the antiseptic treatment offers any such unquestionable advantages over that by sealing the wound; though I do, on the whole, believe that it is safer, and therefore I usually employ it." The wisdom of this opinion is thoroughly borne out by our results. Holmes gives sixty cases treated by sealing the wound, of which 14 died, 5 of delirium tremens, and 9 of pyæmia. It may be argued that many of our cases were treated by sealing the wound; that the antiseptic dressing, once applied, rapidly adheres to the wound, and in satisfactory cases, as it does not need changing, acts as the old piece of lint soaked in collodion or blood. It can only be answered that here the advantages of the older method are retained, with the great addition that, supposing the wound to go wrong, asepticity is maintained, and we are in little worse position than if a more severe injury to soft parts had existed from the first.

The average duration of residence of the whole number of cases treated conservatively, excluding the twelve cases dying within twenty-four hours, amounts to 61·8 days.

Table III shows the mortality of the 245 fractures treated conservatively, omitting the twelve cases dying within

[1] MacCormac's 'Surgical Operations,' vol. ii, 1889, p. 195.

[2] L. c., p. 661.

TABLE III.—*Table of Mortality.*

Bone.	Primary amputation.			Conservative treatment, omitting 12 cases which died within 24 hours.		
	No. of cases.	Died.	Percentage.	No. of cases.	Deaths.	Percentage.
Humerus . .	14	1	7·7 %	40	—	—
Radius and ulna .	2	—	—	22	1[1]	4·55 %
Ulna . . .	1	—	—	8	—	—
Radius . . .	—	—	—	5	1[2]	20 %
Femur . . .	11	5	45·45 %	15	2[3]	14·3 %
Tibia and fibula .	35	13	37·1 %	125	3[4]	2·4 %
Tibia . . .	2	—	—	27	—	—
Fibula . . .	—	—	—	3	—	—
	65	19	29·23 %	245	7	2·86 %

twenty-four hours, but including the seventeen cases treated by secondary amputation. Of the whole number seven died, (or 2·86 per cent.). The foot-notes to the table refer to the cause of death in the seven cases. It will be remarked that the fatal case of fracture of the radius died of broncho-pneumonia, not septic in origin, on the twenty-first day; and that, of the two fatal cases of fracture of the femur, one died from diphtheria on the thirtieth day. The removal of these two cases, the deaths in which are hardly to be referred to the compound fractures, would further reduce the death-rate to 2·04 per cent.

For purposes of comparison we may here add some earlier statistics of similar injuries, which strongly support the superiority of strict modern antiseptic treatment.

[1] Death from tetanus on eighth day.

[2] Death from broncho-pneumonia, not septic, on twenty-first day.

[3] One death from diphtheria on thirtieth day. One after amputation of opposite limb for suppuration of the knee-joint, secondary to a fracture of the leg, on 204th day.

[4] All three from septic causes.

TABLE IV.

Source.	Number of cases.	Number of deaths.	Per-centage.	Nature of treatment.
Upper extremity :				
St. Thomas's, 1881—1890 .	75	2	2·66 %[1]	Antiseptic.
Guy's, 1841—1861 . .	50	2	4 %	Non-antiseptic.
Von Bruns (compilation) .	84	4	4·47 %	Antiseptic.
Von Bruns (compilation) .	46	20	43·4 %	Non-antiseptic.
Obuchow Hosp., 1852—1872	36	20	55·55 %	Non-antiseptic.
Lower extremity :				
St. Thomas's, 1881—1890 .	170	5	2·94 %	Antiseptic.
St. Thomas's, 1875—1880 .	54	12	22·2 %	Mixed, A. and N.-a.
St. George's, 1865—1878 .	162	40	24·6%	Do.
Guy's, 1841—1861 . .	158	54	34·18 %	Non-antiseptic.
Von Bruns (compilation) .	245	23	9 %	Antiseptic.
Von Bruns (compilation) .	180	74	41·1 %	Non-antiseptic.
Obuchow Hosp., 1852—1872	118	86	72·88 %	Do.

Primary Amputation.

The number of cases treated by primary amputation is large, 24·9 per cent. of the whole number; but this is to a certain extent discounted by the very small percentage (3·7 per cent.) of those who died without any operation. As in previous compilations, this is to be explained by the desire on the part of the surgeon to give the last and only chance to patients who have sustained the gravest injury, a large majority of the cases being those more properly described by the term smash than that of fracture.

The death percentage is shown in Table III. The one death after amputation of arm was from shock.

Of the five deaths following amputation for fracture of the femur, four were from shock and concurrent injury; and the fifth died from sloughing of the flaps after amputation at the hip-joint.

Of the thirteen deaths after amputation for fracture of the leg, seven were amputations of thigh, one double; five of these died from shock and concurrent injuries, one from delirium tremens, and one from exhaustion. Six were amputations of the leg, one double; four died from shock and con-

[1] See causes of death, footnotes 1 and 2, p. 201.

current injuries, one from sepsis and one from pneumonia. Further details will be found in the special sections.

These results are far worse than those obtained in 274 cases of primary amputation for injury of all sorts performed in St. Thomas's Hospital between 1876 and 1885 inclusive. Of these thirty-two cases only died—12·77 per cent.[1]

This paper can scarcely be concluded without recognising the large share which the care and attention bestowed on the cases by the resident junior surgical officers has had in obtaining these excellent results.

[1] MacCormac, 'Surgical Operations,' vol. ii, 1889, p. 195.

A SECOND SERIES OF CASES

OF

HEAD-JERKING IN CHILDREN,

WITH REMARKS.

By W. B. HADDEN, M.D., F.R.C.P.

In the 'Lancet' for June 14th, 21st, and 28th, 1890, I described some cases of this affection, and gave an analysis of twelve cases which had been under my care.[1] Since then I have seen about fourteen more instances, of nine of which I have kept notes. When this subject first came under my notice I was surprised to find how little was recorded about it in medical literature. Some of the points to which I was inclined to give importance were either not mentioned by other observers or, if mentioned, did not receive the attention which, in my judgment, was called for. My chief object in again writing on this subject is to bring under review some of the points which seemed to result from an analysis of my first series of cases.

I do not like the terms "eclampsia nutans" and "eclampsia rotans," which have been given to this condition. "Head-nodding" and "head-jerking," although by no means above

[1] "On Head-nodding and Head-jerking in Children, commonly associated with Nystagmus."

reproach, are preferable. "Eclampsia nutans" is especially undesirable, because it has been applied to a distinct variety of epilepsy, sometimes called the "salaam convulsion." There is some reason to think that this condition may occur in cases of the kind I am going to describe; but I have never myself actually seen it.[1]

All the cases to which I shall allude in this paper were seen by me at the Hospital for Sick Children, Great Ormond Street. I have to express my indebtedness to my colleague, Mr. Marcus Gunn, who examined most of the cases and reported on the condition of the eyes.

Before illustrating the special features of this disorder, I will first of all give a brief general description.

The movements of the head are most frequently lateral, though often there is some associated rotation. They are present chiefly when the child is looking at objects, and are often aggravated during efforts at fixation or during excitement. They invariably cease during sleep and when the child is lying down. With the head movements there is generally associated nystagmus of one or both eyes. The ocular movements are much more rapid than those of the head, and are not necessarily in the same direction. The nystagmus is best marked by making the child fix objects or by forcibly restraining the head movements; it may even be induced, when previously absent, by these means. As a rule, the head movements and the nystagmus are present together at some period of the disease, but the former may exist alone, and I have reason to think that in rare instances the disease may be represented by nystagmus only.

Case 1.—Female, æt. 13 months; seen March 27th, 1890. The patient was the second child in the family. No history of convulsions in patient or in other children. Child was bottle-fed.

Head movements began at age of ten months, nystagmus three weeks later. The movements of the head were from side to side, tending to the right with a downward inclination. There was rapid, short, horizontal nystagmus of the right eye

[1] See Henoch's 'Lectures on Children's Diseases,' p. 196; New Sydenham Society's translation, 1889.

only. Both pupils acted to light. Discs healthy, of good full colour. Sight good. She had a curious way of looking at objects held in front of her, which I described in my notes as "looking out of the corners of the eyes, turning the head to the right and downwards." She occasionally had seizures in which she seemed to lose herself, and sometimes the hands would twitch in these attacks. The child was intelligent, but "strong willed" and irritable. She walked well for her age, and could say a few words.

The child had had one fall only which the mother remembered, but this took place two months after the head movements were first noticed.

April 17th.—The nystagmus was only occasionally noticed now, but there had been many attacks of unconsciousness of the kind described. Sometimes she was convulsed in her sleep, the hands chiefly being affected.

May 1st.—No nystagmus for a week, but head movements the same. Still has attacks once or twice daily of unconsciousness. In one of these she took no notice for a quarter of an hour. She did not go pale, and was not convulsed; the head was thrown back, and the eyes fixed on something in the distance, apparently "she gazed at vacancy." Her father spoke to her and kissed her, but she took no notice.

15th.—The mother says the pupils are very small in these attacks (the size of a pin's head), and the child does not follow a light or take notice of anything. It was said that the patient at times staggered and fell.

22nd.— Head movements less. Nystagmus only occasional. Cannot be induced by forcibly restraining the head. No attacks of unconsciousness of late.

In the week following three such seizures occurred, but there had been no nystagmus.

I heard no more of the child for more than a year. On July 9th, 1891, the mother told me that the patient had died of measles following bronchitis. Apparently there had been complete recovery from the head movements, the nystagmus, and the attacks of temporary loss of consciousness.

Case 2.—Male, æt. 15 months; seen March 16th, 1891. There was no history of convulsions. The patient was the

first child. The head movements came on at the age of fourteen months, the nystagmus two weeks later. Later still the child began to have attacks in which he seemed "to be in deep thought, and whatever you do to him he will take no notice" (the mother's description). In these seizures he did not change colour nor was he convulsed; the head and eyes remained still. There was marked rickets, no doubt due to the fact that the child had been brought up on Ridge's food from the age of one month. There were seven teeth. The child was very intelligent; he began to have words at the age of nine months, and was said to talk well now. There was nystagmus of the left eye, rapid, regular, horizontal, excursions small; but this varied, and sometimes seemed to cease entirely. The nystagmus was worse on fixation. On looking upwards the movement was inclined to be vertical, and sometimes rotatory. There was very faint nystagmus of right eye, (?) horizontal or rotatory. Pupils active; fundi normal. The head movements were from side to side.

Three weeks later I noted that he had cut three teeth, and that the head movements and nystagmus, which had not been aggravated just before the teeth came through, had been less marked since. At the end of three months from the time when I first saw him he was well, and four months later he had remained well.

Case 3.—Female, æt. 10 months; seen March 19th, 1891. A brother of the patient's, æt. 22, suffers from fits, and another brother, æt. 8, had convulsions in infancy. The mother's mother had had fits. The patient was the eighth child, and had had convulsions when seven months old. The head movements, which began at the age of five months, were from side to side, with an inclination to the right; they were chiefly seen when he was made to look at an object. The head was generally thrown a little back, and inclined towards the right shoulder. The onset of the nystagmus could not be ascertained, as it had not been observed by the mother until I called her attention to it. The movements were very rapid, horizontal, and affected the right eye only. There was no history of momentary attacks of unconsciousness. There was distinct rickets with tenderness. The

child had been suckled up to the age of three months, and had had Ridge's food from the age of two months onwards. The two upper and two lower central incisors were present. Five weeks later I noted that the head movements had almost disappeared, and that the nystagmus was less frequent. The ocular movements were induced by making the child look upwards and to the left.

Case 4.—Female, æt. 10 months; seen April 13th, 1891. The mother had had fits, probably epileptic. Three children in the family, now dead, had had infantile convulsions. All the children were said to have been "croupy." The patient, who was being suckled, had never had convulsions. At the age of three weeks she had general eczema. She was a fat, good tempered, intelligent baby, with some beading of ribs and thickening of the lower ends of the radii. There were three teeth, the two lower central incisors and the lower right lateral incisor. The movements of the head and eyes were noticed simultaneously at the age of eight months.

The head movements were chiefly lateral, sometimes nodding. The nystagmus was not seen by myself when the head movements were present, but became evident when the head was forcibly steadied. The movements, which affected both eyes, were very rapid, chiefly lateral, but occasionally rotatory or vertical. There was also vertical nystagmus of the upper eyelids. When I first saw the child I could see no nystagmus, but the mother said it would appear if she put the child to the breast. This she did, and the movements were at once apparent, the head remaining still. The pupils were equal and active to light. A week later I noted that the upper left central incisor was coming through the gum.

May 28th.—When looking at objects she throws her head back and turns her eyes to the right.

June 11th.—The upper left central incisor is now through the gum. The movements have been less since.

July 20th.—Occasional head movements and nystagmus.

I lost sight of the child for six months; at the end of that time I examined her carefully, and found that she was quite well. There were never any attacks resembling *petit mal* in this child.

Case 5.—Female, æt. 9 months; seen May 28th, 1891. The patient was the second child, the first having died at the age of one month in convulsions. It was a bright, good tempered baby, free from rickets. She had always been suckled. The lower two central incisors were present; they appeared at the age of five months without pain. The head movements began about the age of four months, when the child began to take notice; but the nystagmus did not appear until two months later. When she was made to look at objects the head was inclined downwards and to the left. The head movements were from side to side with an inclination downwards towards the left shoulder. I thought once that I could arrest these movements by covering the eyes. There was lateral nystagmus, mainly of the right eye. The nystagmus was very marked, according to the mother, when the child was put to the breast, and when she was lying down, that is to say, when the movements of the head were in abeyance. The child never had convulsions, but there were some attacks of temporary unconsciousness. One of these the mother described to me. The head and eyes were quite motionless, and there were no convulsive movements of any part; but the child seemed lost for a little time, and took no notice when keys were dangled before her. At the end of five months after I first saw the child there had been only occasional shaking of the head for more than two months; no nystagmus had been observed for eight weeks.

Case 6.—Male, æt. 15 months, the sixth child; seen February 18th, 1892. One child, now aged six, has had fits for three years; another, aged four, had fits following whooping-cough, but they did not persist. The movements of the head and eyes were noticed simultaneously when the child was thirteen months old. He seemed feverish at the time of onset, and the movements were always worse when he was poorly. The movements of the head were mainly lateral, with an inclination towards the left shoulder; occasionally they were rotatory. There was lateral nystagmus of both eyes, but more of the left than of the right. The child had had occasional general convulsions, which began by deviation of the head to one side. Sometimes he would lose conscious-

ness, with deviation of the head, without a general convulsion. There was marked rickets; no teeth were present.

Case 7.—Male, æt. 1 year 8 months, the seventh child; seen February 22nd, 1892. There was a suspicion that he had some convulsive attacks at the age of three months, when suffering from bronchitis. There was marked rickets. The two lower central incisors were present; these were cut six weeks previously. He was suckled up to the age of ten months, and when four months old was given also boiled bread and milk. None of the other children had had either rickets or convulsions. The eyes began to move a month before I saw him (that is, at the age of one year and seven months), and the head shortly afterwards. There were shaking and rotatory movements of the head, chiefly seen when he fixed. Occasionally, when his attention was attracted to an object, he would cock his head slightly on one side. The mother said that sometimes, when surprised or alarmed, he would turn both eyes strongly to the left, and keep them there. At times he would turn the eyes upwards and take no notice for a second or two. There was extremely rapid lateral or rotatory nystagmus of both eyes, chiefly marked, I thought, when he looked to the right. The pupils were active to light, and he could move the eyeballs freely in all directions. The child was quite intelligent, and was said to have taken notice early.

Case 8.—Female, æt. 10 months, the second child; seen February 23rd, 1892. No history of convulsions or falls. The child was bottle-fed, and had had Ridge's food. She was a bright baby and took notice early, but was not precocious. There was marked rickets. There were only two teeth, the lower left central incisor, which came through at the age of six months, and the lower right lateral incisor, which was cut a week before I saw her. There had been no pain during dentition. The head movements came on at the age of seven months, the nystagmus two months later. The movements were not aggravated whilst the last tooth was being cut. There were slow lateral movements of the head, with a slight rolling tendency. The nystagmus, which was

horizontal, was present in both eyes, but much more marked in the left. The pupils were active to light and to accommodation. Ophthalmoscopically the media were found clear; there was a deficiency of retinal pigment; the optic discs were normal. This child had no attacks like *petit mal.*

Case 9.—Female, æt. 15 months, the sixth child; seen March 24th, 1892. No history of convulsions in family. The child was intelligent and well nourished. There were five teeth only, the upper and lower central incisors, and the upper left lateral incisor. There was some bossing of the head, but no other evidence of rickets. The first tooth appeared at the age of eleven months, and the head movements, which were from side to side, were noticed a month later. It was said that the movements were not aggravated when dentition was active. The head was usually held slightly inclined towards the right shoulder. There was no nystagmus. The mother had never noticed any seizures resembling *petit mal,* but the child had had several falls, different, the mother said, from ordinary tumbles. The child was said to go forward suddenly and fall, "as if the head overbalanced her."

The following deductions are based on an analysis of twenty-one cases.

The movements of the head.—Pure nodding (like the movements of a mandarin doll) is rare. I have only had one case of this kind, and even in this the mother said that there were occasional lateral movements. In all the others the movements were lateral, although very commonly there was combined or alternating nodding or rotation. The range from side to side was not always equal; in five the tendency was to go more to the right, in two to the left.

The character of the movement (broadly nodding and shaking) does not warrant, in my opinion, a division of these cases into distinct classes, seeing that one kind of movement may not be constant (shaking, for example, being occasionally replaced temporarily by nodding).[1]

The movements of the head are chiefly seen when the

[1] This has reference to a remark by Dr. Gee (see 'St. Bartholomew's Hospital Reports,' vol. xxii, p. 26).

child's attention is attracted to an object, and are increased each time it is induced to make a new effort at fixation. Rarely the movements of the head are chiefly marked when the head and eyes are turned in a special direction, as on looking upwards. They invariably cease during sleep and when the child is lying down. It is said, too, that they disappear when the eyes are covered.[1] I should think that this is very probably the case, but I have only made the experiment in one instance, and am not, therefore, in a position to give an opinion on the point.

Nystagmus.—This is very rapid, about four to six movements per second, and of very short range. One mother said it was "like Perry's pens at the Underground stations," and this homely description is not inapt. Nystagmus is not usually constantly present; not infrequently it has to be induced by making the child fix objects here and there, by forcibly restraining the movements of the head, or by placing the child on its back. On two occasions it was especially well marked when the child was put to the breast. I verified this by personal observation.

The movements of the eyeballs are usually either horizontal or horizontal combined with some rotation. As a rule the movements of the head and eyes are in the same direction, but this is by no means invariable. In my solitary case of head-nodding the nystagmus, it was true, was vertical, whereas in another patient there was vertical nystagmus limited to one eye, associated with side-to-side movements of the head.

There is occasionally a relation between the nystagmus and the position of the eyes or evident ocular state. In one case the nystagmus was exaggerated on extreme conjugate deviation to the left, and least marked on deviation to the right. In two instances the nystagmus was chiefly evident when the eyes were directed upwards, and in one of these the nystagmus, which was generally horizontal, tended to become vertical when the eyes were turned upwards.[2] The

[1] "Two Cases of Nystagmus associated with Choreic Movements of the Head in Rachitic Babes," by A. Caillé, 'Transactions of the American Pediatric Society,' 1889.

[2] Gordon Norrie, of Copenhagen, has also noticed this (see 'Centralbl. f. prakt. Augenheilk.,' August—September, 1888, p. 229; also 'Ophthalmic Review,' 1888, p. 355).

nystagmus may vary in direction apart from this; in two instances (combined lateral and nodding movements of the head) the nystagmus was sometimes vertical, sometimes horizontal, and sometimes rotatory (see Case 4).

The movements of the eyeballs in one case of lateral movements of the head were different in each eye, the nystagmus being vertical on one side and horizontal on the other.

The direction of the nystagmus was horizontal in nine, vertical in two, lateral and rotatory in two, lateral or sometimes rotatory or vertical in three, vertical in one eye and horizontal in the other in one; in one the mother gave a history of nystagmus, but none was seen by myself, and in two no movements of the eyeballs were detected.

I have seen mystagmus of the upper eyelids twice; in one it was associated with vertical nystagmus of the eyeballs (the case of nodding spasm), in the other (Case 4 before mentioned) the movements of the head were lateral and nodding, the nystagmus being sometimes horizontal, sometimes vertical, and sometimes rotatory.

In five cases the nystagmus was limited to one eye, and in five others it was much more marked in one eye.

Henoch mentions a case in which, instead of nystagmus, there was convergent strabismus of the right eye. Squint is said to have preceded the onset of the disorder in one of my cases, and the same is recorded of one of Dr. Gee's patients. In one instance only have I observed movements of the eyeballs which were evidently compensatory; in this patient there were lateral and rotatory movements of the head, with horizontal nystagmus limited to the right eye, together with slow movements of both eyeballs in a direction opposite to that in which the head was moved.

The pupils are almost always normal in every way; in one case there was a doubt if they acted with convergence, in another they appeared to act better consensually than with light, and in another they oscillated much, independently of retinal stimulation (hippus). This last condition was present also in Gordon Norrie's case.

No impairment of ocular movements was observed in any case. The media were normal in every instance, and the optic discs were healthy in eight out of ten specially

examined. Of the other two, the fundus was light coloured and there was a slight crescent of atrophy around the disc in one case; in the other there was deficiency of retinal pigment.

The position of the head.—In a certain number of patients (nearly half the total) I noticed that there was a peculiar way of holding the head when the child was looking at an object. Sometimes the head would be cocked on one side, less commonly thrown backwards, and least often thrown forwards. In some instances in which the nystagmus was uniocular I thought this was done in order to bring the unaffected eye to bear on objects; but this will not explain all my cases and other instances which I have seen recorded.

Attacks of unconsciousness.—In eight cases there was a history of occasional attacks in which consciousness was in abeyance. Two of these were verified by Mr. Gunn and myself. In one instance the seizure consisted in sudden deviation of the eyes to the left and downwards, the head also turning in the same direction, the pupils being (?) dilated. For the moment the child seemed to be quite unconscious. In the other, the eyes and head deviated strongly to the right, the face being directed downwards; at the same time the child looked vacant, and took no notice of what the eyes were fixed upon. There was no personal or family history of convulsions in these two patients.

According to the description of the mothers, the child as a rule looks vacant and stares in front of it, the head and eyes remaining still, and the face unchanged in colour. In one case the hands were said to have twitched occasionally, and the child was said to be convulsed in sleep at times; in another (Case 6) there was deviation of the head with loss of consciousness, and this sometimes would proceed to a general convulsion.

Convulsions.—Of the eight cases in which there was history of these attacks of unconsciousness there was a personal and family history of convulsions in one, a personal history of convulsions in one, and a family history only in one.

Out of the whole number of cases (twenty-one) there was a history of convulsions in other children of the family in six, and a personal history in three; in four of these

instances there was rickets in the family. In one child, the subject of rickets and convulsions, there were occasional outbursts of laughter, possibly allied to the convulsive state.[1]

Rickets.—In my first series of twelve cases there was rickets in two only; but my later observations give a much larger proportion. Out of the total number there was evident rickets in nine patients.

Dentition.—Henoch attaches considerable importance to this process as a causative agent. It is no doubt true that head-jerking occurs most commonly at a period of life when dentition is active; but in my view there is no essential relation between the two. The onset of the movements of the head or eyes may precede or coincide with the eruption of a tooth, and it is quite possible that dentition may be an immediate exciting agent. I have little doubt that it sometimes aggravates the disorder, but so may also other conditions, such as whooping-cough, measles, diarrhœa or general malaise. I have satisfied myself that in many instances the process of dentition has had nothing to do with the disease. I may in support of this just mention the fact that the movements of the head or the nystagmus may appear at a period when dentition is not active, *e. g.* at the age of six weeks in one of my patients, and at a still earlier period in a case reported by Dr. Gee.

In many patients the general health is very good. The children are almost invariably more than usually good-tempered and intelligent. This is a point which I have frequently remarked, and I am inclined to look upon it as a feature of importance as regards the explanation of this condition.

Falls.—In my former paper I called attention to the frequency of falls and head injury, and I pointed out that the latter appeared occasionally to be an antecedent or aggravating agent. In one case the injury to the head was severe, and resulted in the formation of a large hæmatoma. The nystagmus was first noticed two weeks later. I obtained a history of falls in nine cases, but I am quite sure that no causative influence could be ascribed to them in most of the patients. My impression is that falls occur more frequently

[1] See Henoch, op. cit., for reference to "convulsive laughter" in infants.

in these children than in others, and that they are due to visual impairment or to vertigo, or perhaps in some instances to the sudden fits of unconsciousness to which I have called attention.

Onset.—In most the head movements and the nystagmus occur simultaneously. In three cases the nystagmus preceded the head movements, the intervals being two weeks, four months, and one year. In five the nystagmus came after the head movements, the intervals being ten days, two weeks, three weeks, and two months (two cases).

The date of onset (either by nystagmus or by head movements) was given as follows :—At the age of six weeks, one; between three and four months, two; between four and six months, three; between seven and nine months, four; at ten months, two; at twelve months, two; at thirteen months, one; at fourteen months, three; at sixteen months, one; at nineteen months, one.

Course and duration.—Sometimes recovery takes place in a few weeks, but relapses are very apt to occur under the influence of various conditions of disordered health. As a rule, I think, the nystagmus persists longer than the head movements; I have seen it present seventeen months after the onset. I have had the opportunity of examining four cases after considerable intervals. One was quite well a year after the disappearance of the disorder, two after the lapse of two years. In a third I saw the child after the lapse of three to four years. There has been no return of the movements, but the child was said to still suffer from attacks of "vacancy."

Dr. Gee had the opportunity of examining one of his patients at the age of twelve years, and found the child quite healthy. In my first contribution I mentioned the occasional occurrence of some mental impairment in these cases after the subsidence of the active symptoms, but I have not had any subsequent facts confirming this.

Varieties of the disorder.—One case was observed by myself for two years and a half. For the first six months there was constant nodding or lateral movements of the head, but no nystagmus was seen all this time. Two years later I made a note to the effect that nystagmus had never been observed. In this patient the movements of the head were often pre-

ceded by lateral deviation of the eyes. This disorder may, I think, be represented by nystagmus only, just as there may be tabes dorsalis without ataxy, or paralysis agitans without shaking. In one instance I had a case under observation for a year, and during this time there was nystagmus only. At a later date there were occasional slight movements of the head. In another case there was a history of nystagmus for ten months, during six months of which I observed the child closely, and never detected any movements of the head. In my former paper I alluded to two children of the same family who were sent to me by Mr. Gunn. One child, aged two years, had a way of looking at objects sideways, usually keeping the eyes to the right; with the ophthalmoscope slight nystagmus was seen. The mother said there were occasional lateral head-jerkings, and that sometimes attacks of unconsciousness occurred. The elder sister, aged three and a half, had double horizontal nystagmus, which came on about two weeks before the onset in the other case. There were no movements of the head. Another child of the same family, whom I did not see, an infant a few months old, was said to have nystagmus. Dr. Booker alludes to two children affected much in the same way.[1] In one of my cases of head-jerking there was a very distinct history of nystagmus and head movements in another child of the family.

There are still some points which I may dismiss in a few words. Males and females seem to be equally affected. Congenital syphilis and conditions attending labour have nothing to do with causation. There is no special liability to head-jerking in either the earlier or later-born children of a family.

Treatment must be directed chiefly to the general condition. My impression is that bromide of potassium has a beneficial effect on the movements in some cases.

I have elsewhere discussed fully the nature of this affection. The explanation which I gave was the following:

The earliest acquired purposive movements are those of the head and eyeballs, a child often following an object with its eyes at the age of two months or even earlier. The movements of the head at this time are very imperfect, and it is

[1] 'Transactions of the American Pediatric Society,' 1889, p. 239.

not until the age of four months that the movements of the head and eyes become fairly associated, and for a considerable period later the movements of the head are often ataxic. Here, then, we have purposive movements, acquired at an early age, but not fixed. Probably in this affection there is a disarrangement of movements, which in the fully-developed condition are harmoniously associated.

I have alluded to the fact that these patients are intelligent, probably precocious, and if this be true there would seem to be an additional liability to partial dissolution of movement.

My colleague, Mr. Lawford, referred me to some interesting observations of Mr. Simeon Snell in his recently published work on 'Miners' Nystagmus.' "Trembling of the hands and quivering of the eyelids, tremors of the head and muscles of the neck, are often met with. If the quivering of the head is not very obvious, a little careful watching will demonstrate slight nodding-like movements, or the hand placed on the head will perceive the motions" (p. 71.)

So far as I know, the association of nystagmus with movements of the head, resembling what is seen in the cases I have described, has not been found, except perhaps in miners.

AN ABSTRACT OF AN ADDRESS

ON

SOME POINTS OF SCIENCE AND PRACTICE CONCERNING CANCER,

Delivered at the Annual Inaugural Meeting of the Midland Medical Society, at Birmingham, on November 9th, 1877, *by* Sir John Simon, K.C.B., D.C.L., F.R.S., *Consulting Surgeon to the Hospital.*

WITH A SHORT NOTE OF THE REASONS FOR CONSIDERING CANCER TO BE A MICRO-PARASITIC DISEASE,

By SAMUEL G. SHATTOCK and CHARLES A. BALLANCE.

The men who within our times have theorised on the Evolution of Cancer have equally had before them for explanation certain broad facts in the natural history of the disease. They have seen that the tendency of persons to suffer cancer runs with marked excess in particular families, or in other words is, in a great degree, hereditary. They have seen that the natural course of a cancer, left to itself, is to pass into indefinitely extending processes of local destruction, which involve such flux of organic material as must sooner or later exhaust the general strength, and end the life, of the patient. They have seen that often before this course, as regards one cancer, can complete itself, other cancers are making progress

in other parts of the patient's body, to the more rapid detriment of his life; or that, at any rate, after his death, other cancers, more or less advanced, will generally be found in his body. And, not least, they have seen that surgical removal of cancer, whether by knife or caustic, is in general of no effect to cure the patient; often because of the just mentioned presence of the disease in various other parts of the body; often, also, because the disease recurs in or near the place of removal.

The older cancer theory of our times—the theory which was in full bloom some twenty years ago, and is even now not quite extinct—interpreted those facts to about the following effect. It conceived the patient to be *ab initio* the subject of a form of general ill-health or cachexia which disposed his entire body to form cancer, just as the entire body of a person incubating smallpox is disposed to form variolous pustules. His state before the cancer showed itself was a state of general cancerous tension. When a solitary cancerous tumour (say a scirrhous breast) came under surgical notice it was regarded but as the partial effect of a diffused cause, the outward and visible sign of a tension to which it gave partial vent; and the many cancers, when they were seen, in lymph-glands and various other organs, were but the more perfect utterance of that original dyscrasy.

The amended theory of cancer recognises no cancerous cachexia except such general ill-health as gradually results from the progress of cancer. It appeals to the fact familiar to us all—familiar even in a degree which often in a particular point of view makes the experience painful to us, that the person who comes to consult us with a cancer, a person whom we may at once see to be doomed to death within a year or two, is often to all appearance in rude general health. The theory does not necessarily pretend to explain the origin of the local disease which in such a case is brought to our notice; but starting from that as fact, it argues what must result from it. Given (it says) one primary tumour, all other facts of the case follow from it by logic or humoral sympathy; just as, in the story of syphilis, secondary and tertiary consequences need only the one hard chancre to account for them. The cancerous cachexia, like the syphilitic cachexia, is but an affair of *progressive infection;* essentially by the juices of the body—

the lymph and blood, but sometimes also accidentally in other ways; an affair only of infection, of ever-widening infection from the one first established focus of disease. How that first focus came to be, and how it came to have its wonderful endowment of infectiveness, are questions which must be separately argued; but meanwhile (says the theory) let us frankly recognise that, where our cancer patients show certain general signs of disturbed health, presumably this "cachexia" is the effect, not the cause, of the cancer.

Of late years, too, there has been change in the point of view in which pathologists have regarded the Anatomy of Cancer. Thirty years ago cancer was supposed to be a specific new bodily texture, having (as cartilage or muscle has) an organisation proper to itself in contrast with other textures, and proper to it in all its forms.

In a certain sense, however, though a sense widely different from that of the doctrine of thirty years ago, we may still say that the various sorts of cancer have morphological characters in common; but the likenesses to which I here refer are likenesses rather of expression than of feature. Thus, for instance, it seems general to cancers that the overgrowing textural elements of which they primarily consist do not develop into ripe texture, but remain more or less immature; and that in some cases they exhibit a marked reversion to very early embryonic type. It seems also general to cancerous, as compared with non-cancerous tumours of respectively the same textural parentage, that, as they grow, their first textural type soon becomes obscured: on the one hand, by the crowding of forms which, in proportion as the process is vehement, will more and more be immature or embryonic; and on the other hand by evidences, which are sometimes extreme, of the tendency of the new growth to degeneration. On the whole, then, the knowledge which anatomy hitherto contributes to the explanation of cancer is but indirect, and rather negative than positive in its bearings. The anatomical forms explain nothing in regard of the property of infectiousness which is associated with them, and which, as I will hereafter show, constitutes the real puzzle of the disease. The anatomical forms are matters of mere local accident; but the infectiousness of the cancer represents its very cause.

As regards the extremely difficult subject of the Causes of Cancer, it may, I think, be said that of late years we have come to estimate more fitly the nature of some of the problems which have to be solved; and that, in consequence, some definite lines of study have begun to suggest themselves as tending, directly or indirectly, to throw light on the origin of the disease. Little as this progress may seem, it is, I think, not to be despised; and those who are studying the ætiology of cancer may derive the greatest encouragement, as also, I think, some most instructive suggestions, from a consideration of the wonderful advances which during the last dozen years have been made in the ætiology of tubercle.

A first and very strongly marked ætiological character of cancer is its preference for particular lines of hereditary succession. Superficially it may appear that cancer in this respect only follows the lead of the non-cancerous tumours, for they also tend to run in family lines; but on fuller inquiry it seems little less than certain (at least so far as some of the best known forms of cancer are concerned) that cancer and the non-cancerous tumours are hereditary in two different senses. In the non-cancerous tumours the hereditary influence seems to be the true and entire cause of the phenomenon; whereas in some of our best known types of cancer it seems only or chiefly to supply that part of the causation compound which we familiarly call by the name of predisposing conditions—a distinction which our studies of tubercle tend to show may be one of most critical importance.

I have said that the hereditariness of the non-cancerous tumours, as compared with that of cancer, seems to be a simple matter. The non-cancerous tumours, in their most characteristic forms, belong, I believe, to the same pathological category as supernumerary toes and fingers; that is to say, they represent the same sort of idiopathic fault in the embryonic antecedents of the animal. They are local quantitative "monstrosities." True, they may not be ostensibly congenital, as the toe or finger is; but though a part have not at birth any ostensible pleonasm of texture, not the less it may have in reserve the endowment which will afterwards evolve such pleonasm, a waiting power like that with which the sexual organs remain undeveloped for the first sixth or

seventh part of life; and the growth of the tumour, perhaps not becoming manifest till years after birth, illustrates, I believe, when at last it comes, the deferred exercise of a congenital endowment.

A second ætiological character of cancer is the tendency which it apparently has, in some of its forms, to found itself (so to speak) on certain already existing local disorders. See, for instance, as regards epithelioma of the skin, the very numerous cases in which the chronic raw of a common mechanical irritation, having existed perhaps on and off for years as a mere inflammatory phenomenon, has at last (as the phrase is) "taken on malignant action." And, in the same point of view, as regards the terrible liability of the female sexual system to cancer, and the conditions which make womb and breast such apt soils for the cancer-eventuality, see, and especially at the one critical period of life, how vast a quantity of common irritative unhealthiness is suffered by the two organs as incidental to their decline of function.

It is worth notice that, in this ætiological direction, cancer seems to diverge considerably from the non-cancerous (hypertrophic) tumours; for, in the pathology of the latter, it can hardly be said that any important part is played by circumstances of local irritation. It may, no doubt, be said that, in the vegetable kingdom, tumours on various parts of plants are found, in a very extensive range of cases, to arise where there is such irritant action as would in animals produce inflammation. There are the well-known and very numerous cases in which insects or acari give occasion to the tumours, on leaves and elsewhere, which are known by the name of "galls:" cases, indeed, in which the animal avails itself of the plant's vital irritability to get housing of suitable pattern built for its young by the resentful efforts of the texture which it invades; and more recently it has been learnt that organic forms far below the status of insects and acari, and so minute as to be out of reach of any but skilled observation, may cause tumours of the same sort. Thus M. Davaine, investigating the gall of the Alpine rhododendron, in which a parasitic animal had in vain been looked for, finds, as the apparent cause of the tumour, a very minute fungus, with mycelium, pervading it; and a Russian botanist, M. Woronine,

finds that forms of the lowest (vibrionic) micro-fungi stand in apparently a like causative relation to tumours of the roots of certain plants—viz. of the alder and the garden lupine. Cases like these are evidently frequent in the vegetable kingdom, and are perhaps to some extent represented among animals by those thickenings of texture which serve to encapsulate in the body for an indefinite time the cystic entozoa or the trichina; and also among animals a certain quantity of papillary or polypous outgrowth will sometimes be found associated with chronic inflammations of skin or mucous membrane: but, barring such doubtful exceptions, it would seem that tumour-formation of the merely hypertrophic kind is not apt to arise in the textures of the animal body in consequence of common irritation; and the relation of cancer to irritated parts would thus far appear to be *sui generis*.

Of all the ætiological characters of cancer, that which I think incomparably the most important is the property of infectiousness which its cause imparts to it, and which in fact makes the identity of the disease.

I need not say that in a great variety of diseases which are primarily local (including many which we can ourselves start by inoculation for purposes of study) the primarily diseased part is able to infect other parts by means of the lymph and blood which it directly or indirectly transmits to them, and into which it has shed its contagium; and, in the case of cancer, evidence has long existed that those are the essential means by which the disease, when once started at any spot, tends to produce secondary and tertiary cancers in other parts of the body. Molecules, larger or smaller, of the primary cancer are always apt to be contained in the outflowing lymph and blood; and, in particular cases, the growth intrudes into veins with masses which are visible to the naked eye, and bits which detach themselves pass on with the blood till they become fixed as embola in smaller vessels.

Our present ætiological position seems, in short, to be this. In the genesis of the primary cancer we have evidence of two forces: one, the natural growth-power of the texture, the other a power which is at least relatively foreign; and the cancer, which will act zymotically on other organs, expresses the co-operation of those two powers. Whether the process, as

regards its unknown factor, depends, directly or indirectly, on some contagium from the outer world, or is from first to last merely the abnormal play of forces native to the body, is the question which waits to be solved. In our present imperfect state of knowledge with regard to many of the requisite elements for judgment, it would, I think, be unwise to attribute impossibility to either of the alternatives. In relation to them both, as well as to other conceivable hypotheses of cancer, our scientific need and duty is to continue observing, as accurately as we can, every local and personal and hereditary condition which may seem to act, either attractively or repellingly, on the factor which it is our aim to understand; and of such indications there are already some which I think valuable. Thus, for instance, the fact (above noted) that cancer has marked affinity for organs which are already in certain accidental ways disordered, seems to show that the unknown exciting cause either is not native to the body, or at least is not specially an attribute of the texture in which the disease breaks out. And the fact (as it appears to be) that cancer, though eminently contagious from part to part in the affected body, can hardly, if at all, be communicated to any other body, even among animals of the same sort, by artificial inoculations, injections, and transplantations, seems to say—first, that the unknown factor in cancer can only operate where certain general predisposing conditions exist; and secondly, that cancer is perhaps not an hereditary disease, except as regards those predisposing conditions.

From the preceding extracts of Sir John Simon's address it will be evident that the view of cancer which recommends itself to him is that otherwise spoken of as the microparasitic. Parasitic is, perhaps, a less apt expression inasmuch as one of the older views on the ætiology of carcinoma was that which regarded the tumour itself as being parasitic, with the same meaning in which one plant is parasitic on another. The modern doctrine, however, and that which we have always advocated, regards the tumour not as itself parasitic, but as being a growth either of epithelial or connective-tissue cells, incited by the presence of a micro-parasite belonging either to the vegetable or animal series. When

the reasons for this view are duly set forth, as we endeavoured to do in the 'Path. Soc. Trans.,' 1887, its probability is made so great that with many persons the actual proof has come to be regarded as a matter only of time. With Sir John Simon we think that the best general parallel adducible is that afforded by tuberculosis; indeed, we venture to assert that there is no fact in the ætiology and life history of carcinoma or sarcoma which has not its counterpart in that of tuberculosis.

Sir James Paget, in his lectures on Surgical Pathology, as these were first delivered at the Royal College of Surgeons, has insisted as fully as the subject then allowed upon the likeness in pathology there is between cancer and other specific constitutional diseases.

One of the most vexed questions in regard to the ætiology of cancer has been whether the disease is constitutional or local. It is a curious fact that it seems not to have occurred to anyone as possible that it may be either. This we believe to be the true case; although in the greater number of instances the local disease is correlated to some general condition (*i. e.* is constitutional), nevertheless in certain other instances the local disease would appear to be a phenomenon as local as is any conceivable under the term.

In the same way that the tubercular process may arise by direct inoculation, and remain a local though a spreading disease, so we should look upon some examples of squamous-celled carcinoma of the lip in smokers, the early and free removal of which may be followed by complete cure of the disease. In other words, a patient suffering from a carcinoma which has arisen as a local lesion, and has not passed beyond the stage of local infection, may not only be relieved by the knife from the actual disease, but freed from an almost certain secondary infection. The case, in fact, is exactly comparable to that of local tuberculosis arising from direct inoculation, or to external anthrax whilst yet a local process, and it might be termed one of local carcinomatosis. Against this view, thus typically illustrated, the main argument adduced is that all those exposed to the local irritation arising from smoking should become therefore the subjects of

carcinoma. But the mechanical irritation is only the partial cause of the disease; the efficient cause lies beyond, and the question resolves itself into this: why are some persons infected under such circumstances whilst others escape?

Reflection will suggest possible answers,—the irregular distribution of the virus, the dependence of its efficacy upon the various elements of environment, personal predisposition, &c.

There is a fair proof of the local inoculability of squamous-celled carcinoma in the well-known cases of infection of one labium arising from contact with a carcinomatous ulcer on the other. An excellent example of the same class is given by Mr. Harrison Cripps in his paper on carcinoma of the rectum,[1] in which he mentions a case of carcinomatous infection of the skin of the arm from contact with an ulcerating scirrhus of the mamma.

We have quite recently seen a most suggestive specimen in this regard. It was exhibited by us at the International Congress of Hygiene, 1891, and has since been again shown by Dr. Hadden at the Pathological Society. The specimen exhibits a carcinomatous stricture towards the upper part of the œsophagus. From the main growth there are traceable downwards long extensions of the disease in the mucous membrane; these growths are limited to the summits of the rugæ, and in the lowest portion of the œsophagus, which is otherwise unaffected, there occurs a small isolated nodule in the most superficial part of the mucous membrane of similar new growth, and there is a still larger focus in the mucous membrane of the stomach, close by the cardiac orifice.

Here the most reasonable view of this dissemination is that the infecting material in its transport along the œsophagus from the ulcerating tumour had directly inoculated the most prominent portions of the rugæ. This patient had been for several weeks treated by catheterisation, and was for some time fed by this means; gastrostomy was subsequently performed. In this case it is difficult not to believe that the course of events has been the same in kind as that which leads to the secondary infection of the intestine in pulmonary

[1] 'Path. Soc. Trans.,' vol. xxxii.

or laryngeal tuberculosis, or of the lower part of the urinary tract in tuberculosis of the kidney.[1]

In all these cases the secondary infection appears to result from the direct inoculation of the virus conveyed from the primary source of disease; and in the instance first noticed, the treatment so long adopted of catheterisation seems to us to aid in explaining the remarkable distribution of the secondary infection.

As supporting the view that many cases of carcinoma arise by direct infection from without, may be quoted the statistics drawn up by Edmund Andrews, of Chicago ('Journal of American Medical Association,' November 23rd, 1889). The author collected 7881 cases of primary carcinoma of different parts; these showed that the parts most exposed are those most prone to disease.

The disease of the lymphatic glands in anatomical relation with a carcinoma admits of no other explanation than that it results secondarily from infection conveyed from the primary focus. There is no conceivable alternative.

In this respect, again, tubercle has a parallel history in the secondary gland disease that sometimes arises from a local tubercular lesion, and which invariably follows the experimental production of tuberculosis by subcutaneous inoculation of tubercle bacilli in healthy animals.

The parallel extends even further. It is well known to clinical observers that after the first appearance of tuberculosis in the lymphatic glands, *e. g.* in the neck of children, the disease may remain quiescent for many years, and on the patients reaching adult age again exhibit all its former activity. In precisely the same way we know of cases in which, after the removal of a mammary carcinoma, disease has appeared in the lymphatic glands of the axilla as long as four years after the operation. Still more markedly, in a case of excision of the tongue for squamous-celled carcinoma, we have known the glandular disease appear at an interval of as much as seven years after the operation. In all such cases it must be held that the glandular infection arose during the

[1] A very similar case, but one in which no catheterisation had been adopted, has been published in the 'Medical Press' by Mr. Herbert W. Page, April 27th, 1892.

growth of the primary tumour, for this is the only means of accounting for the growth of epithelial tumours of such kinds in the tissue of lymphatic glands ; and this being so, the conclusion is inevitable that the infective material conveyed to the glands has remained latent or quiescent during the periods mentioned.

The instances of general infection occurring through the lymph or blood-stream from a local carcinomatous or sarcomatous lesion have so many parallels in the history of other specific diseases that the analogies need not be further referred to. The succession of general tubercular infection as witnessed in animals after primary inoculation is strictly like the general dissemination of sarcoma that not rarely occurs. The special anatomical characters of the secondary growths in carcinoma are ample proofs of their source from the primary tumour. In the case of sarcoma, perhaps, the best proof of the same fact is furnished by the melanotic variety, where the pigmentation of the secondary tumours is sufficient evidence of their origin from the primary growth.

The foregoing, doubtless, include only the simpler of the pathological processes involved in the history of malignant new growths; and far more abstruse problems arise in connection with the more numerous cases in which the disease, though first manifested locally, has a "constitutional origin." Amongst parallel diseases tubercle again offers itselff or consideration.

Clinical observers are agreed that tubercular disease is predisposed to in certain persons; that the predisposition is hereditary ; that the scrofulous diathesis, although it may not always be recognisable by the ordinary gross tests, is nevertheless a fact. What this diathesis really is cannot as yet be stated. It may, however, be provisionally thought of either as tuberculosis without a local lesion, or as a soil eminently favorable for the growth and development of the virus of tubercle.

Perhaps the tubercular diathesis bears a just comparison with hereditary syphilis. In hereditary syphilis the disease will remain latent after its earliest manifestations until puberty, when it will again disclose itself. In this long period of latency it surely must be held that the virus, or, to speak

more definitely, the bacillus, remains potent for evil, though it does not make its presence shown.[1] In acquired syphilis in the adult the same is true, as seen in the outbreaks which are liable to occur for years after the date of the primary disease,—the gumma is not less characteristic of syphilis than is caseous tubercle of tuberculosis.

Is it, therefore, that the tubercle bacillus is dormant in the scrofulous diathesis, and that its presence is shown only when a local injury lowers the vitality of the part, and furnishes a medium in which it will grow? On this supposition the scrofulous diathesis is derived through a parentage of tubercular disease.[2]

The other view that may be held concerning a localised manifestation of tubercular disease, arising from some slight injury, and independently of direct inoculation, is that the tissues of the patient, though not harbouring the seeds of disease, are below the proper "standard vitality;" and that whilst organisms gaining entrance through the internal or external surfaces of a healthy person fail to grow, in the other case they find a suitable soil for growth in the injured part.

In one or other of these ways we should support the view which makes certain forms of cancer, whether shown first by a primary tumour or by an apparently simultaneous outbreak of new growths, depend upon a specific diathesis comparable to that of tuberculosis.

And the many recorded cases in which cancerous tumours have rapidly grown after injury bear comparison with the specific local tubercular lesions arising under similar circumstances in "scrofulous subjects."

That the transport of a normal cell is not sufficient to account for the indefinitely growing secondary tumours is proved by Leopold's experiments, which show that portions of growing tissue, if transplanted, though they grow for a while, subsequently undergo atrophy, they do not grow into tumours; and

[1] Compare the cases of long-delayed formation in the history of certain galls referred to by Sir James Paget as illustrating the phenomenon named by German writers "Eiruhe" (address on "Elemental Pathology," 'Brit. Med. Journal,' 1880).

[2] Malaria and relapsing fever well illustrate the possibility of certain pathogenic organisms remaining for a period dormant without producing results by which their presence may be shown.

a similar result has been obtained by Cohnheim and Maas ("Virchow's Archiv," vol. lxx) in the case of periosteum, &c., made to lodge in the lung.

Tetanus is more common in certain parts of the globe than others. The same is true of tubercle,[1] to say nothing of those specific diseases which, like malaria or cholera, are endemic. And cancer has, in the same sense, a geographical distribution.

The most complete investigation into the distribution of cancer, as it affects England and Wales, is that of Haviland ('Geography of Heart Disease, Cancer, and Phthisis,' 1875). His conclusions are that geologically the hardest and most elevated rocks, or the most absorbent like the oolite and chalk, are the sites where the least mortality from cancer is found. Secondly, that along the river courses which flood their banks seasonally, such as the Thames, the Severn, the Mid Devon and Yorkshire rivers, are to be found the districts in which the highest mortality takes place. Thirdly, that wherever, from the nature of the rocks forming the watershed, the floods are much discoloured by alluvium, and where, from the flatness of the country, the floods are retained and not easily drained off, there we find the greatest mortality from cancer among females. The mortality from cancer is most high in Devon; its river system carries abundant alluvium when it swells, and the adjacent districts are often covered with water for a considerable time during the rainy season. The Thames counties, characterised by their Tertiary soil and frequently flooded river, form, as it were, a typical cancer field.

In connection with the high mortality of Devonshire we may cite a remarkable instance, the details of which were communicated to us by Dr. R. Ackerley, of Ashburton. In a large house in that town, situated in low ground, the cellars of which must be below the level of a small stream which runs through the town about twenty yards from the house, four cases of cancer have occurred in the last thirteen years. 1. A lady who had occupied the house for many years died from cancer of the breast, and it was said also of the womb. 2. The next occupant, after residing at least seven years in the house, died

[1] Buchanan, quoted by C. Theodore Williams in Quain's 'Dictionary of Medicine,' p. 1167, "Damp Districts, Clay Soil, Moist Atmosphere."

of cancer of the breast; the husband of the latter died two years ago of carcinoma of the larynx. 3. The second wife of the last mentioned, whom he married five years ago, has lately had her breast removed for scirrhous carcinoma.

Four other deaths from cancer have been certified in the last four years in persons who had resided for many years within 100 yards of the same house. In the Newton Abbot district of Devonshire, in which Ashburton lies, the proportion of deaths from cancer to deaths from all causes is as 1 to 17; it is 1 to 21 for the county of Devonshire, 1 to 27 for the whole of England (Registrar-General's Return, 1889).

There seems to be some reason for believing that miners (at least from information given to us from the Cannock Chase district, Staffordshire) are markedly exempt from cancerous disease. The immunity is limited to those working *in* the mines. Possibly, the coal-dust possesses antiseptic or physical properties inimical to the growth of the hypothetical contagium.

Do malignant growths ever undergo spontaneous cure? By the side of certain methods which profess to cure cancer without operation this question has some interest. Of the few cases that might be cited as giving an affirmative answer to this question, the best of which we know is one recorded in the 'Pathological Catalogue of St. Bartholomew's Hospital Museum' under the title "Withering Sarcoma," (3302A). "One half of a tumour removed from the scalp of a young man. Similar tumours had appeared and subsequently disappeared without operation; its structure is that of a fibro-sarcoma.

"The patient was a man, æt. 24, who, six years previously, was struck on the top of the head; the first of the tumours appeared six months later."

Although from the preceding considerations the theory advanced appears to us as almost certainly the correct one, it must nevertheless be admitted that up to the present time no demonstrative evidence in its favour can be adduced. Not only has no microparasite been indisputably demonstrated in the tissues of malignant growths, but all cultivation experiments from such growths conducted on artificial media have hitherto been negative in result.

In the 'Path. Soc. Trans.,' 1888, we described certain appearances in sections of carcinoma which have since been more especially and fully drawn attention to by Russell, Klebs, Noeggerath, and others. Briefly, the appearances consist in the presence, either in the cells of the growth or in the alveoli or their walls, of spheroids of homogeneous substance which is stained intensely by fuchsine and other nuclear dyes. Russell considers these bodies to be vegetable micro-organisms characteristic of the disease; others hold them to be protozoa.

In the 'Path. Soc. Trans.,' 1887, and in the 'Proceedings of the Royal Society,' vol. lviii, 1890, we have recounted a series of experiments made with the object of cultivating a micro-organism from malignant tumours. All the ordinary media were used, including human blood-serum, but with negative results.

We afterwards carried out a number of experiments with the view of seeing whether the disease in man could be transmitted to the lower animals. The result was in all cases negative, and in this it corresponds with the experience of all modern observers in this regard. In the case of the lower animals, however, positive results have been obtained by transplanting portions of tumours from one to another, but the results were successful only between animals of the same species.

It has been alleged especially by certain French observers that the appearances described above as met with in microscopical sections of carcinomata indicate the infection of the cells with protozoa. At present the evidence of this is inconclusive.

In this, as in other cases, the four requirements laid down by Koch must be fulfilled; if the microzoon in question cannot be cultivated outside the body, the infection at least of one of the lower animals or of the human subject must be accomplished.

We have in various animals endeavoured to induce disease by the subcutaneous and intra-venous injection, and by the vaccination of psorospermial material from the livers of recently killed rabbits. Although we have allowed such animals to live for many months after these experiments, we have not succeeded in producing any cancerous formation.

There is no need for assuming, however, that the microzoon of carcinoma is identical with that which so commonly infests the intestine and liver of the rabbit, for amongst protozoa there are many kinds and these have further special habitats.

But to conclude, the great merit of the micro-parasitic theory has lain and lies in this, that it not only offers a working hypothesis for further investigation with which none other can compare, but it holds out the hope that cancer may one day admit of a scientific treatment based on the same lines as that of the micro-parasitic diseases.

SOME CASES

OF

REMOVAL OF THE KIDNEY FOR CHRONIC DISEASE.

By BERNARD PITTS.

Extirpation of so important an organ as the kidney is such a serious matter that it can rarely be advisable to submit a patient to it, so long as there is hope that the diseased organ is doing any appreciable work.

A patient who has the discomfort of a discharging sinus in the loin after exploration for suppuration or other trouble, is usually willing to run any risk to get rid of the annoyance. The immediate risk is often not great, and it is the uncertainty with respect to the state of the other kidney which generally prevents the surgeon from advising such removal.

Some additional information may be gained by abdominal exploration, but manual examination of the kidney *in situ* is often misleading, and too much reliance must not be placed on it.

The following cases are instructive, both in respect to the history of the symptoms and the conditions which necessitated extirpation.

Case 1.—W. I—, a man æt. 49, was quite well up to the age of seventeen, when after a week of considerable pain he

passed a small stone. He remained well until he was thirty-nine, when he began to be troubled with increased frequency of micturition, and first noticed a deposit of pus and mucus in his urine; he never had any pain in the back, but suffered a good deal at the root of the penis and in the perinæum. In 1884, at the age of forty-one, the urine first became offensive, and the following year he paid a visit to Contrexville, but without obtaining any definite relief. In December of 1886 I was first asked to see him by Dr. Jack, of Kensington; he was in a very exhausted and miserable condition, having lost more than three stone in weight; he was passing water every hour night and day, and the pain was only relieved by very large doses of morphia, which he was in the habit of administering to himself subcutaneously, to the amount of 5 grs. in the twenty-four hours. The urine varied greatly in character, being acid and almost free from pus in the morning, but most horribly offensive and full of pus soon after getting up and walking about. On examination by sound the bladder was found to be smooth, and free from calculus or phosphatic concretion. In the left loin a swelling could be felt in the situation of the kidney, and an indistinct sense of fluctuation obtained.

On December 14th, 1886, an incision was made, and a large quantity of offensive pus was evacuated from the dilated pelvis of the kidney, and a phosphatic stone of irregular shape, and the size of a chestnut was removed. The various dilated chambers leading from the pelvis could be easily examined with the finger, but no sign of further calculus was obtained. The result of this free drainage was a considerable improvement in the general health of the patient, and also in the character of the urine, but it was quite clear that the left kidney was completely disorganised, and as a sinus resulted which continued to discharge pus freely, but no trace of urine, it was determined to proceed to extirpation.

The operation was on March 16th, 1886, by transverse lumbar incision, with upward extension to the last rib. The capsule was very adherent, and difficult to separate from the kidney, and the operation was long and tedious; a very large sacculated kidney was removed, and on section this was found to contain three large branched calculi, all as large or larger

than the one removed at the first exploration. They were so surrounded by dense fibrous tissue, and so far removed from the pelvis, that they had escaped careful search on that occasion.

The vessels were ligatured within the capsule with thick silk, and the ureter also ligatured and secured to the edge of the wound. The patient rallied well from the operation, but for several days was troubled with distressing attacks of hiccough, and a good deal of pain about the diaphragm. A few days later he had signs of tenderness along the sigmoid flexure and ascending colon, with frequent loose motions containing blood and mucus.

The urine now for the first time entirely lost all offensive odour, and became quite clear; a large amount of albumen, however, continued, but the pain and frequency of micturition quickly diminished, and by the end of April he was able to hold his water for five or six hours at a time with comfort.

During the next five years he remained in good health and regained his proper weight, and was able to follow his occupation as a chemist. Examination of the urine always, however, showed that it contained nearly one half albumen, so that the probability of calculus in the remaining kidney was very great. In the early part of 1892 some of the old symptoms returned, viz. frequency of micturition, pain in perinæum, with occasional deposit in the urine of pus and mucus.

It is interesting to note in this patient's history the entire absence of hæmorrhage at any time, and also of lumbar pain, and the diagnosis was in consequence very difficult to arrive at during the earlier history of the case. Before the swelling appeared in the loin, and so long as a small quantity of pus only was continuously present in the urine, the symptoms pointed rather to calculus, encysted either in the bladder or prostate.

The kidney was only removed when it was quite evident that its structure was completely spoilt. The persistence after its removal of so large a quantity of albumen in the urine suggested the probability of calculus trouble in the right kidney, but in the absence of all active symptoms it was not thought wise to interfere further. Now that signs of dis-

comfort are again rising, the propriety of exploration of the right kidney may have again to be considered.

Additional note.—On the 14th May, 1892, I was again asked to see the patient by Mr. Tyrrell. He was rapidly emaciating, suffering from great frequency of micturition and perinæal pain. The urine was alkaline, and almost constantly mixed with clots of blood. A small fluctuating swelling could be felt just below the central point of the perinæum. Guided chiefly by this swelling, we determined to incise it, and explore the bladder digitally.

A very extensive malignant ulcer was thus discovered, involving the prostatic region and a considerable portion of the base and sides of the bladder.

The relief afforded by the drainage was considerable, and at the end of a fortnight the patient seemed stronger, and altogether much more comfortable.

May 27th.—The nurse noticed a diminution in the amount of water passed, and he died quite suddenly on the following day.

The development of malignant disease in this case is very remarkable, but it is impossible to say whether any relation existed between the disease and his former urinary trouble.

The bladder at the time of exploration was free from stone, and apparently healthy, except when involved by the growth. For a long time previous to the excision of kidney the bladder had been a reservoir for very offensive urine, but it seemed to recover its normal condition directly the source of irritation was removed.

Case 2.—Robert H—, æt. 40, resident in Canada. Ten years ago had hæmaturia lasting one week, but unaccompanied with pain. His general health remained good till May, 1888, when he had an attack of renal colic lasting fourteen days, but without any hæmaturia. There was no history of phthisis in the family, and as he commenced to lose flesh, and was unable to resume his occupation, he determined to come to London for the consideration of operative interference. On the night before leaving Canada (after a long railway journey) he suddenly lost all pain in his right loin, and a large quantity of greenish pus appeared in the urine.

On admission under my care in St. Thomas's Hospital a rounded swelling was manifest in the right lumbar region, with tenderness on pressure, and indistinct sense of fluctuation; the swelling could be moved slightly from side to side. Examination of the urine passed in the morning showed that it was usually quite clear and free from pus or albumen, but the urine passed later in the day, after moving about, contained a considerable quantity of both pus and albumen.

On September 21st, 1888, a free incision was made in the loin, and some fifteen ounces of pus evacuated; the whole kidney was found sacculated, but no stone could be detected. The wound was drained, and for some days a free discharge of pus took place, but without any admixture of urine. The patient's condition rapidly improved, and all his symptoms disappeared, and he was able to leave for Canada in December with his wound quite healed. He remained perfectly well until May, 1890, when he was again seized with pain in his right side, and a few days later, after six hours of very great suffering, he suddenly passed a large quantity of pus with his water, and two small calcareous masses of about the size of a split pea.

In June his medical man again found a swelling in the loin, and, as he was steadily going downhill, he was again advised to come to London.

He was admitted to the hospital on June 28th, 1890. He presented the same emaciated appearance as on his previous admission. The urine was acid, 1024, one twelfth albumen; some pus; no blood. A swelling could be easily felt in the right loin. On July 4th I removed the kidney by lumbar operation; the old cicatrix was dissected out, and the vessels tied within the capsule. Some portion of the dilated pelvis was so adherent that it could not be removed, and was left after a thorough wash with chloride of zinc solution.

July 5th.—Patient doing well; has passed 28 oz. of urine, albumen one eighth.

6th.—Passed 25 oz.; no pus or albumen.

7th.—Passed 31 oz.

The amount of urine daily increased until July 13th, when it reached 67 oz. His recovery was rapid, and he was able

to leave on August 12th for Canada, having gained flesh considerably and lost all pain. In a letter dated December 14th, 1891, he writes, "My general health continues good, and my weight is the same as before my illness. A small sinus continues to discharge a few drops of pus, and a silk ligature two days ago made its escape by the sinus."

In this case, from the definite history of renal colic, and hæmorrhage as early symptoms, a calculus was suspected as the cause of trouble, and it was a disappointment not to find one on the first exploration. Although the kidney was evidently spoilt, yet the wound healed so well after the incision and drainage, and the symptoms were so completely relieved, that it was thought advisable to wait the course of events. On the recurrence of trouble a year later, removal of the kidney was clearly indicated; and considering how fallacious any exploration for suspected stone may be, it was not until after the removal of the organ, and a section through it had been made that it could be certainly ascertained that no stone existed in its upper part.

In the first case narrated three stones were found on section of the kidney, all larger than the one removed at the exploration, yet these had escaped very careful search by finger and probe.

The appearance of the kidney in Case 2 was that of a typical tubercular one, but there is every reason to hope that the disease was local, and may not appear in the bladder or other organs.

In both cases, the knowledge that the diseased kidney was doing no useful work rendered the decision as to the propriety of removing the organ an easy one to arrive at. Whenever it is found, on examination of the discharges from a kidney sinus, an appreciable amount of urea is being excreted, then the organ should generally be left, and certainly before the partially active though suppurating organ is removed an examination of the opposite kidney should be made by abdominal exploration, to try and gain further evidence as to its condition.

Case 3.—Ellen M—, æt. 40, married, was admitted to St. Thomas's Hospital under my care in August, 1891, with a large

cystic swelling in the abdomen. Her family history was good, and she had three children alive and well.

For twenty years she had been subject to paroxysmal attacks of pain in the right renal region, and about eight years back first noticed a small swelling on the right side, which did not seem to increase until her last confinement one year ago. For several years before the appearance of the swelling she had frequently passed blood and gravel with her urine, but this ceased on the appearance of the lump.

State on admission.—A thin but fairly healthy-looking woman, with a very moveable cystic tumour of the size of a child's head, situate in the right loin, and extending about one inch to the left of mid-line.

The tumour of very irregular outline, and apparently not connected with either the lower or pelvic organs. Urine acid, containing mucus, one twentieth albumen, and some pus-cells. Patient complaining of very frequent micturition, and a good deal of pain in the right side.

Operation was on August 31st. An incision was made in the right semilunar line; and in consequence of the size and relations of the tumour, it was found necessary to gain additional room by a transverse incision nearly across the right rectus. An incision was then made through the mesocolon, and the bowel separated inwards; the ureter and vessels were secured and the tumour enucleated without any great difficulty. The incision in the mesocolon was brought together by a continuous silk suture, and the ureter brought to the surface through a small separate incision in the loin. A glass drainage-tube was retained for thirty-six hours, and a quantity of bloody serum escaped by it. Very little shock followed the operation, and during the first week convalescence was normal; there was then for a few days some rise of temperature, and an incision had to be made near the position of the exit opening for the ureter.

On October 7th she left the hospital well; scar firm, no induration or any sign of hernia. She reported herself some four months later as free from any discomfort, but continuing to wear her abdominal support.

The tumour proved to be a hydronephrosis of kidney; one large branched calculus was occupying the pelvis and extend-

ing into the entrance of the ureter, and several other calculi were found in different compartments of the expanded kidney.

The operation by abdominal section was clearly indicated in this case, both by the size and the mobility of the tumour. Even with a long incision in the semilunar line it was necessary to gain additional room, and the connections of the colon made it advisable to make the transverse incision inwards; but by not completely dividing the rectus, and by very careful after-suturing of the muscle and its sheath, no weakness of the abdominal wall seems to have resulted. The colon dipped in between the various lobulations of the tumour to such an extent that it would have been impossible to avoid injury to it without plenty of room for manipulation. Before proceeding with the removal it was easy to examine the opposite kidney, and to make sure at any rate of its presence and apparently normal condition.

In this particular case there was every probability of the simple nature of the swelling, and there was no reason for suspicion that any malignant condition was present. Even when the history of renal trouble and swelling is of long existence it is not always possible to take this favorable view.

The following case is of considerable interest in illustration of the difficulty in diagnosis thus possible. I am indebted for the notes to Dr. Cooper, of Valparaiso.

Miss L—, æt. 52. Mother and father died at advanced ages from natural causes; one sister died from secondary cancer of the liver following upon a carcinoma of breast.

Miss L— first sought advice four years ago for hæmaturia, which lasted about four months. Previous to this her health had been good; the catamenia had ceased for two years. About six months after the cessation of the hæmaturia pus was found in the urine, and a small round swelling was detected in the right lumbar region. She had little or no pain, but was troubled with greatly increased frequency of micturition. The loss of flesh and anæmia were, however, so marked that Dr. Cooper was led to suspect malignant tumour of the kidney. During the next three years the swelling gradually increased in size, and the frequency of micturition at last

became so troublesome that she determined to submit to operation as the only chance of relief, and she came to London for this purpose.

The tumour was then of large size, very irregular in outline; though fluctuation could be made out in places, yet the general feel of the tumour gave the impression of solid growth. I was present at the operation, which was carried out much after the plan adopted in the last case narrated. Although she lost of necessity a large quantity of blood, and suffered at the time greatly from shock, yet she rallied so well that it was quite hoped she might pull through.

Unfortunately suppression of urine supervened, and the patient died about twenty-four hours after operation.

Examination of the tumour removed showed a primary calculus, hydronephrosis, and a considerable quantity of new growth which the microscope showed to be carcinoma, this malignant growth having evidently developed secondarily to the chronic calculus change.

ACUTE, PRIMARY, SUPPURATIVE CELLULITIS OF THE NECK.

(LUDWIG'S ANGINA.)

By SEYMOUR J. SHARKEY, M.D., F.R.C.P.

Case 1.—W. C—, æt. 34, barman, was admitted into St. Thomas's Hospital under my care on August 21st, 1890, and died on August 28th. His family and personal history were unimportant.

On August 17th, four days before admission, his illness began with pains in the abdomen, diarrhœa, and vomiting. The only cause which he could suggest was that during the week previous to August 17th he had changed a flannel for a cotton shirt, and had got wet through. On the 20th, when he awoke, he found that his left eye was sore, the conjunctiva red, and that the lashes stuck together, owing to dried discharge. He also had a sore and swollen throat, and was unable to swallow except with very great pain, and this trouble had gone on steadily increasing.

On admission he was found to be a well-nourished man, with anxious expression, short of breath, and sitting upright in bed. He complained much of soreness of throat and inability to swallow. Respirations were 20 in the minute, regular, and fairly deep. The lungs were resonant all over, and rhonchi were heard here and there.

There was slight swelling and great tenderness on both

sides of the larynx, the fauces were slightly congested, the tonsils not enlarged. The epiglottis was enormously swollen and congested, quite hiding the deeper parts from view. The patient could only speak in a hoarse whisper, and with considerable effort. There was profuse mucoid expectoration. Temp. 101°. Pulse 92, regular and of fair strength. The heart and abdominal viscera presented no evidence of disease, and the urine contained no albumen. Tongue was covered with a thick creamy fur. Ice collar applied to throat.

August 22nd.—Swelling of throat if anything increased, especially on left side, where it felt hard and tense. Breathing feeble in many parts of the lungs; highest temp. 102°. Ice collar removed and poultices applied. In the evening the patient's voice appeared to have improved considerably, but he had taken scarcely any nourishment since admission. An unsuccessful attempt at intubation of the larynx was made, and the patient was fed through a nasal tube.

23rd.—Highest temp. 102·8°; pulse 96. Breath-sounds at base of left lung very feeble. Swelling around larynx somewhat less, but considerable swelling of lower lip, chin, and parts around. Voice much improved, and swallowing easily performed. Bowels well opened by two drops of croton oil. The laryngoscope revealed an intensely swollen and congested epiglottis, but nothing else could be seen. At the base of the left lung were detected dulness and tubercular breathing, which occupied only a small area of the lower lobe, and at extreme base of the right lung a few crepitations were heard. The patient wandered at times.

25th.—On the 24th the highest temperature was 102·8°, and on the 25th 101·8°, and on each day it was normal at some time in the twenty-four hours; pulse 100. There was evident pneumonia at base of left lung, and crepitations and rhonchi over right lung.

The epiglottis was much less swollen, and both it and the ary-epiglottidean folds were intensely congested, and partially covered with a yellowish-white purulent-looking material.

27th.—Pulse 88; resp. 88: low, muttering delirium, and picking at the bedclothes. The temperature gradually rose through the day from 102·6° to 104°, 104·8°, 105·2°, and after death at 4 a.m. on the 28th it was 105·6°.

Post-mortem examination was performed by Dr. Hawkins. Body well nourished; no eruption; no œdema. Both pleuræ were adherent to the pericardium and to the chest wall over the lower lobes of the lungs, and on both sides were masses of yellow lymph three tenths of an inch thick. A little muddy fluid in left pleura. Pericardium normal.

The hinder part of the tongue was thicker and heavier than usual, and the muscle showed evidence of having been inflamed. In the fossa between the tongue and epiglottis the mucous membrane was stripped up and undermined over an area one inch by one and a half inches; the abscess cavity thus formed had discharged its contents through two ragged openings on either side of the epiglottis not far from its upper border, but it was now empty save for a little thick yellow pus or slough adherent to the walls. Thus the mucous membrane was stripped up from the whole of the anterior surface of the epiglottis to its free edge, but the cartilage was not laid bare.

Another abscess in and about the left tonsil had burrowed down and opened near the base of the epiglottis; thick pus could be squeezed out of this. A small similar abscess with ragged opening was situated on the free edge of the epiglottis on each side. Another, containing adherent slough, surrounded the left arytænoid cartilage, and in this one the cartilage was bare.

The epiglottis itself was considerably swollen and deeply congested.

The larynx was less affected, but it was congested and contained mucus; no obvious œdema and no ulceration.

Trachea and large tubes vividly red, but not ulcerated.

Right lung: Upper lobe dark, crepitant, and full of frothy fluid; lower lobe incompletely consolidated, still containing some air, but dark and fleshy, heavy, and rather granular. Near the anterior edge, about half an inch from the surface, was a mass the size of a walnut, sharply demarcated, and on section standing up considerably above the surrounding surface of the lung; it was very firm and hard, and presented the colour and consistency of a patch of caseous pneumonia.

Left lung: Upper lobe as on right; lower lobe in state of complete red hepatisation.

Heart flabby, soft; endocardium deeply stained; no valvular disease.

No trace of past or present inflammation was found in the soft parts around larynx and trachea, but the bronchial glands were swollen, dark, and soft.

Abdomen natural.

Liver rather large and soft; no obvious disease. Spleen very soft.

Kidneys large, flabby, full of blood.

Brain firm and healthy.

Weights of organs.—Right lung, 2 lbs. 5½ oz.; left lung, 2 lbs. 5¼ oz.; heart, 13 oz.; liver, 4 lbs. 5 oz.; kidneys, 14½ oz.; spleen, 6 oz.; brain, 3 lbs. 1½ oz.

Case 2.—T. R—, æt. 29, cabman, was admitted into St. Thomas's Hospital under my care on March 14th, 1892, and died on March 20th.

He was a hard drinker, but otherwise his family and personal history was unimportant. The patient was taken ill on March 13th, the day before his admission, but for the preceding week he had not been really well, having suffered from general malaise and slight pains in back and limbs. He did not get up on March 13th, and in the evening he felt pain and slight swelling about the angle of the jaw, especially on drinking. He also felt chilly, but had no rigor. He slept soundly that night till 4 a.m., when he woke, was restless, and had wheezing in his chest. By 9 a.m. he was much worse, had great difficulty in breathing and swallowing, and fluids regurgitated through his nose.

On admission at 4 p.m. on the 14th he was found to be breathing with difficulty; no stridor, no retraction of ribs, voice clear. Some fulness of tissues of neck observed, but no definite swelling except of some of the glands along the posterior margin of the sterno-mastoid muscles. Neck generally tender, especially at the angles of jaw and in the middle line over the larynx and trachea.

Air found to be entering both lungs badly. Great œdema of tonsils and uvula, the tip of the latter being not only swollen, but having the yellow colour of pus. No membrane visible anywhere. Temp. 102°. At 6 p.m. eight leeches

were applied to the neck. Milk given him to drink regurgitated through the nose. At 9 p.m. still greater respiratory difficulty. Respirations 16 per minute; when air was inspired there was a long interval before expiration. Heart healthy.

At 10.30 p.m. tracheotomy was performed by Mr. Clutton, who thought the trachea was somewhat pushed to left. On examination with laryngoscope under chloroform, intense œdema of epiglottis was found, which hid all lower parts of larynx from view. The tissues of the neck were thick and sodden, but no pus exuded on incision. The external wound was made large on purpose to drain, but no further incisions were made, as no collection of pus could be discovered, nor did pus exude from the incision already made. The tracheotomy gave great relief. Pulse 120, rather soft. Respirations 42. Temp. 99°—102·2°. Power of swallowing restored.

March 15th, 3 p.m.—Not so well. Pulse 140. Respirations 52. Urine contained albumen. Evening: sleeping quietly. Respirations 48. Pulse 138. No obstruction to breathing. Taking food well. Temp. 99°—102·2°.

16th.—Pulse 114. Resp. 54. Patient looking better, but herpes on lip. Tubular breathing at base of left lung close to spine, at right base crepitations and doubtful tubular breathing. Heart apparently normal, but pulse poor. Tonsils much less swollen. Uvula still swollen and yellow at extremity. Temp. 98·8°—103°.

17th.—Pulse 108. Resp. 48. Typical pneumonic consolidation of lower lobe of both lungs; free expectoration. Temp. 99°—102·6°. No abnormal sounds in heart.

18th.—Pulse 86. Resp. 60. Urine, no albumen. Temp. 99°—100·2°.

19th.—Patient slept very badly last night; much cough and expectoration. Pulse 80, poor. Resp. 60. Temp. 98·8° —101·4°. During the day pulse rose to 126, and became somewhat irregular. Resp. 60. Expectoration ceased, though there was evidently fluid in respiratory passages.

20th.—Died.

Post-mortem examination performed by Dr. Hadden. No general infiltration of connective tissue of neck; no enlarged

glands. The uvula was much swollen, yellow in colour, not ulcerated on the surface. On section an abscess was seen to occupy the submucous tissues. The epiglottis was likewise swollen, and pus was found occupying the loose cellular tissue between it and the base of tongue. The pus extended from there along both ary-epiglottidean folds, which were swollen. The vocal cords and rest of larynx were healthy, and the tonsils were free from disease. A few drops of pus were found in the cellular tissue behind the œsophagus about the level of the second dorsal vertebra. There was recent lymph over the greater part of both lungs, being most abundant over the lower lobes. The left lower lobe appeared solid throughout, and contained thickly set islets of broncho-pneumonia in the red stage. There was a similar condition along the anterior border of the right upper lobe, and in the posterior and upper part of the lower lobe. The rest of the lungs was œdematous. The heart was covered with a very thick layer of honeycombed, fibrinous exudation, but there was no fluid in the pericardial sac. Valves were normal. The liver, spleen, and kidneys were large and soft, the liver in addition fatty.

Case 3.—C. W—, æt. 39, carpenter, was admitted into St. Thomas's Hospital under my care on March 17th, 1892, and went out well on April 27th. The only point of interest in his family or personal history was that he had always been a hard drinker.

His illness commenced on Friday, March 11th, with headache and shivering. On Sunday (13th) he had sore throat and difficulty of swallowing, and sought medical advice. The sore throat got better, but on Monday (14th) he became delirious, and suffered from shortness of breath and much expectoration. In addition he was troubled with constipation and loss of appetite.

On March 18th he was admitted, and was found to have broncho-pneumonia of the lower lobe of the right lung; there was incomplete dulness over this region, crepitation, and greatly increased voice-sounds. He had a feeble pulse of 104, resp. 20, and temp. 103°. His tongue was dry and brown, and the fauces were also dry. The expectoration was

tenacious and streaked with blood. Heart free from disease. Urine 1020, acid, and contained a trace of albumen.

19th.—Things were much the same, but the expectoration was rusty; resp. 28.

20th.—Sputum was muco-purulent. Resp. 30. Pulse 100 and weak. Temp. 100°.

Up to March 22nd there was but little change; the patient was very weak and ill, his tongue brown and dry, but the pulse was only 88, and resp. 26. The patient then complained of tenderness on each side of larynx, and some hoarseness of voice.

In the evening the laryngoscope revealed great redness and œdema of epiglottis; so swollen was it that it hid all the deeper parts of the larynx from view. Pulse 120, soft and weak. Tongue covered with thick white fur. Temp. 100·8°.

On March 23rd and 24th no great change occurred, except that there was some stridor with respiration, but little or no apparent dyspnœa. Resp. 20. The lung was clearing up, the albumen had disappeared from the urine, but the tongue remained very foul.

On March 25th a considerable hard swelling appeared in upper part of neck in front and below the floor of the mouth; no fluctuation detected. The stridor in breathing increased.

The patient was therefore put under chloroform, and an incision was made just below the symphysis of the lower jaw; it was carried deeply inwards, and opened an abscess lying behind the hyoid bone and external to the larynx. After the operation the patient was much relieved. Pulse 108; food swallowed fairly.

March 26th pulse was 126; resp. 36. Inspiratory stridor and dyspnœa returned, and tracheotomy was performed. The tissues in front of the trachea were found to be thickened and infiltrated. The patient was again much relieved, and fell asleep. Pulse 96; temp. 102·2°.

27th.—Floor of mouth still much swollen. Pulse 102; temp. 99·6°. Tongue dry and furred. Taking food well. Signs of consolidation still at base of right lung.

28th.—Swelling of floor of mouth much less. Taking food well.

29th.—Temp. 104·2°; pulse 138; resp. 30. Tracheotomy tube taken out. Complained of pain beneath the ribs on left

side low down. Nothing to be detected on physical examination, except a few crepitations. Temperature subsequently rose to 104·8°, and pulse to 144; respirations to 42, but all quickly subsided after a dose of 10 grains of quinine.

30th.—Some friction at base of left lung, with crepitations and some dulness. Pulse 114; resp. 20; temp. 98°.

April 1st.—Patient coughing up a good deal of blood-tinged, muco-purulent expectoration. Left lung clearing up; crepitation still at base of right.

7th.—Gradual and steady improvement. Pulse 104; resp. 24. Tongue moist; nourishment well taken; tracheotomy wound still open. Left lung normal. Temperature generally normal, occasionally from 100° to 101°.

From this time the patient gradually improved, and finally went to a convalescent home. Examination of larynx revealed nothing but slight redness and thickening of epiglottis.

Before surgical interference became necessary the patient was treated with expectorants for the pneumonia which he was suffering from on admission. He was also given paraldehyde without much success for insomnia. He had hot fomentations externally to neck, and inhalations of Oleum Pini Sylvestris and steam.

Later, his heart's action getting very feeble, he was given first of all ether and ammonia, and then strychnine, tincture of digitalis, and bark.

Although the man was addicted to alcohol, and at first none was given on that account, it was thought necessary to administer it later on, so feeble was the circulation. The largest quantity given daily was ten ounces of brandy.

The three cases which have just been described resemble each other so closely in symptoms and in pathological anatomy, that they must be classed together under one title. They all began acutely with fever and with some of the general symptoms which attend the febrile condition; they all had soreness of throat, dysphagia, dyspnœa, external tenderness in the neck, œdema of the epiglottis, pneumonia, and suppuration in the connective tissue of some part of the neck. In all the disease was very severe, and two out of the three died. They may be called cases of "acute, primary, suppurative cellulitis

of the neck." All three were signalised by the presence of abscesses somewhere in the neck in its upper part, and they were always sufficiently near the larynx to produce intense œdema of the epiglottis; but the larynx itself was comparatively healthy, and not the primary seat of the disease. Nor, indeed, did the affection originate, as far as one could see, in any spot on the mucous membrane of the mouth, throat, or larynx, but in the deeper cellular tissue. In one case only was a hard, brawny condition of the skin and subcutaneous connective tissue present, so that such superficial inflammation must be looked upon as a variable phenomenon of the disease, rather than one upon which much diagnostic importance should be laid.

There is a condition which is now generally referred to under the name of "Ludwig's angina," of which Professor Vogel writes as follows in 'Ziemssen's Cyclopædia of the Practice of Medicine.'

"By angina Ludovici, cynanche cellularis maligna, pseudo-erysipelas subtendinosum colli, we understand a very acute inflammation and suppuration of the cellular tissue beneath the chin in the environs of the submaxillary glands, which has been named after its earliest describer, Ludwig, and which has appeared epidemically at various times."

Professor Vogel also says, "In recent times the disease has almost disappeared, and I can only find a few short accounts of it in the various journals of the last few years." The inflammation begins in the supra-hyoid region, and the exudation has a great tendency to be purulent or ichorous. "In cases terminating fatally the connective tissue and the muscles of the entire submental region are found, according to Bamberger, transformed into a semi-fluid, brownish mass, mixed with necrotic shreds of connective tissue; the submaxillary glands and the parotid are also destroyed by gangrene, and the neighbouring connective tissue is densely infiltrated for a distance extending even to the larynx and pharynx. In addition to this we usually find considerable hypostatic trouble in the lungs, and signs of embolism or septicæmia in various organs." The tissues in the front of the neck become harder and harder, often from chin to sternum. Compression and œdema of the larynx and trachea

and great dyspnœa occur, and the patient is often in a typhoid condition. If the disease is not fatal the hardness of the tissues of the neck persists for weeks. Suppuration or gangrene, however, generally sets in, and a large number of the patients die through exhaustion, suffocation, or septicæmia. Tracheotomy is often necessary owing to the occurrence of œdema of the glottis, and deep incisions should be made in the tissues of the neck."

The third of the cases which I have described is evidently an example of the disease referred to by Vogel, but so, in my opinion, are the other two. "Ludwig's angina" is suppurative inflammation of the cellular tissue of the neck, which involves the superficial as well as the deeper parts, and so gives rise to a brawny condition of the skin. The involvement of the latter, however, is not an essential point, and the disease runs much the same course whether the suppuration is in the deeper parts only or affects the superficial as well. The affection is probably septicæmic in origin, as is suggested by the prostration, the dry brown tongue, pneumonia, and even pericarditis, which are so frequent, and by the largeness and softness of the liver, spleen, and kidneys.

Judging from my three cases, one would say that alcoholism is a strongly predisposing condition. Two of the patients were certainly hard drinkers, and the third was a barman, and therefore probably addicted to alcohol, though I find that no note was made at the time with reference to this point. The affection is a very fatal one, and the main chance for the patient depends on early surgical interference. Deep incisions should be made to drain the cellular spaces in the neck, the œdematous parts of the epiglottis should be scarified, and tracheotomy should be performed if necessary. The principal diagnostic feature of the affection seems to me to be external tenderness, swelling, or hardness, either superficial or deep-seated, together with the absence of signs of either diphtheria or scarlet fever. In conjunction with this are usually found fever, prostration, dysphagia, dyspnœa, œdema of the epiglottis, and pneumonia.

THE

LIFE-HISTORY OF SOME SURGICAL PROCEDURES.

Read before the Medical and Physical Society,

By F. C. ABBOTT, B.Sc., B.S.Lond.

The aim of this paper on "The Life-history of some Surgical Procedures" is not mainly to describe the mediæval practice of our profession, as this has been twice admirably done before this Society in recent years; but rather to trace the evolution of a few of our modern procedures, to see from what germs they have originated, and along what lines they have progressed to reach their present high standard of excellence.

For the laws of evolution undoubtedly hold true in surgery; new ends, and new means to attain those ends, are being constantly set before us, and in that profusion which is necessary to create a "struggle for existence," the first essential for advance by evolution.

Yet it cannot fail to strike us, in the surgical world as in the natural, how ancient are the primitive types from which our modern classes of operations have sprung, and that modern advances have been alterations in detail of pre-existing types, and not the creation of new ones; indeed, in many cases they have been but the revival of ancient operations in all essential details, and owe their greater success to our

more favorable accessories, especially anæsthetics and antiseptics.

Of the use of anæsthetics nothing will be said here, except to remind you that it is only in the latter half of this century that operators have had this advantage, and that its chief effect has been that many operations devised for pace have given place to others devised for safety—as, for example, in the introduction of amputation at the hip-joint by the method of Furneaux Jordan in the place of the old transfixion operation.

But since nearly all modern surgical proceedings entail the infliction of a wound, we must trace shortly the evolution of our modern methods of wound treatment, including the development of antiseptic surgery.

This evolution we may divide into periods.

First the period of meddlesome interference, from which ancient medicine and surgery so largely suffer, due to an overweening confidence in the value of drugs and applications—a rash confidence begotten of youth, from which we all suffer in greater or lesser degree on first taking up the practical side of our work.

Thus the ancients applied one thing to make the flesh grow, something else to make the growing flesh firm, and so on, till we have those huge compound applications of the old authors; but amongst all this they lost sight of the fact that a wound itself has a tendency to heal, if only you leave it at rest.

Then the period, if we may so call it, of macroscopic or anatomical rest, during which the value of rest was fully appreciated, but the causes of physiological unrest were so little known that no steps were taken against the bacteriological or chemical irritation of the tissues. During this period wounds were sometimes closed, sometimes left quite open; at times no dressings or the simplest were applied, at others we have a harping back to ancient custom, and the most complex applications used.

Finally we have the period of microscopic or physiological rest, in which the harm done by bacteria and their products has come to be fully understood. And this period may be again subdivided into two: at the commencement a time of active attack on bacteria, but still leaving us the chemical

unrest due to the strong and irritating antiseptics employed; while, lastly, we hope to have attained to chemical rest as well, by the use of asepsis only, or of less irritating though equally powerful antiseptics.

It will be understood that there is no marked line of separation between these various periods, for in any age one figure may stand out far in advance of his fellows, while in another there may be a general relapse to the practice of a previous epoch, forming those cycles to be observed all through the history of surgery, which we can only put down to the effect of fashion, and from which we are by no means free at the present day.

This very brief *résumé* must, therefore, be supplemented by reference to the practice of a few individuals.

Perhaps the first definite protest against the unnecessary complication of dressings was made by Paulus Ægineta in the seventh century. At this time no attempt at all was made to close wounds, nor indeed till the thirteenth century, when we find that Lanfranci and Bruno advocate obtaining immediate union of all simple wounds; but their teaching was soon lost sight of.

It is not, however, till we come to the sixteenth century that we really commence the history of modern wound treatment. At this period lived Paracelsus, whose views were that there is a juice which keeps the various tissues of the body in good health, and repairs them when injured; and his whole aim was to prevent alteration of this liquid resulting from the contact of air or other accidents. Medicaments he looks on as only useful in preserving this juice and preventing its corruption. He employed sutures of silver wire, and bathed his wounds with solution of acetate of lead.

After him Ambrose Paré, a great apostle of rest for the healing of wounds, including rest both of body and mind. His advice is, "Preserve the temper of a wound by low diet, a little wine, and rest; avoid venery, contentions, brawls, and other perturbations of the mind." To him we owe the introduction of the ligature, which did away with one great cause of irritation—the use of the actual cautery; for though the Alexandrian school had used and advocated the ligature, they appear never to have applied its use to amputation

wounds. He also pleaded for ventilation, looking on pure air as beneficial to the wound and to the patient.[1]

During the next century but little progress in wound treatment was made, while we have a retrograde step taken in the great re-accumulation of dressings; but towards the end of this time we have a surgeon[2] describing results obtained by use of a medicament whose constitution, most unfortunately, he does not mention, but which gave him results only comparable to those obtained by the aseptic method, and whose wounds certainly ran a typical aseptic course. He thus describes his method:

"Suppose a wound be made with a sword or other cutting instrument, the length or depth of which signifies nothing. I make a solution of my powder in water, for want of which, in *urine*, and as soon as conveniently I can, the sooner the better, I either squeeze, or with a syringe if the wound be deep, inject into the wound some of the said solution. I then close the lips of the wound together, which, if large and wide, I stitch up. When I have so done I apply a pledget of fine tow, wet in the said solution, to the wound, not letting it go into it, but only to cover the edges of it and lie all over it. In incised wounds one dressing, or at most two, were as many as were needed, the second being applied at the end of four days."

With regard to his results he says:—"There has never been any such thing as a fever, be the wound internal or external, attended any who have used my medicine soon after they have been wounded; but several who have been ill-managed before, and thrown into violent fevers, have in twenty-four hours, by the use of my medicines, been totally freed from them.

"In all incised wounds, when my medicines have been soon enough used, and no other applications preceded, they are perfectly cured in a few days without suppuration."

These statements certainly describe an aseptic course of wound-healing.

It is interesting that Neudörfer thinks this powder was a

[1] The works of that famous chirurgeon, translated by Thomas Johnston, 1665.

[2] 'Novum Lumen Chirurgicum,' &c., by Sir John Colbatch, 1704.

salicylate, probably (on account of the smell of roses to which Colbatch refers) salicylate of ammonia.[1]

During the eighteenth century and beginning of the nineteenth, although there were many surgical giants in those days, we have no great advances in wound treatment, except that dressings were simple, and that subcutaneous surgery had its first beginnings.

Thus in 1706 Anel[2] described a method of evacuating abscesses by aspiration without leaving an open wound, though even this was not the origin of the aspirator, as a similar instrument had been described by Delacroix in 1573 for the purpose of removing blood from the thorax.

At the other end of the century Abernethy introduced the valvular method of opening abscesses in 1793.

Boerhaave, in 1720, describes the frequent occurrence of internal abscesses after certain injuries, and ascribes this to the absorption of pus by the open orifices of the veins of the wound, and puts down the evil effects to the putridity of the pus. That abscesses of the liver were apt to follow wounds of the skull had not escaped Ambrose Paré, but he did not understand the significance of the fact; and it is to Boerhaave we owe the first distinct statements of the danger of pyæmia following putridity of the pus.

In the earlier part of the nineteenth century subcutaneous surgery made great progress. Sir Charles Bell, in 1807, advised subcutaneous division of the ligaments of the thumb by means of a cataract needle in cases of irreducible dislocation; and though he never performed the operation, the suggestion and modifications of it have often been carried out in more recent times. Bransby Cooper, in 1816, divided the tendo Achillis subcutaneously, and in 1822 Dupuytren did the first subcutaneous myotomy of the sternomastoid.

We now come to the experimental period, in which many workers played great parts, and which led at length to clear ideas of sepsis and antisepsis, and the application of these ideas to wound treatment. Lister's first recorded case

[1] Watson Cheyne, 'Antiseptic Surgery,' London, 1882; from which work many other facts as to wound treatment are taken.

[2] Portal's 'Histoire,' iv, 398.

treated in this manner was one of compound fracture in 1865.

No attempt can be made here to trace the various changes in the antiseptic method from that time onwards, from the complicated "Listerian dressing," the spray, &c., to the simple dressings of the present time. The simplification of dressings has already proceeded far, but will probably go farther yet; and with the complete closure of wounds now in vogue, the simpler the dressing the better, for where formerly we expected pus, and in later days we still expected a considerable serous discharge, we now expect neither, and in a successful case the dressing is taken off nearly as clean as it was put on.

Where drainage-tubes are still used we must, of course, provide actively antiseptic dressings to receive the discharge; but the drainage-tube is now largely becoming an instrument of the past, and it has during its history been used for such different objects that its life-history may well detain us a moment.

Its origin dates from very remote times, for we find the famous "Four Masters" of the thirteenth century refer to the use of drainage-tubes of animal membrane made from the windpipes of rabbits, and they are also mentioned by Ambrose Paré.

But Chassaignac re-introduced its use in 1855, his tubes being of india-rubber, essentially the same as those of the present day, and his object in using them was the drainage of pus already formed.

Then with Lister came the hope of an a-purulent wound; and he applied the drainage tube to quite another purpose, the prevention of suppuration by the drainage of serum, and the promotion of a dry wound. Except in the case of acute suppuration, this was their only justification in antiseptic surgery, and it was owing to this fact being overlooked that they were often left in so much longer than was necessary. In still more recent times, by the careful drying of wounds, the use of few ligatures, and non-irritating antiseptics, we have so diminished the amount of serous discharge that the majority of wounds can be sewn up without drainage, while many surgeons have also abandoned their use in the treatment of

tubercular abscesses; and in these ways the drainage-tube has again come to play a very small part in wound treatment.

In passing now to individual operations, time will only permit the consideration of some points in the surgery of the abdomen. We naturally look upon abdominal surgery as essentially a new department, belonging almost exclusively to our own time, and as necessarily relying on antiseptic treatment for any chance of success. Yet this is not really true, as is indeed obvious when we consider the large number of successful ovariotomies performed in the pre-antiseptic period.

A few examples will show that there was also in other ways a considerable department of abdominal surgery in even earlier times, and that some of our most modern improvements, including even the introduction of the most modern methods for intestinal suture, are but reversions of type.

The surgeons of the Greek and Roman schools discussed the advisability of operating in intestinal obstruction, but it is doubtful if any of them ever performed the operation.

Le Clerc, in his 'History of Medicine,' states that Praxagoras advised laparotomy in intussusception or volvulus (the rolling or twisting passion), and even advised incision into the gut to allow the fæces to escape—advanced treatment surely, even according to the most modern notions; but it is more than doubtful if he ever carried out his suggestions. Incision into the stomach for removal of a foreign body (the modern gastrotomy) was a successful operation in the seventeenth century, and two successful cases were recorded in 1635, the one by Shoval,[1] who removed a knife six inches long, and the other by Schwaben;[2] but up to the eighteenth century abdominal surgery mainly consists of the treatment of abdominal wounds, though the treatment of these was certainly well understood by surgeons at this time, including the necessity of bringing peritoneum in contact with peritoneum.

The following directions for closing a wounded abdomen given by Mons. Dionis 150 years ago, and which would almost serve for the completion of a modern operation, will prove this.

After reduction of the wounded intestine, he says, "As soon as the intestine is restored to its place, the chirurgeon

[1] 'Chelius' (South), vol. ii, p. 391.

[2] Hévin, 'Mém. de l'Acad. de Chir. de Paris.'

thinks of accommodating the epiploön, when displaced or disordered; but first he sees whether it be corrupted or broken. . . . He must then tie it and separate that portion of it which is putrefied, before replacing it in the body; to perform which operation methodically, he takes a coarse waxed thread, at the end of which he has a straight needle threaded. He draws the epiploön a little further out of the body than it is already, that he may not make his ligature upon that which is corrupted; he then binds this membrane twice or thrice round the sound part with the string, drawing the ligature moderately tight, for fear lest, if too hard, it should cut in the performance; or if leaving it too slack, the vessels, which are very numerous, should pour out their blood in the cavity of the belly. He runs the needle through across the proper substance of this again, that the ligature may not slip; then he cuts it off within half a finger's breadth of the ligature, leaving out of the body one end of the string as long as the silk, to draw it out when the scar is fallen off. Next he puts the epiploön into the belly, and in order to enable him to extend it over the intestines, which is its natural place, he a little moves and shakes his patient. . . . . After having put into order the intestine and the epiploön, a servant should, with both hands, hold the two lips of the wound in the abdomen close to each other, that the organs may not again fly out, while the chirurgeon disposes himself to perform the suture of the belly.

"It must be performed thus:—The chirurgeon must have two large curved needles threaded with the string. He puts his forefinger into the wound in order to hold the peritoneum, the muscles, and the skin together; then with the other hand he thrusts one of the needles through into the belly, guiding the point on his forefinger, to avoid pricking the epiploön or intestine. He pierces from the inside outwards one of the edges of the wound far enough forwards, that the suture may hold the better and having drawn out his needle on the outside, he takes the other needle, with which he pierces the other sides of the wound in the same manner, observing the same precautions as at the first stitch."[1]

[1] Mons. Dionis, 'Course of Chirurgical Operations,' translated from the Paris edition, London, 1733, Dem. i.

This description would almost serve for the present day; and that he is fully aware of the mode of union of serous membranes is shown by his attacking Guido in the same lecture, "who would have us to sew, on the one side of the wound, the peritoneum with the muscles, and that on the other we should make that the muscles touch the peritoneum;" because, as he asserts, the peritoneum reunites better with them than without them.

Dionis[1] also describes accurately the operation for strangulated inguinal hernia, beginning by making skin incision through a piece held up by thumb and forefinger of each hand, as some modern surgeons do, opening the sac, using a hernial probe and curved knife for the ring, reduction of intestine, and ligature of omentum.

The first authentic record of the surgical treatment of a case of intestinal obstruction is in a paper on "Gastrotomy," by Mons. Hévin, in the 'Transactions of the Royal Surgical Academy of Paris' in 1768.[2]

"The Baroness de Lanti, of Chatillon-sur-Seine, was nearly dead of an iliac passion. A young surgeon who had served in the army for a long time came forward, and promised recovery if the patient would submit to operation. He was allowed to operate. He pulled out a great deal of the intestine before he found the twist, he freed it (*nodos dissolvit*) and returned it to its place. He sewed up the abdomen, the wound healed well, and the patient recovered."

In another case the exposed intestines were carefully covered by warm milk while the coils were unravelled, and the patient recovered. Still most authorities from the seventeenth century up to quite recent times condemn it; and though it was sometimes performed, failures were almost universal.

Excision of part of the small intestine is said to have been first done by Ramdohr in 1727, who removed successfully two feet of gangrenous gut from a hernia. His method of junction is said to have been one of invagination.[3] Enterectomy was revived by Langenbeck in 1875.

Some of the most recent developments of intestinal suture are not entirely new, but have been partially anticipated long

[1] Op. cit. [2] M. Hévin, 'Mém. de l'Acad. de Chir. de Paris,' vol. iv, 1768.
[3] Dr. E. J. Ill, 'New York Med. Rec.,' Sept. 22nd, 1883.

before; for the "four masters," monks who practised surgery in Paris in the thirteenth century, used rings derived from the trachea of an animal for this purpose; while the following quotation, taken complete from 'Cheselden's Anatomy,' shows that ancient veterinary practice furnishes us with a type in this particular:

"Thomas Brayn, of Yeaton, in parish of Basechurch and county of Salop, a doctor for cattle, maketh oath that about ten or twelve years agone he was sent for by a farmer or husbandman who lived near the village called Maesbrooks, and very near to the river Vernay, in the said county of Salop, to have his advice about an ox he had, which was then sick by reason he could not dung. He had been drenched by several beast doctors before this deponent came to him.

"This deponent, seeing the ox in the condition he was in, told the owner that, if he would venture his ox, he would do him what service he could with curing of him, which the owner consented to; and thereupon the deponent opened the ox in the flank, and took great part of his bowels, upon searching which he found there was a perfect stoppage in the guts, and the gut was, about the stoppage, putrefied for about three quarters of a yard, whereupon this deponent cut off so much of this gut as was putrefied, and took it quite away, and then drew the ends of the gut, which remained sound after what was cut off, together upon a hollow keck, which was about three to four inches long, and sewed the ends of the gut together upon the said keck, leaving the keck within the guts, and then shut up the hole cut in the side of the said ox; and this deponent further saith that within the space of one hour after the operation was performed the ox dunged, and the piece of the keck, which the said ends of the gut were sewn upon and left within the guts, came away from the ox with the dung, whereupon the ox recovered, and lived to do the owner several years' service."[1]

The hollow keck here referred to appears to have been a piece of raw turnip;[2] and now that Dawbarn[3] has recom-

[1] 'Cheselden's Anatomy,' 1730, p. 151.

[2] Greig Smith, 'Abdominal Surgery' (from which work many other facts are taken).

[3] Dawbarn, 'New York Med. Rec.,' June 27th, 1891.

mended the use of plates of raw potato in the place of decalcified bone, we see how near this veterinary surgeon came to our most modern practice.

The operation of colotomy is a good instance of those curious cycles in surgery previously referred to.

First proposed by Littre[1] in 1710, his method was to open the sigmoid flexure by the inguinal incision in cases of imperforate anus, but probably he never performed it. Pilloré, in 1776, opened the cæcum by incision in the opposite inguinal region; while Fine, of Geneva, in 1797 opened the transverse colon in the region of the umbilicus, thus anticipating by nearly a century the operation of Knie. Finally, Amussat, led to experiment while treating Broussais for cancer, did his first lumbar colotomy in 1839 (operating on the ascending colon), and from this time onwards for a long period lumbar colotomy was nearly always performed; but quite recently there has been a revulsion in favour of the primitive or inguinal operation, which now bids fair to displace its successor in the large majority of cases; and this change cannot be due to the introduction of antiseptics, but has occurred in much more recent times, and in part at least is due no doubt to fashion.

Although the surgery of the gall-bladder would appear to be a product of the last ten years, it is in reality 150 years old, though it nearly fell into oblivion in the intervening period.

Petit first discussed the subject in 1733, and ten years later he recommends several procedures, including, besides simple incision of an enlargement adhering to the peritoneum, two other operations, of which "l'une se sera dans le cas où la rétention de la bile est portée à l'extrême, et le malade en danger de mort; celle-ci est la *ponction :* l'autre opération . . . . c'est la *lithotomie,* je vieux dire l'extraction des pierres hors de la vésicule du fiel."[2]

Splenectomy as an operation is of considerable antiquity, and was performed more than 200 years ago for prolapse of the spleen through a parietal wound;[3] while Mons. Dionis[4]

[1] Littre, 'Mém. Acad. Sc. Paris,' vol. x, p. 36.

[2] Petit, 'Mém. de l'Acad. Roy. de Chir.,' tome i, p. 163, Paris, 1743.

[3] Simon, 'Die Extirpation der Milz am Menschen,' Giessen, 1857.

[4] Op. cit.

mentions a class of surgeons who sprang into fame for their "unmilking" operation performed for divers reasons.

Nearly all kidney operations are really modern, and have no ancient type, the one exception being nephrolithotomy; but in the practice of the ancients the operation was mainly the evacuation of an abscess, and Hippocrates recommends incision for renal calculus should the parts swell and become inflamed. The first case operated on with no abscess is recorded by Mezerai in the 'Abrégé chronologique de l'Histoire du France.' "The doctors having learnt that a certain archer, of Meudon, who had long been afflicted with stone in the kidney, had been condemned to death for his crimes, requested the magistrates to hand him over to them, that they might experiment, and see if it were practicable to extract the stone without killing him. The experiment was successful, and the man lived." This occurred about 1680. It is right to mention that Ambrose Paré discredits this story.[1] The first modern operation was performed by Morris in 1880.

The evolution of Bladder Surgery forms, perhaps, the most interesting chapter of any in the history of surgery; and, indeed, the history of a large part of this evolution, as described in the racy language of John Bell, reads like a romance; as he himself says, "The history which I am about to lay before my readers is, I believe, full of amusement and instruction."[2]

The first step in bladder surgery was taken by Erasistratus in the third century B.C., and his invention, as perhaps we might expect, was the catheter, which he used in cases of retention; but time will only allow us to consider the operations for stone.

Celsus in the first century first describes the operation of cutting for stone, the operation by the apparatus minor or "cutting on the gripe," but it had undoubtedly been practised for many centuries before his time, only the operation was in the hands of specialists, who rapidly degenerated into quacks; and Hippocrates, in his book of "oaths," forbids it to be performed by surgeons.

[1] Greig Smith, op. cit.

[2] John Bell, 'Principles of Surgery,' new edition, by Chas. Bell, 1826.

Lithotomy on the gripe was also performed in ancient Hindoo surgery, while they occasionally also used the suprapubic method, which, when the case was considered specially dangerous, was done on wives by their husbands—a nice method of shifting responsibility from the shoulders of the surgeon.

This cutting on the gripe remained the only method for 1600 years after Celsus wrote, and was entirely in the hands of quacks. The patient having first been made to walk about, or jump off a chair, or some other method to bring the stone down to the neck of the bladder, it was felt from the rectum, and fixed by two fingers there, protruding it forwards against the skin, and cut down on by a curved incision in front of the anus, the horns pointing backwards, and then by a second transverse incision into the neck of the bladder itself the stone was reached, and shot out by pressure from the rectum, "leaping out into the operator's breast or shirt collar," or if not, it was extracted by a hook. Thus a knife and hook were the only instruments forming the apparatus minor.

One of the last and most successful of these operators was Le Raones, who was most vigorously attacked by the court surgeons in France, who now themselves used the apparatus major. Drelincurtius describes the operation of Le Raones in terms of most vigorous contempt, one passage of which, as translated by John Bell, certainly deserves repetition:—"The patient, after getting up, making a few strides and steps about the room to clear the bladder, or shaking himself, or jumping over his garter, is laid in bed, and this jack-pudding of a charlatan plasters up his bottom with a mixture of flour and eggs, and keeping a mountain of flour over the wound thus bandages his posteriors."

But the new operation was devised not so much owing to the ill-success of this operation as to the necessity for inventing a more complex procedure, which the regular surgeons alone could perform, and in this way to cut out the quacks, who were no doubt more expert at the old method, and had the whole of the practice in their hands.

They therefore re-introduced and perverted an aphorism of Hippocrates that "wounds of membranous parts are mortal,"

and on this ground gave up the incision of the neck of the bladder, replacing it by a ghastly method of dilatation, which meant indiscriminate laceration.

This, the operation of the "apparatus major," invented by Joannes de Romanis, was first described by the grandiloquent Marianus Sanctus Barolitanus in 1524, who used the most bombastic terms, and, as John Bell says, "seems ready to sink under the ignominy of his situation when obliged to acknowledge that this august operation is to be begun even with a razor;" but rising to the occasion as he proceeds, he speaks of the "voracious and vociferous forceps, roaring and gaping for the stone," and many other equally magnificent expressions.

Stripped of all this, the operation was a median lithotomy, opening the membranous urethra on a grooved staff, and then by probe, male and female conductors, and dilators a way was made for the great forceps, which were forced on into the bladder with a rotatory motion.

The pain must have been awful, while the lacerations produced were the cause of a very heavy mortality. In an authentic list at the hospital of La Charité, out of 71 cut, 38 died.

Such accidents as the dilators suddenly slipping in and piercing the posterior bladder wall were not infrequent, while fistulæ and incontinence were the usual sequelæ. Imagine then the excitement in Paris when Frère Jaques appeared, surrounded by mystery and with a great provincial reputation, operating by a new and rapid method, the first precursor of lateral lithotomy, plunging his dagger-shaped knife deep into the ischio-rectal fossa, and reaching the bladder at the first cut, guided only by an ungrooved staff.

Opposed by the hospital surgeons, he was only allowed to operate on the dead body; but gaining the notice of the king he soon returned, and early in 1698 his method was discussed in open debate, and in spite of opposition he was allowed to operate at the hospital.

The doors of the hospital where he operated were besieged at an early hour, and such was the press of spectators that sentries were required to keep back the mob.

Soon, however, his patients began to die, and M. Méry

presented such an unfavorable report on dissections he made that Frère Jaques was driven from Paris, but he afterwards resumed his operation, cutting on a grooved staff.

From this time onwards the evolution of lateral lithotomy was a rapid one, and it was practically perfect by 1730. The first rudiment of lateral lithotomy was, then, the operation of Frère Jaques, untaught in anatomy, plunging his knife in the ischio-rectal fossa, aiming at the body of the bladder, and generally reaching it behind the prostate with correspondingly bad results.

Then followed the reformed operation of Frère Jaques, the outward incision made as we do, and the deep one by cutting the prostate and neck of the bladder on the groove of the staff. He was followed by Rau, skilled in anatomy, and at first teaching that the body of the bladder should be cut and the prostate spared; but subsequently he altered this teaching, and had splendid results.

Then came Cheselden, dissatisfied with the high operation which he had previously performed, but cutting at first into the body of the bladder, four patients dying out of ten. This procedure he subsequently modified, so as to cut only the prostate and bladder neck, at first making his deep incision from before backwards as we do, but afterwards from behind forwards—an alteration he curiously appears to have always afterwards adhered to.

From this time (1730) onwards there has been no essential change in lateral lithotomy, though the gorget and other instruments have been introduced and died out again, and we have reverted to Cheselden's earlier method of making his deep incision.

The first supra-pubic operation appears to have been performed by Colot in the latter half of the fifteenth century. He made the experiment on a condemned criminal, and it is said to have been successful, although the intestines escaped from the wound. Pierre Franco did the second in 1560 on a child from whom he had previously failed to remove the stone through the perinæum. The operation was revived by John and James Douglas in 1710, and Cheselden records nine cases he had done in his book published in 1723.

Pierre Franco did not even inject his bladder; Cheselden

and the other operators always did this, but did not use anything to distend the rectum.

After the perfection of lateral lithotomy, supra-pubic lithotomy practically died out till quite recently revived again, with the addition in 1878 by Garson of the rectal bag.

Median lithotomy, a modification of the old Marian operation, has also been revived in recent times by Allarton.

The first mention of lithotrity is in the writings of Avenzohar in 1070. After having given directions for extracting a calculus from the urethra, he proceeds to teach the manner of breaking or grinding it down by an instrument which would appear to be a sort of drill, which he describes as "a thin polished rod made of gold or silver, and having a pointed adamant enchased in its extremity." Here we have the earliest progenitor of the modern lithotrite.[1]

Modern lithotrity dates, however, from the time of Civiale, who did his first public operation in 1822; from this time onwards the operation steadily advanced in favour with the gradual perfection of the lithotrite, receiving an immense impulse in 1878, when Bigelow proposed litholapaxy, and crushing the stone at one sitting, with his powerful lithotrite and evacuator. Since then it has been demonstrated that the operation can be successfully performed on children, with results as good as or better than in the best series of lithotomies, and now we see it installed as the favourite operation in the vast majority of cases.

Could any history be more curious than this? We have first the struggle of the four main types of lithotomy, the apparatus major replacing the apparatus minor, supra-pubic getting its opportunity from the failure of both, and all three being entirely dropped to give place to the perfected lateral method, only to be supplanted in its turn by lithotrity, which at the present time holds the field in the vast majority of cases, while the residue are nearly always undertaken by the again revived supra-pubic method; and the only perinæal operation that we are likely to see at all commonly in the future will be a modification of by far the oldest method of all, "the cutting on the gripe," which we may yet see in cases of impacted calculus in the urethra.

[1] 'Avenzohar-Theisir,' lib. ii, tract 4, cap. i.

In conclusion, great gaps have been left in the treatment of this subject, even in the field of abdominal surgery which has been mainly discussed, and the interesting evolution of ovariotomy has been entirely omitted, but this has been so fully treated of in many modern works that the omission can be easily made good.

THE PATHOLOGY, COURSE, AND SYMPTOMS

OF

PELVIC CELLULITIS IN THE FEMALE SEX.

(*Thesis for the M.B. Degree.*)

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"Pelvic cellulitis" is the term now generally used to designate inflammatory affections which have their seat or origin in the cellular tissue of the female pelvis. It appears preferable to the expression "parametritis," introduced by Virchow in 1862 as a name for inflammatory affections of the loose connective tissue and fatty mass which is found surrounding the vagina and the neck of the uterus, and forms at the same time the base of the broad ligaments. This, he says, is one of the most frequent seats of inflammation, and it would be an error to call inflammations occurring here affections of the broad ligament. Matthews Duncan in 1869 applied the term parametritis without distinction to all inflammations of cellular tissue of the true pelvis; while he used the expression "remote parametritis" for those inflammatory affections which, commencing primarily in the neighbourhood of the uterus or its annexa, locate themselves

finally in regions more or less remote from their original starting-point—as, for example, near the umbilicus. Thus the meaning of the word "parametritis" has been extended far beyond the intention of its author, and the older expression "pelvic cellulitis" seems more correct. It is necessary in the first place to allude to the disposition of the pelvic cellular tissue, and the aponeuroses or fasciæ which are specialised portions of it.

Dr. Cullingworth[1] says that except perhaps over the fundus uteri a layer of connective tissue underlies the entire pelvic peritoneum, parietal and visceral, and that the so-called ligaments of the uterus contain a greater or less quantity between the peritoneal folds of which they are composed; while in certain special situations the connective tissue may be said to be abundant—for example, around the supra-vaginal portion of the cervix, along the base of the broad ligament, and behind the symphysis pubis. According to Dr. Galabin the areolar tissue is most abundant in the broad ligament; there is, however, plenty of it between the lower half of the uterus and the bladder, and occupying a smaller space at the posterior part of the cervix, also around the bladder, vagina, and rectum, and in the sheaths of the psoas and iliacus and abdominal wall muscles.

Valuable information is derived from the study of frozen sections, as shown by Hart and Barbour.

In sagittal lateral section there is shown, at the junction of the broad ligament of one side with the uterus, much connective tissue with large blood-vessels, and the retro-pubic tissue is seen to be less in amount than in mesial sagittal section. A section made still more laterally in a sagittal plane shows lessening in the amount of the connective tissue in the broad ligament.

Transverse sections show well the retro-pubic fat, and the tissue at the level of the supra-vaginal portion of the cervix is well demonstrated all round. A coronal section through the base of the sacrum and the great trochanter displays the connective tissue in the broad ligaments, and the continuity of the fatty tissue external to this with the

[1] Cullingworth on 'Differential Diagnosis of Pelvic Inflammation in the Female.'

subperitoneal fat outside the ovary and near the great sacro-sciatic notch.

An axial coronal section shows the continuity of the broad ligament connective tissue with that in front of the iliacus muscle.

Both on anatomical and pathological grounds the pelvic cellular tissue may be divided into—

(1) That which is situated in the broad ligaments.

(2) That which lies at the base of the broad ligaments, surrounds the supra-vaginal part of the cervix, descends between the upper part of the vagina and rectum, and is continuous anteriorly with that in front of the bladder.

Thus there are two cellular regions, an upper and a lower.

The former contains the uterine and ovarian vessels and the lymphatics of the fundus uteri, the Fallopian tube and the ovary on the same side. These empty themselves into the glands between the transverse processes of the lumbar vertebræ (Delbet) or into those surrounding the aorta and vena cava, the mesial lumbar glands (Quain).

At its upper part the peritoneum of the broad ligament is divided into three folds : (1) an anterior, along which the round ligament is directed towards the internal abdominal ring ; (2) a median, which contains the tubes ; and (3) a posterior, which contains the ovary. The median fold is the mesosalpinx, the posterior the utero-ovarian ligament. Also the broad ligament is rendered continuous externally with the pelvic wall by means of the ovaro-pelvic or infundibulo-pelvic ligament, which contains the ovarian vessels.

The lower region—continuous with the upper along the base of the broad ligament—is bounded as follows :—Behind by the sacro-recto-genital aponeurosis, in front by the posterior and lower part of the umbilico-vesical aponeurosis, above by the convergence of these two layers, and below by the superior perineal aponeurosis or recto-vesical fascia. Externally and by way of the sciatic notch this region is continuous with that of the buttock. Internally it abuts on the neck of the uterus and the vaginal dome, on the bladder, and the cellular tissue between the bladder and the cervix.

This area corresponds to the parametrium of the Germans, or the so-called base of the broad ligament.

From the anterior surface of the sacrum (from the second, third, and fourth sacral vertebræ) and from the front of the coccyx there arise fibrous bands, of which the highest are inserted into the posterior uterine wall at the level of the internal os uteri, the lowest into the rectum, and those between into the cervix and partly into the bladder, being continuous with the fibres of the umbilico-vesical aponeurosis, and into the vaginal dome. The highest fibres are continuous with those of the iliac fascia. The aponeuroses of the two sides converge along their inferior borders, which are continuous with the recto-vesical fascia; the utero-sacral ligaments are only a part of the whole, to which Delbet has given the name sacro-recto-genital aponeurosis, but they are an important part,—they form the folds of Douglas, those projections of the pelvic peritoneum which bound laterally the pouch of Douglas, and internally and posteriorly they limit the retro-lateral spaces, which are bounded anteriorly and externally by the broad ligaments.

In front there are fibrous bands running from the pubes to the bladder and to the neck of the uterus and vagina, and also others running laterally between the bladder and uterus—these are thickenings of the recto-vesical fascia when it is continuous with the umbilico-vesical aponeurosis; they comprise the anterior and lateral true ligaments of the bladder and the utero-vesical ligaments.

The umbilico-vesical aponeurosis is inserted above into the umbilical scar; it extends in front of the urachus and the cords which represent the umbilical arteries, adhering firmly to the peritoneum outside these; below it passes on to the anterior wall of the bladder with which it is closely incorporated, and is attached inferiorly to the anterior ligaments of the bladder; on the lateral and inferior parts of the bladder it descends to the pelvic floor, and is limited below by the recto-vesical fascia. From the lateral parts of the bladder it is continued posteriorly to the neck of the uterus, being still continuous below with the recto-vesical fascia. It then runs rather obliquely from before backwards and from within outwards to the anterior border of the great sciatic notch, being then continuous with the obturator fascia.

This aponeurosis surrounds, with the peritoneum, which is behind, the whole allantoic system. The lower part of the allantois itself becomes the bladder, and the vessels that accompany it. Hence Delbet has named it umbilico-vesical.

It is only necessary further to mention that in front of this, and above the anterior true ligaments of the bladder, there is a virtual cavity containing some connective tissue—the so-called pre-vesical cavity. The aponeuroses above described and the spaces in relation to them have been demonstrated by Delbet both by injections and dissection.

The lower region, the boundaries of which have been alluded to above, contains the pelvic branches of the internal iliac vessels and the main trunks themselves. Further it contains the lymphatic glands related to the internal iliac vessels and their branches, and by means of the obturator vessels it communicates with the obturator fossa, in which or along the obturator vessels a gland or glands may be present; it contains also lymphatic vessels and the ureter; by the sciatic notch it communicates, though not freely, as the notch is largely occupied by strong fibrous bands, with the gluteal region. The lymphatic vessels are those which drain the cervix and at least the upper part of the vagina; these empty themselves into the glands which lie along the internal iliac vessels.

The existence of a lymphatic gland near the neck of the uterus is doubtful, different opinions being held on this point.

The results which König has obtained with regard to the lines of cleavage of the pelvic cellular tissue in experiments conducted on women who died after labour, but from non-puerperal diseases, using for these experiments injections of air and water, are of importance in connection with the course taken by inflammatory exudations, and will be alluded to hereafter.

For the anatomical description here given, and for much other help and information, which it has been found impossible in every instance to acknowledge, I am indebted to Delbet's recent work 'Des suppurations pelviennes chez la femme.'

Proceeding now from the anatomy of the pelvic cellular

tissue to the inflammatory affections of which it is the seat, it must be stated in the first place that the differential diagnosis of pelvic affections in the female has until a comparatively recent period been veiled in an obscurity from which we have perhaps even now not altogether emerged. Especially is this so with regard to pelvic peritonitis and pelvic cellulitis. Dr. Cullingworth, however, is of opinion that in most cases it can be made.

Macnaughten Jones thinks, with Emmet, that in the majority of cases it is impossible to make the distinction at the bedside.

It is worthy of note that Emmet considers pelvic cellulitis one of the most important of the diseases of women; its frequency will now be discussed.

The number of patients under treatment in the gynæcological ward of St. Thomas's Hospital during the years 1888-91 was 925. Of these 56 appear to have been undoubted cases of cellulitis; in 8 others, which may also have been inflammations of the pelvic cellular tissue, there seems to be doubt as to the nature of the disease. Of the 56 clear cases 1 was admitted on two distinct occasions. Nearly 6 per cent., then, of the gynæcological cases treated in St. Thomas's Hospital during the time mentioned were cases of pelvic cellulitis, counting the case alluded to above as one.

In addition to these there are four cases which have been discharged since the end of 1891 or are still under treatment. This brings the total number of cases for consideration up to 59.

In the year 1889 there were 11 cases of pelvic peritonitis and 7 of pelvic cellulitis; also of 10 cases of pelvic abscess 4 were cellulitic.

In the year 1891 there were 12 cases of pelvic cellulitis and 9 of pelvic peritonitis. Among the cases of pelvic peritonitis those in which salpingitis was present are not included. Pelvic cellulitis appears, then, to be equally common with simple and uncomplicated pelvic peritonitis.

The average age of the 59 patients whose cases we have for consideration was 29·4, the youngest being 18, the oldest 49.

As to each quinquennial period—

5	patients	were	between	15—20 years old.
14	„	„	20—25	„
15	„	„	25—30	„
10	„	„	30—35	„
5	„	„	35—40	„
8	„	„	40—45	„
2	„	„	45—50	„

The disease appears, then, to occur most commonly between the ages of 20 and 35.

Pelvic cellulitis may be variously classified, 1st, into puerperal and non-puerperal. Of 59 cases 37 were certainly puerperal; of these 3 followed miscarriages: 4 others may have been of the puerperal variety, and of these 1 followed a miscarriage.

Freund states that the non-puerperal variety is not very rare. Schroeder, on the other hand, though he admits its existence, considers it as occurring with great rarity. However, if we assume that the four doubtful cases were of the puerperal variety, 18 non-puerperal cases still remain, or in other words about 30 per cent. According to Galabin puerperal cellulitis affects more frequently the left side, and this is correlated with the position of the occiput of the child and of the fundus uteri of the mother in labour, the occiput lying more frequently on the left side, and the fundus being inclined to the right.

Of 41 puerperal cases the left side was chiefly or solely affected in 20 cases, the right in 11 cases; in 4 cases both sides were affected. With reference to the remaining 6 the evidence is not clear.

In 13 cases the patients were primiparæ, in 28 multiparæ; of these latter—

3	had borne	1	child.	1	had borne	5	children.	1	had borne	9	children.
6	„	2	children.	2	„	6	„	1	„	10	„
6	„	3	„	2	„	7	„	1	„	11	„
3	„	4	„	1	„	8	„	1	„	12	„

The average number of children for each multipara was 4·5, and 15 had borne fewer than four children. The liability to cellulitis in multiparæ does not therefore appear to increase proportionally to the number of children borne.

Secondly, cases of cellulitis may be classified according to the seat of the inflammation, in two groups: (1) comprising those in which the tissue of the broad ligaments is affected; and (2) comprising those in which the lesion is situated in the lower region, *i. e.* at the base of the broad ligaments. The latter may further be subdivided into lateral (*α*) anterior, *i. e* in the tissue between the uterus and bladder, and (*β*) posterior, *i. e.* in the tissue between the rectum and vagina, around Douglas's pouch or below it, or in the utero-sacral ligaments. To cellulitis occurring in the situation last mentioned the name "parametritis posterior" was given by Schultze, but according to Hart and Barbour it is better to speak of it as utero-sacral cellulitis.

The relative frequency of these varieties will now be briefly discussed. Cellulitis in the broad ligament is, according to Delbet, far less frequent than inflammation of the tissue in the lower region; but in 29 out of 59 cases I have found distinct evidence, on analysing the notes of these cases, that the broad ligaments were affected, and that in 14 cases they were affected alone. It has either been definitely stated in the notes that the broad ligaments were affected, or signs have been present regarded by Delbet as diagnostic of this variety. In 4 cases the inflammation of the tissue in the broad ligaments has been demonstrated by laparotomy. Galabin, it may be noted, states that inflammation occurs here in the majority of cases.

With regard to the second variety, *i. e.* cellulitis in the lower region, in 8 cases there was lateral exudation only; in 6 cases lateral exudation was associated with cellulitis in the broad ligaments, but in one of these the association was doubtful; in 2 cases exudation around the cervix was associated with cellulitis in the broad ligaments, and in one of these there was also exudation between the rectum and vagina; in 1 case exudation around the cervix was the sole lesion; in 5 cases there was posterior and lateral exudation; in 1 case the exudation was situated posteriorly, but in the same case, on readmission, anterior and lateral cellulitis was found; in 2 cases it was posterior, being in one of these around the anterior aspect of the rectum; in 1 it was posterior and in the broad ligaments; in 1 poste-

rior and lateral and in the broad ligament; in 1 anterior and in the broad ligament; in 2 anterior and lateral and in the broad ligament; in 1 anterior, lateral, and posterior, in the tissue between the vagina and rectum; in 2 cases the utero-sacral ligaments were affected, and there was also lateral exudation; in 2 the utero-sacral ligaments and the broad ligaments were affected; in 2, in addition to the affection of the utero-sacral and broad ligaments, there was also lateral exudation in the lower region; in 2 cases the exact locality of the lesion was doubtful. Thus we have 37 cases in which there was cellulitis in the lower region, in 15 of these there was undoubtedly also implication of the broad ligaments; there remain, then, 22 cases in which the tissue of the lower region was alone affected.

With respect to the pathological anatomy of pelvic cellulitis, there occurs, as in cellulitis elsewhere, an inflammatory exudation of coagulable lymph from the vessels of the affected area; this takes place primarily in the neighbourhood of the upper part of the vagina, of the cervix or body of the uterus. It may be entirely absorbed or nearly so; on the other hand, suppuration may occur, but extensive sloughing is extremely rare (Galabin), and gangrene also occurs very seldom (Lewers). I shall here pass over such cases as the last, and also those in which suppuration occurs with extreme rapidity, and which come quickly to a fatal termination; death, indeed, may occur in them even before suppuration has had time to take place.

These will not be further alluded to, partly because I believe that in such cellulitis plays an unimportant part, infective septicæmia being the main element; but chiefly because I have not any cases of the kind to bring forward.

If suppuration occur and an abscess be formed, its walls are usually thick and cartilaginous on section, but they may be thin. If it be situated in the broad ligament there is usually only one large cavity; if it be located in the lower region it may be traversed by large branches of vessels—the vesical and vaginal tributaries of the internal iliac artery and vein. The more important of König's results will now be described. He found (1) that water injected between the layers of the broad ligament high up, anterior to

the ovary, travelled first into the tissue lying at the highest part of the side wall of the true pelvis, then into the tissue of the iliac fossa raising the peritoneum, and along the psoas, passing but slightly into the hollow of the bone; lastly it separated the peritoneum from the anterior abdominal wall some little way above Poupart's ligament and from the true pelvis below it; (2) that injections made beneath the base of the broad ligament, to the side of and anteriorly to the isthmus, filled first the deep lateral tissue, then raised the peritoneum from the anterior part of the cervix; the separation then extended to the tissue near the bladder, and finally along the round ligament to the inguinal ring; it then separated the peritoneum along the line of Poupart's ligament, finally passing into the iliac fossa; (3) injections made at the posterior part of the base of the broad ligament filled the corresponding tissue around Douglas's pouch, and then passed as in the first case.

In 36 cases of non-suppurative cellulitis extension into the iliac fossa occurred in 6, and in 1 other to the tissue around the psoas. In 2 of these cases the inflammation occupied the lower region, in 1 the upper. In 1 case the swelling felt extended three inches from the symphysis pubis and two and a half inches from the middle of Poupart's ligament.

In cases of abscess the fluid tends to follow the course of blood-vessels. The course of nearly all forms of cellulitis can, according to Delbet, be reproduced by injections, but the lumbar prolongations are reproduced with difficulty and the inguinal not at all. According to him, the process is not merely mechanical, and the lymphatics play an important part. According to Lewers the course of purulent collections is a mechanical matter.

The pus in unopened abscesses is usually laudable, but it may be fœtid; this was so in 2 cases out of 23 in which suppuration occurred, and possibly this is due to osmosis from the alimentary canal. Gas may, it is said, be formed in an unopened abscess.

The iliac vessels may be bathed in pus, and 1 case of ulceration of the internal iliac artery is recorded. The vein may be involved by suppuration from without. Mégrat also, according to Delbet, records a case of ulceration of the uterine

artery. The iliacus muscle may be infiltrated by the purulent fluid, as appears to have been the case in one patient recently treated in St. Thomas's Hospital.

Cellulitic abscesses in the lower region may, according to Delbet, extend in various directions:

(1) Towards the rectum, with which the sacro-recto-genital aponeurosis has intimate relations.

(2) Towards the vagina, along the vaginal vessels.

(3) Towards the bladder, along the inferior vesical vessels.

The pus may be spontaneously evacuated into these viscera. It is doubtful whether the abscess opens with greater frequency in the vagina or rectum; discharge into the bladder is certainly less common than into either of the foregoing viscera.

In 3 of 23 cases vaginal opening is recorded: in 2 of these only was the evidence definite; in 1 case an opening was felt which was enlarged, and in this the abscess was said to have been situated in the broad ligament.

One patient had pyuria, and her urine was alkaline, before an abdominal incision was made into the abscess; possibly here the abscess had opened into the bladder.

In 4 cases, opening into the rectum may have occurred, but of these 2 only were authenticated. In 1 case the upper region appears to have been the seat of inflammation. Further, the pus may leave the pelvis (i) by the sciatic notch, but this seldom occurs, owing to the filling up of the notch by bundles of fibrous tissue; (ii) by the obturator notch, passing along the obturator vessels—this is, however, very rare, only 2 cases being recorded; (iii) it may pierce the superior perinæal fascia and thus reach the ischio-rectal fossa; it may mount along the internal iliac vessels, and so reach the iliac fossa; then it may pass with the vessels under Poupart's ligament, rarely occupying the psoas sheath. Of this, which is called the anterior crural prolongation, I have seen one case. Having mounted up along the vessels it may reach the anterior abdominal wall, and form a swelling here. It may also invade the pre-vesical cavity and send a prolongation along Poupart's ligament without attaining the iliac fossa, and this course has been reproduced by Delbet using gelatine injections. Having invaded the pre-vesical cavity, it may reach the umbilicus. Retro-uterine cellulitis

does not exist, but the vesico-uterine tissue may be the primary seat of suppuration.

Abscesses in the broad ligament tend, as a rule (according to Delbet), to reach the iliac fossa, passing along the suspensory ligament of the ovary (infundibulo-pelvic ligament) and the ovarian vessels. A tumour may thus be formed, being independent of the abdominal wall, and thence extension may occur towards the lumbar region. In 2 cases I have notes of prolongation in this direction, but in 1 it is doubtful whether suppuration occurred, the only evidence being a history of discharge *per rectum*.

In 2 cases also the abscess reached the iliac fossa without approaching the abdominal wall.

Abscesses in the broad ligament may also reach the abdominal wall raising the peritoneum along Poupart's ligament, or very rarely they may pass along the round ligament and form a swelling which points at the external abdominal ring.

Lewers records 2 cases of abscesses pointing in the labium majus, but certainly one of these occupied the lower region, and this course corresponds to König's results.

In other cases which are very rare the abscess has discharged itself into the uterus (6 cases), into the colon (1 case), into the vagina, rectum, and duodenum (1 case), into the urethra (2 cases), into the peritoneal cavity (4 cases).

In 11 out of 23 cases the abscess pointed above Poupart's ligament, generally near the middle. In one of these an incision two inches in depth had to be made before pus was reached ; in another it was only found after abdominal section that the suppuration had occurred in the broad ligament, and on making an incision above Poupart's ligament the peritoneal cavity was opened. Fortunately this is a very rare event ; usually the peritoneum is raised by the extension of the fluid well above the level of Poupart's ligament ; in one other case the peritoneum was not raised at first, although there was a mass in the iliac fossa, but the usual elevation occurred later on increase of the swelling.

In one case the abscess was anterior to the bladder, occupying probably the pre-vesical cavity, and was traversed by fibrous bands.

Though usually pointing near the middle of Poupart's

ligament, the abscess may do so near the anterior superior spine of the ilium. This occurred in 1 case.

Lastly, in 1 case there was pointing in the situation of the internal abdominal ring, suppuration having occurred in the lower region.

According to Bandl, cellulitis in the broad ligament can spread into the iliac fossa, disappearing in the broad ligament while it develops in the latter situation. I have seen 2 cases of this kind ; in one I believe the broad ligament was not at any time thought to be affected—that is, there were no physical signs of exudation there ; in the other the broad ligament was affected early, and later became free.

The peritoneum in the neighbourhood of an abscess in the cellular tissue may, according to Delbet, remain quite or nearly quite healthy.

In 1 case in which laparotomy was performed the right tube, ovary, vermiform appendix, and broad ligament were all adherent. The abscess was situated in the broad ligament. The tube, ovary, and appendix appeared inflamed only on their peritoneal surfaces. In another case, in which there appears to have been suppuration in the cellular tissue anterior to the bladder, peritonitis was also manifested, on abdominal section being performed, by extensive adhesions.

In 2 other cases a swelling was felt in Douglas's pouch, which in one case was thought to be omental. In 5 cases in which suppuration did not occur there appears to have been some associated peritonitis. In 2 cases cellulitis masked disease (1) of the tube in one case, in which no operation was performed, (2) of the ovary in another, in which a suppurating ovarian cyst was removed.

Suppuration occurs more frequently in puerperal than in non-puerperal cases. Of 41 puerperal cases suppuration occurred in 17 ; in one of these, however, it is very doubtful whether pus was formed. Of 18 non-puerperal cases 6 were cases of suppuration, but only 3 were undoubtedly such, and in 1 other case the abscess may have been peritonitic. Thus in only 2 out of 18 non-puerperal cases did suppuration certainly occur.

The proportion of suppurative puerperal cases, 40 per cent., is somewhat lower than that given by Galabin, who

states that it is estimated that in 50 per cent. of puerperal cases abscess occurs, but he further remarks that this percentage is probably too high.

Inflammation of the pelvic cellular tissue is almost always caused by micro-organisms. The only exceptions are those cases in which it is secondary to some other pelvic lesion, for example, perisalpingitis or carcinoma. But in these cases too the inflammation may be septic in origin.

As to the primary cause of pelvic cellulitis there is now universal agreement among gynæcologists, but opinions differ as to the mode in which the microbe reaches the cellular tissue from the vagina, uterus, or tubes. Some have thought the route is by way of the veins, others that it is by way of the lymphatics, and others believe that direct propagation takes place. There is abundant evidence that the lymphatic tissues are very frequently affected in cellulitis, derived both from clinical observations and those made at autopsies. Auger in 1876 proposed to call inflammation of the pelvic cellular tissue "periuterine lymphadenitis," believing that it was always due to inflammation of lymphatic vessels and glands.

According to Delbet phlebitis is present only in cases of diffuse purulent inflammation occurring with great rapidity, —cases, that is, of puerperal fever.

In most cases he says there is seen an inflammation of the uterine mucous membrane in one part, and in another inflammation of the cellular tissue, the parts between being healthy. From these considerations he concludes that it is by the lymphatics microbes travel. There are various conditions which determine the development of cellulitis, and these arise most readily during the puerperal period. At this time, in addition to the imperfectly healed placental site, there may be abrasions and lacerations of the uterine or vaginal mucous membrane, lacerations extending perhaps deeply to the cellular tissue which, too, may have been contused by the passage of the child or the use of instruments. With regard to lesions of the vagina, the lymphatics of this canal empty themselves partly at any rate into the pelvic glands.

Beigel gives five cases in which rupture of the perinæum

was followed by cellulitis in the broad ligament; but Delbet suggests that in these other associated circumstances may have been present, more readily explaining the cellulitis, meaning, presumably, lesions in the uterus or vagina. Also in the puerperal period other favouring circumstances are the impoverished condition of the patient's blood and general feeble nutrition, in which the leucocytes and connective-tissue cells are involved, so that they are not able adequately to perform their function of resisting the invasion of microbes.

Further, in the puerperal period it is difficult to maintain strict antiseptic precautions. In one case confined in the York Road Hospital, the perinæum being lacerated, cellulitis occurred, but there is little doubt that in this case it was attempted to maintain strict asepsis.

The puerperal cases are 41 in number. Assuming that the doubtful cases were puerperal in origin, 4 of these followed miscarriages, including one doubtful case, and in one of these the membranes were retained.

In 2 cases laceration of the cervix is recorded, and in one of these instruments had been used, and the perinæum was ruptured. In another case of probable cervical laceration there was also an adherent placenta, which was removed by hand.

In 3 cases rupture of the perinæum is alone recorded; in 5 cases the placenta was removed by the hand, and in one other the patient said the midwife "hurried" her. In the one case in which a Barnes' bag appears to have been used by the medical attendant the nurse later removed the placenta. In one case there was a laceration inside the vulva and a ruptured perinæum; and in 1 a yellow discharge and burning micturition 14 days after confinement, and peritonitis arising later suggest gonorrhœa.

There does not seem to be in these cases any definite relation between the supposed seat of the lesion and that of the resulting cellulitis. One would expect removal of the placenta by a septic hand to be followed by cellulitis in the broad ligament, and lacerations of the cervix to be succeeded by cellulitis in the lower region.

Other determining causes mentioned by Galabin as ope-

rating in the puerperium are emotion and premature exertion after labour.

With regard to non-puerperal cellulitis it may be said that uterine inflammation is not seldom a determining cause, as is probably also the case in puerperal cellulitis. 4 cases (2 non-puerperal,[1] 2 puerperal) had menorrhagic discharge, which may be taken as indicating endometritis, and all endometritis is septic according to Péraire. In 1 puerperal case also septic intoxication was present, with an offensive lochial discharge, indicating the existence of septic endometritis.

In 2 cases cold during menstruation appears to have been the determining cause. Hart and Barbour state that this acts far more frequently as a cause of peritonitis.

In 2 cases the inflammation may have been secondary to new growth. In one of these there was cervical ulceration which was either malignant or syphilitic in character, its nature not being definitely determined; and in another, uterine myomata were present. Also in a case which I examined microscopically, and which was pronounced to be infiltration of a fibroid tumour of the body of the uterus by carcinomatous growth, there was on the right side a tense band extending outwards from the uterus, felt easily on abdominal palpation, and probably, therefore, the right broad ligament; possibly there may have been cellulitis in this case.

In 2 cases the inflammation appeared to be secondary to uterine displacement; in 1 of these the uterus was retroverted and retroflexed, in the other there was prolapse, the cervix being only just inside the vulva. Possibly in the latter case uterine inflammation was really the determining cause; indeed, it may have been so in the former. Injury is perhaps another determining cause. One patient, a girl æt. 18, had received a blow in the pelvis just after menstruation had ceased, and this was followed by the onset of cellulitis with sudden pain on the next day; ten days after this some vaginal discharge was noticed. This, together with the fact that the hymen was ruptured and the vagina

[1] One of these had suffered from menorrhagia for two years. Her last child had been born seven years before admission, and an old laceration of the cervix was the only recorded symptom suggesting that the case was puerperal in origin.

large, led to the suspicion that gonorrhœal or other septic contamination might have occurred.

Another patient had taken a chill, followed in two days by a fall; since that time, fourteen years before her admission, she had had attacks of pain, the case being a very chronic one.

In one case cold and injury appear to have acted in combination. The patient, after a cold bath, went upstairs in light clothing, and two days afterwards was struck by a tramcar in the side. It is not stated whether she was menstruating at the time. This occurred about fourteen years before admission, and the patient was afterwards subject to attacks of pain, the case being an extremely chronic one. In another case cold alone was the alleged cause. In another case the patient became ill while attending a lady who was suffering from an offensive lochial discharge; she, the patient, had worn a cup and stem pessary for prolapse during twenty years, and while menstruating introduced this, her finger having meanwhile become sore and having festered. Dr. Cullingworth[1] quotes this as an instance of the septic origin of cellulitis. In this connection it may be mentioned that 3 cases are recorded by Valleix as occurring after the use of intra-uterine pessaries. Operations on the uterus in which antisepsis fails, or is not attempted, also require mention.

Guérin records 2 cases, Trousseau 1, and Chantemesse 1, in which the patient, suspecting she was pregnant, which she was not, attempted to procure abortion by mechanical means.

Lewers records an interesting case in which the cervix was incised posteriorly with the galvano-cautery; probably the slough thus caused could not be kept aseptic, and so cellulitis resulted. He compares cellulitis to whitlow: if a finger be cut with a clean knife there is no whitlow; if with a dirty one whitlow may result.

Dr. Cullingworth says that neither a clean sound nor a clean wound ever yet produced cellulitis.[2]

[1] Cullingworth on 'Differential Diagnosis of Pelvic Inflammations in the Female.'

[2] Cullingworth on 'Differential Diagnosis, &c.'

In one case cellulitis appears to have followed in the course of two days treatment of cervical erosions with iodised phenol, but the patient had been confined about three months previously and the perinæum lacerated. This has been classed among the puerperal cases. In another case classed among the non-puerperal cases I have found since that the patient had had some pain and tendency to hæmorrhage since confinement, which occurred one year and eight months before admission, and that she had an old cervical laceration.

Gonorrhœal inflammation of the mucous membrane of the genital canal may perhaps prepare the way for other micro-organisms, but the gonococcus does not penetrate beyond the epithelial cells. The *Streptococcus pyogenes* has, according to Widal, alone the power of infiltrating the uterine walls. One puerperal case in which gonorrhœa was suggested has been mentioned. In another case (non-puerperal) the inflammation may have been secondary to a supposed villous growth at or near the junction of the vagina and cervix, or it may have been gonorrhœal, for she had had a yellow discharge with burning micturition continuing intermittently for two years. In another case exposure to wet on leaving St. Thomas's Hospital, where the patient had been treated for suppurative mastitis, was followed by cellulitis. This patient had had a yellow discharge from the vagina two months before labour, but no trouble with micturition at that time. Also in a case mentioned before, in which the uterus was retroflexed and retroverted, a yellow discharge is recorded. On this point I have no certain evidence.

It is worthy of note that the same causes may operate both in puerperal and non-puerperal women. There is no essential difference between puerperal and non-puerperal cellulitis, all that is required being a way by which microbes can enter and conditions allowing their development.

Finally tubercle and syphilis require mention as possible causes of cellulitis. In one case of tubercular peritonitis, under Dr. Cullingworth, there was found post mortem an abscess in the left broad ligament, probably tubercular. Fenger and Byford also record cases.

With regard to syphilitic inflammation I have already alluded to a case in which cellulitis occurred coincidently with or secondarily to possible specific ulceration of the cervix. Delbet states that while primary buboes which do not suppurate have been found in the pelvic cellular tissue, gummatous adenitis is unknown.

It is doubtful whether salpingitis can determine secondary cellulitis in the broad ligament. In one case of salpingitis I have found the existence of cellulitis in the broad ligament noted in the course of abdominal section. In another case, treated in 1891 for cellulitis in the left broad ligament, and readmitted, abdominal section was performed early in the present year. A suppurating ovarian cyst was found on the left side with thickening of the broad ligament, the tube being normal, though embedded in the cyst wall. Such cases as this are, according to Delbet, due probably to coincident infection by way of the lymphatics.

The symptoms and signs of cellulitis will now be discussed. Cellulitis may be acute or chronic, but most frequently it is of the former variety. The onset is usually acute ; this was so in 20 cases out of 32 tabulated with a view to comparison of the symptoms, and in these there was no recognised affection of the peritoneum.

Pain is present at one time or another, and usually at the onset—only in 1 case out of 59 was there no pain. This patient appeared to have had pain only on attempting to bend the leg, which is explained by the fact that she had an abscess which opened in the left groin and sent an anterior crural prolongation into the thigh.

Dr. Galabin remarks that the onset is acute in the great majority of cases, and that pain generally depends on implication of the peritoneum. But the pelvic cellular tissue is abundantly supplied with nerves from the inferior hypogastric plexus of the sympathetic or pelvic plexus, one on either side, and the broad ligaments are traversed by branches from the lateral fasciculi which are formed by the division into two parts of the hypogastric plexus, and descend into the pelvis to form the inferior hypogastric or pelvic plexuses : some of the sacral nerves, mainly the third and fourth, also send branches into both upper and lower regions.

These nervous twigs are liable to compression by the hard cellulitic exudation, and also the inflammatory process may extend to their sheaths, producing perineuritis.[1]

A priori, then, one would expect to find pain a prominent symptom in pelvic cellulitis. It may, however, be entirely absent, and certainly patients when in hospital do not seem to suffer much pain when at rest.

The pain which usually accompanies the onset is often severe, and may compel the patient to take to her bed, if she is not there already. It is situated in the lower part of the abdomen, usually in one or other iliac fossa, and sometimes also in the lumbar region. It may be constant or intermittent; not infrequently it is shooting in character, and it may radiate down the lower extremity of the same side. This radiation occurred in about one fourth of the 32 cases tabulated; and in one case, owing to this symptom, the patient was treated for sciatica.

The pain is said to be less acute, more dull, and deeper than in peritonitis, and it is stated not to radiate, especially at the onset, down the lower extremity to the same extent.

In one case of cellulitis pain at the onset was present near the umbilicus; in this case (the lower region being affected) it was severe at first, then intermittent and less severe, though present on passing motions, the bowels having to be relieved by enemata and purgatives; in one case it was most marked in the hip.

Though present generally at the onset, pain may not come on until later. Sometimes this symptom occurring at the onset is accompanied by vomiting, but this is not so frequent as in peritonitis, nor is it of the same "pumping" character. Vomiting unaccompanied by nausea occurs also in the latter disease.

After the onset the pain may ameliorate or even disappear for a time, returning again later. It may be paroxysmal, and recurrent at intervals, like that of chronic pelvic peritonitis; usually it is markedly diminished by rest and poultices.

According to Galabin a rigor frequently occurs at the onset.

[1] v. Zeigler, 'Pathological Anatomy.'

The date of onset is in puerperal cases most usually the second, third, or fourth day. In 2 cases the first day ushered in the disease. In 1 case symptoms began fourteen days after labour; in 1 one month, following a chill, and in 1 seven weeks after labour, but in this last case there had been general weakness and apparent loss of flesh.

Olshausen denies utterly the late onset of puerperal cellulitis. He says that if the patient be closely questioned it is found that she has had symptoms between the second and fifth day, *e. g.* shivering and abdominal pain, which have disappeared, and have not prevented her from getting up on the ninth day.

Delbet says that if this be true (and he admits that it usually is so), then in more than half the cases the onset is insidious. As an instance of insidious onset a case may be quoted in which the patient had some pain in the back and irregularity of menstruation after her last labour, which had occurred thirteen months before admission. Six weeks before admission she had hæmorrhage, pain in the back and abdomen, and vomiting. In this case the pain in the back and irregular menstruation might, perhaps, be taken as indicating uterine inflammation, which had originated a cellulitis manifested by the acute onset of symptoms six weeks before admission, the hæmorrhage which then occurred being symptomatic of the uterine inflammation.

Certainly in by far the greater number of puerperal cases, which amounted to 21 out of 32, the onset was acute and early.

Next to pain the most important symptom is fever. One has not often the opportunity of observing the temperature at the onset, as patients do not, as a rule, come under observation, at any rate in hospital cases, with the exception of those which occur in lying-in hospitals, until a later period.

In one case confined in York Road Hospital the temperature at childbirth was 100°, on the sixth day it was 100·8, on the eighth 101·4,° and later 103·2; on the tenth the evening temperature was 104°. It may remain within normal limits throughout. Thus in one acute case it was never above 99·2°, and in this suppuration occurred; in no other acute case have I found the temperature normal throughout. It was so in 2 out of 5 chronic cases, those

cases not being included as chronic which, acute at first, become chronic later; nor those puerperal cases in which the onset is late, and which, if Olshausen's views be adopted, might be regarded as chronic.

Of 32 cases 26 were acute in onset, 1 is doubtful. Of the 26 acute cases 18 followed labour, 2 followed miscarriages, and 6 were non-puerperal.

Abscess has before been shown to be more frequent in puerperal than in non-puerperal cases, and it is so where the disease is acute, which is the case in by far the greater number of puerperal patients suffering from cellulitis. Of 5 chronic cases suppuration occurred in 1 only.

Flexion of the lower extremity, or pain on straightening, or inability to straighten, or stiffness of the thigh, occurred in 8 cases, associated in 3 cases with pain in the thigh, leg, or hip.

In 1 alone out of the 8 cases does the exudation appear to have been confined to the lower region. This symptom is said to occur only when the psoas is affected. In 1 of these 8 cases œdema of the lower extremity occurred; in this case there was an anterior crural prolongation, and in another œdema of the leg occurred, but there was nothing abnormal described in the iliac fossa or in the broad ligament.

In 4 cases diarrhœa occurred; in all of these except 1 the broad ligament appears to have been affected alone. This appears to show that in these cases the diarrhœa was not dependent on mechanical interference with the rectum. In 4 cases constipation was present; in 1 of these there was utero-sacral cellulitis, and in 2 others the lower region was affected; in 1 case dysenteric diarrhœa was also present; in another mucus was noticed once in the stools, and defæcation was difficult, and, it was said, impossible for a time. In 4 other cases defæcation was difficult or painful, there being in 1 of these a constant desire for stool, but defæcation relieved the pain; in 3 of these cases there was exudation in the lower region.

Trouble with micturition was also a symptom in 3 of these cases, 1 requiring the catheter frequently, and also in 4 others, in 3 of which the lower region was affected.

Albuminuria was present in 4 out of 21 cases in which

the condition of the urine was recorded; in 2 out of 26 cases of pelvic peritonitis albumen was present in the urine. Albuminuria seems, then, rather more common in cellulitis. Matthews Duncan found albumen in 6 out of 16 cases of cellulitis, and in 32 cases of peritonitis it was absent from the urine.

Anorexia may be present; often there is considerable weakness; another occasional symptom is headache. The tongue may be furred or dry. In 1 case (puerperal) a fit was said to have occurred at the onset, in another the patient asserted that she was delirious for one week, the delirium commencing two days after the onset, which had taken place on the third day.

Amenorrhœa may occur, or more frequently irregularity of menstruation, and there may be dysmenorrhœa. Hæmorrhage from the uterus may also occur; in one case possibly it ushered in the attack of cellulitis. Probably these symptoms are connected with the uterine inflammation which may be the determining cause.

Also the lochia may be offensive or scanty, or they may continue beyond the normal time; this probably has more relation with uterine inflammation, coincident with or preceding cellulitis.

The pulse usually is not very rapid, it may be 120—130. In one case in which suppuration did not occur it was very feeble and 140 at one time, but sank later to 84. In another it was 150. Suppuration occurred in the latter of these.

Usually, according to Delbet, the beats are clear and well marked; a thready, very rapid pulse ought to raise a suspicion of peritonitis.

The patient lies, according to Delbet, on the sound side; in one case of abscess this was so. According to Macnaughten Jones the reverse is more frequently the case, and in two cases the decubitus was towards the affected side.

It is noteworthy that in chronic cases pain, fever, and even local symptoms may fail utterly. There may be only general malaise, and local symptoms may be very slight, and may require careful investigation. In these cases pain radiating into the thigh and inability to completely extend it are, according to Delbet, important symptoms.

The patients are usually thin, emaciated, pallid, and anæmic in aspect, with perhaps an anxious look, but they do not present the pinched, anxious facial expression of peritonitis. The aspect is recorded in 26 cases; 2 are described as healthy, 1 as well-nourished, 1 as florid, and 1 as healthy and high-coloured; but the rest are anæmic, emaciated, thin, very thin, pale, very pale, sallow, with dark lines under the eyes, anxious, very anæmic, wasted; these expressions being in some cases combined in the description.

According to Galabin thrombosis of veins is a common result of inflammation of the cellular tissue round them, and here there is danger of embolism.

Phlegmasia alba dolens may, he says, be the signal of cellulitis, whether puerperal or non-puerperal. Lewers says it is common in the leg of the same side. He also states that acute inflammation of the knee-joint, on the same side or on the opposite, may occur, and that the fluid may be serous or purulent. Possibly in such a case the effusion is a symptom of pyæmic infection.

The abdomen is not usually distended, but is generally flaccid; it may, however, be rigid, even extremely so, as it was in one case. As a rule marked resistance is felt only in one iliac fossa. Often there is tenderness here, but only on deep palpation; the board-like resistance and extreme superficial tenderness of peritonitis are absent. The swelling in the acute cases is said to be recognisable early, but this is not always so. In one puerperal case, in which there was also septic intoxication, the patient being very ill, with at one time a temperature exceeding 105° F. and a pulse of 150, the most marked symptoms were pain in the left hip, thigh, and knee. Nine days after the onset of symptoms it is noted that no sign of cellulitis was present. A little later some transient hardness and thickening in the left broad ligament were evident, extending from a cervical laceration; about a fortnight after the onset, deep fluctuation being felt in the left buttock, an incision was made here, and an aspirating needle thrust in deeply, but without result. About one week later thickening above Poupart's ligament was noticed, tenderness having been present here one week before. Nearly one month after the commencement of the

illness a lump was observed in the left iliac fossa, but the uterus and cervix were fairly moveable, the exudation having apparently disappeared in the neighbourhood of the uterus and developed more externally. Two days before this there had been lameness. Two or three days later it is stated that she could not straighten the leg without pain. About six weeks after the onset the inflammatory thickening felt on deep palpation over the outer part of Poupart's ligament had increased, and there was an ill-defined sense of fluctuation; an incision was made two inches in length parallel to Poupart's ligament. Hardened inflammatory tissue was exposed, the parts beneath being elastic and semi-fluctuating; the incision was now deepened to one and a half inches; the needle of a hypodermic syringe was introduced in vain, and only on plunging in a trocar and cannula did one drop of pus exude and confirm the suspicions entertained for some time with regard to the existence of deep suppuration. Cases like this are certainly rare, but it shows how indefinite the physical signs may be.

The various positions occupied by the inflammatory exudation have been already described. On making a vaginal examination we may in the first place find the vagina hot, and marked arterial pulsation may be felt, but these signs are not peculiar to cellulitis.

According to Delbet we can in four or five days' time recognise definite physical signs; by this time also the exudation will probably have become consolidated, and will present its typical consistency—it is hard and almost stony; so much so that on introducing the finger into the vagina one is inclined at first, when there is exudation between the vagina and rectum, to mistake the exudation for the sacrum; but rectal examination shows that the mass felt is anterior and not posterior to the gut: usually the tumour is smooth on the surface.

In cases when the effusion is in the lower region, one or both, usually one lateral fornix is depressed, it may be obliterated, the cervix being on that side apparently continuous with the vagina. The mucous membrane of the vagina is often, according to Delbet, immoveable as regards the tumour, and the examining finger soon gives pain.

The posterior fornix may also be found bulged by exudation, on examination *per rectum;* this may be surrounded by a collar or crescent, and its calibre may be narrowed—between the finger in the vagina and that in the rectum the downward extent of the exudation can be estimated. There appears to be, *primâ facie,* no reason why a cellulitic deposit should not be limited to the tissue between the vagina and rectum ; and if so, it might be difficult to distinguish between exudation here, and an intra-peritoneal swelling occupying Douglas's pouch, but in cellulitis the tumour would descend lower than in peritonitis.[1] I have no record of a case of this kind.

The tumour in cellulitis is part of the uterus, and is felt to be so bimanually. Between it and the cervix there is, according to Delbet, no groove felt as is the case in tubal swellings; and further if there be, as there usually is, a lateral exudation, the tumour is lateral, and not retro-lateral, as it would be if the appendages were the seat of inflammation.

The uterus is not always absolutely immobile in cellulitis, but the cervix may be completely surrounded and fixed by consolidated exudation. Externally it reaches the pelvic wall, to which it is adherent and fixed.

On rectal exploration the utero-sacral ligaments, one or both, may be felt tense or thickened. The two sides should, however, be carefully compared, and it must not be forgotten that these bands can be felt in normal cases.

Depression of the posterior fornix alone is almost pathognomonic of peritonitis.

As to the special signs of exudation confined to the upper region, it is, according to Delbet, easily felt on abdominal palpation, but in order to feel the tumour from the vagina it is necessary to make a bimanual examination, and to depress it with the external hand. There is no depression of the fornices, and the mucous membrane slides easily over the tumour.

In cases where both regions—that of the broad ligament and that of the tissue at its base—are affected, the signs are variously commingled.

When the iliac fossa is invaded a swelling may be felt there.

In both varieties the tumour is continuous with the uterus,

[1] Galabin, ' Diseases of Women.'

as has been said. In the case of exudation in the lower region the cervix is pushed towards the opposite side; if it be in the broad ligament the body of the uterus is pushed over to the opposite side, and the os externum tends to look towards the side of the swelling. Later, in consequence of suppuration, or even without the occurrence of this, the contraction of newly organised fibrous tissue may draw the corresponding part of the uterus over to the side of the swelling.

In utero-sacral cellulitis, according to Hart and Barbour, pathological anteflexion is said to follow, with dysmenorrhœa and sterility as its result.

The involvement of lymphatic glands in the inflammation has been alluded to: in one case several small lumps were felt in the left iliac region; possibly these were enlarged and inflamed glands.

It has been assumed until now that suppuration has not yet occurred. The pointing of an abscess is, according to Macnaughten Jones, often long, and I have quoted a case of this kind. Pus may, according to Delbet, form without being recognised, and escape by the rectum and bladder without being noticed: cases of doubtful evacuation *per rectum* have been alluded to.

Delbet states that if resolution appears to occur in an acute case when fever and pain have lasted four weeks, suppuration is nevertheless certain, and probably spontaneous opening into one of the viscera has passed unnoticed.

The temperature is not diagnostic; it may be very high without suppuration, and an evening rise and morning fall are, I believe, the rule; but daily oscillations with night sweats, progressive emaciation, aggravation of pain, and diarrhœa are, according to Delbet, important. Emaciation is, however, a fairly constant feature of the disease whether pus forms or not; diarrhœa is a symptom of greater import.

In four out of five cases in which this symptom was present, in one of these alternating with constipation, suppuration occurred. Pain may be absent in cases of abscess.

As a rule, when an abscess is formed it tends to point above the middle of Poupart's ligament. If, as is usually the case, the abdominal wall is involved, fluctuation may frequently be felt, generally localised and over a limited

area of the swelling, and there is often marked local tenderness. A hard brawny induration may be felt around the fluctuating spot, giving rise to a feeling like that of plaster of Paris. Hence the name "plastron" has been given to this condition. The skin may be reddened when the pus is approaching the surface. As a rule there is more or less dulness on percussion.

According to Lewers a feeling of bogginess is commoner than actual fluctuation; and König lays stress on the existence of small, painful, soft depressions, felt with the top of the finger.

The purulent fluid may become encapsuled, and being in minute quantity, may be surrounded by hard, thickened tissue. It is doubtful, according to Delbet, how long this condition may continue. He speaks of one case in which an abscess opened and closed alternately for four years, the general health being meanwhile good. When the abscess cavity filled paralysis of the left leg occurred. In this case there was first spontaneous discharge *per rectum*, later *per vaginam*, and again, after the second child born during the course of the illness, by the same channel.

In one case treated in St. Thomas's Hospital the patient was admitted in 1887 with an abscess discharging spontaneously *per vaginam*. The opening was enlarged. After remaining three months or so the patient left the ward, the discharge continuing. The diagnosis was "right parametritic abscess." In 1888, about six months afterwards, she was readmitted, having had meanwhile a yellowish vaginal discharge. She had then been ill four weeks, her symptoms being pain in the lower part of the abdomen, with nausea and vomiting after food, and occasionally slight metrorrhagia, and a swelling about the size of an egg had been noticed in the right inguinal region, and had increased. On admission there was a large swelling in the *left* lumbar, inguinal, and hypogastric regions, attached (on bimanual examination) to the uterus, which was fixed; the discharge continued, and there was some fever. After remaining in the hospital about two months or more she again went out, and was readmitted in November, 1888, the illness of which she then complained having lasted five months. Abdominal

section was performed, and an abscess cavity anterior (apparently) to the bladder opened. There were also extensive adhesions indicating peritonitis. The patient died in the following month.

With regard to the course of suppurative cellulitis after opening, the cases usually recover; in one the discharge had ceased after one week,—usually, however, it continues longer than this.

Of 59 cases 3 were fatal: one of these is the case just quoted; in another abdominal section had been performed, pus having previously been discharged *per rectum;* in the third the presence of pus had been demonstrated by the use of the needle of a hypodermic syringe, but unfortunately no operation was done, perhaps the condition of the patient contra-indicated this.

Unless suppuration occur there appears to be no danger to life. The prognosis is, therefore, very good in most cases in this respect, and even though an abscess has formed, it remains good if the pus be evacuated and free drainage afforded.

Cellulitis in the broad ligament may, it is said, compress the ureter in the second part of its course; in abscesses in the lower region the ureter may be involved in either lateral wall and undergo serious compression, owing to the contraction of the tissue forming the parietes of the abscess. Pyelo-nephritis and even uræmia are said to occur. Cicatricial bands may also surround the rectum and cause difficulty of defæcation, but total obstruction is said to be very rare. Displacements of the uterus, which are nearly always lateral, may result. In one of my cases only is it recorded that no trace of cellulitis remained; in this case there was an abscess anterior to the bladder.

In two others, however, the exudation disappeared with great rapidity, very slight traces remaining; in one of these cases suppuration certainly did not occur.

Most of the cases of cellulitis treated in St. Thomas's Hospital, though nearly always there are some traces of the disease in the way of physical signs on leaving, are not heard of again, unless the cellular inflammation has masked some tubal or ovarian disease. Presumably, then, the traces left disappear, or do not give rise to any noticeable symptoms.

Pelvic neuralgia may result, especially in neurotic persons, as in one case of old cellulitis in which also there was hysterical dysphagia. This patient complained of pain and tenderness in the left lateral fornix, which was pushed down and thickened by old inflammation, and she had also difficulty of micturition.

Freund describes a parametritis chronica atrophica in which atrophy of the pelvic organs may occur.

I had hoped to allude to diagnosis and treatment, but time will not admit. Some of the more important diagnostic points, as between cellulitis and peritonitis, have been briefly discussed in speaking of the symptoms and signs.

Lastly, I desire to acknowledge the valuable help I have derived in the preparation of this thesis from Dr. Cullingworth, who has kindly allowed me to use the notes of cases in Adelaide Ward, St. Thomas's Hospital; I am also much indebted to the writings of Delbet, Dr. Cullingworth, and other authorities on the subject of pelvic cellulitis.

MEDICAL REPORT.

1890.

By HECTOR W. G. MACKENZIE, M.A., M.D., F.R.C.P.,
MEDICAL REGISTRAR.

Table I.—*General Statement of Medical and Surgical Patients.*

	Males.	Females.	Total.
Number of patients in Hospital, Jan. 1st, 1890 ...	199	165	364
,, ,, ,, Dec. 31st, 1890 ...	200	148	348

,, ,, discharged or died during 1890:

	Males	Females.	Total.	Rate per cent.
Cured	1659	1046	2705	58·2
Relieved	550	642	1192	25·7
Unrelieved or other causes ...	95	142	237	5·1
Died	318	191	509	10·9
	2622	2021	4643	

Average number of days of each medical patient's stay in hospital—23·68.
,, ,, surgical ,, 29·5.
,, ,, ophthalmic ,, 22·7.

Table II.—*General Medical Statement.*

Number of Medical Beds[1]... 171

	Males.	Females.	Total.
Number of patients in Medical Wards, Jan. 1st, 1890 ...	76	73	149
,, ,, admitted during the year 1890 ...	1050	824	1874
Total	1126	897	2023
,, ,, in Medical Wards, Dec. 31st, 1890...	69	63	132
,, ,, treated to a termination during 1890	1057	834	1891

,, ,, discharged or died during 1890:

	Males.	Females.	Total.	Rate per cent.
Cured	529	388	917	48·49
Relieved	287	280	567	29·98
Unrelieved or other causes ...	22	26	48	2·53
Died	219	140	359	18·98
Total	1057	834	1891	

Average number of days of each patient's stay in hospital—23·68.

[1] This does not include 21 beds in Adelaide Ward, the statistics of which are given in the Report of the In-patient Department for Diseases of Women (p. 434).

Table III.—*General*

DISEASE.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
I. General Diseases.																				
Measles	17	8	9	14	3	...	...	...	...	...	...	7	3	4	2	1	...	...	...	...
Influenza	94	66	28	...	1	16	50	12	8	7	...	53	30	8	3	...	...	...	...	...
Varicella	2	1	1	1	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...
Scarlet fever	15	5	10	3	3	3	5	1	...	...	...	2	...	3	8	2	...	...	...	...
Enteric fever	69	44	25	3	8	26	26	5	...	1	...	8	3	8	31	19	...	...	...	...
Febricula	8	5	3	1	2	4	1	...	...	...	...	3	3	2	...	...	...	...	...	...
Fever of doubtful nature	3	1	2	1	...	2	...	...	...	...	...	...	1	2	...	...	...	...	...	...
Erysipelas	21	7	14	2	...	6	4	7	1	1	...	6	4	6	...	2	...	...	...	...
Pyæmia	2	1	1	...	...	...	1	...	1	...	...	2	...	...	...	...	...	...	...	...
Rickets	6	4	2	5	1	...	...	...	...	...	...	1	1	...	3	1	...	...	...	...
Diphtheria	92	50	42	61	26	1	4	...	...	...	...	38	16	23	11	3	1	...	...	...
Diphtheritic paralysis	3	3	...	2	...	...	...	...	1	...	...	...	2	...	...	1	...	...	...	...
Ague	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Pertussis	9	5	4	6	3	...	...	...	...	...	...	3	2	4	...	...	...	...	...	...
Syphilis	5	3	2	1	1	1	1	1	...	...	...	...	1	2	...	...	2	...	...	...
Acute rheumatism	89	47	42	..	10	38	31	5	3	2	...	5	24	41	17	2	...	...	...	...
Chronic articular rheumatism	9	3	6	...	...	...	...	2	3	1	3	1	1	2	5	...	...	...	...	...

Table of Diseases.

Cured.		Re-lieved.		Unre-lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
6	6	...	...	1	...	1	3	Of the fatal cases: there was broncho-pneumonia in 2; bronchitis and diphtheria in 1; rickets and pulmonary collapse in 1. Tracheotomy performed in 2 of these cases.
30	28	...	...	...	...	6	...	Of the fatal cases: pneumonia in 4; pneumonia and pericarditis in 1; congestion and œdema of lungs in 1 (see Special Abstracts). Pneumonia occurred in 6 of the cases which were cured. 3 house physicians, 2 house surgeons, 2 students, 8 nurses, 3 ward-maids were among those affected.
1	1	...	...	...	...	...	...	
3	9	...	...	...	1	2	...	1 house surgeon, 1 probationer. No P.M. in 1 fatal case. Abscess of thigh and tubercle of kidneys in 1.
30	21	...	...	...	...	14	4	Relapse in 4, of which 1 was fatal. Hæmorrhage from the bowels in 11, of which 7 were fatal. 1 case fatal from perforation. Diarrhœa a prominent symptom in 14 of the fatal cases. In 2 of the fatal cases no P.M.; in 4 of the remaining 16 fatal cases there were ulcers in the large as well as in the small intestine. Death occurred in 1 case from cardiac failure during convalescence.
5	3	...	...	...	...	...	...	
1	2	...	...	...	...	...	...	
7	13	...	...	...	...	...	1	In the fatal case extreme obesity. 18 facial, 3 of the leg.
...	...	...	...	...	...	1	1	Cause doubtful in both. For another case of pyæmia see under goitre.
...	...	4	1	...	1	...	...	Purpura in 1, bronchitis in 1.
24	23	...	...	...	...	26	19	Intubation performed in 32, of which 8 recovered and 24 died. In 10 of the cases tracheotomy was performed subsequent to the intubation, and all but 1 proved fatal. Tracheotomy alone was performed in 15 cases, 7 of which recovered. 9 of the fatal cases were of a very malignant type. In 4 of the cases scarlet fever developed; of these 3 recovered, 1 died. Paralytic symptoms in 12 of the non-fatal and in 10 of the fatal cases. Albuminuria in 13 of the non-fatal and in 12 of the fatal cases.
2	...	...	...	...	...	1	...	Pulmonary collapse in fatal case, in which there was paralysis of the diaphragm.
...	1	...	...	...	...	...	...	
...	3	5	...	...	...	...	1	In fatal case broncho-pneumonia and pleurisy.
2	1	...	1	...	...	1	...	Fatal case an infant with disease of bones of skull and broncho-pneumonia. 2 of the other cases also congenital.
46	41	...	...	...	...	1	1	53 were cases of 1st attack, 18 of 2nd, 5 of 3rd, 7 of 4th, 5 of 5th or later, and in 1 no history was obtained. In 37 there was mitral valvular disease, in 1 aortic, and in 2 affection of both valves. In 4 there was pericarditis. In 1 pneumonia developed, in 2 chorea. In 2 there was a transitory mitral murmur. There was no P.M. in the fatal cases, mitral disease in 1, pericarditis in 1.
...	...	3	6	...	...	...	...	

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	10–20	20–30	30–40	40–50	50–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
I. GENERAL DISEASES — *continued.*																				
Rheumatic nodules	1	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Rheumatic pains	4	2	2	...	...	2	1	1	...	...		1	1	...	2	...	...	...	...	...
Gout	4	4	...	...	..	...	1	1	2	...		...	1	1	1	1	...	...	...	...
Diabetes mellitus	10	7	3	...	...	1	5	1	3	...	..	4	2	...	2	2	...	...	...	...
Myxœdema	1	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Cretinism	1	...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Leucocythæmia	1	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Purpura	2	2	...	1	...	...	...	...	1	...	...	...	...	2	...	...	...	...	...	...
Anæmia	27	2	25	...	...	11	10	4	1	...	1	1	3	17	6	...	...	...	...	...
Pernicious anæmia	3	...	3	...	...	...	...	2	1	...	...	1	...	1	...	...	1	...	...	...
Lymphadenoma	3	2	1	...	...	...	...	2	1	...	...	...	1	1	...	1	...	...	...	...
General tuberculosis	3	2	1	3	...	...	...	...	...	...	...	1	...	1	...	1	...	...	...	...
Œdema	3	2	1	...	...	...	1	...	1	...	1	...	2	...	1	...	...	...	...	...
II. DISEASES OF THE SKIN.																				
Erythema	3	3	...	2	...	1	...	...	...	...	...	1	1	1	...	...	...	...	...	...
Erythema nodosum	4	1	3	...	...	1	2	1	...	...	...	...	3	1	...	...	...	...	...	...
Psoriasis	1	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...
Eczema	3	1	2	1	...	...	...	1	1	...	...	...	...	1	1	1	...	...	...	...
Lichen planus	1	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Pemphigus	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...
Herpes frontalis	1	..	1	...	..	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...
Cheiro-pompholyx	1	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Pityriasis rubra	2	...	2	...	...	...	...	...	...	...	2	...	...	...	1	1	...	...	...	...
Lupus	1	...	1	..	..	1	...	.	...	...	...	...	...	...	...	1	...	...	...	...
Phthirius inguinalis	1	1	...	...	...	1	...	...	...	..	...	1	...	...	...	...	...	...	...	...
III. DISEASES OF THE RESPIRATORY SYSTEM.																				
Laryngitis	8	6	2	2	...	1	2	2	...	1	...	3	4	...	1	...	...	...	...	...
Tubercular laryngitis	1	...	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...
Syphilitic laryngitis	1	...	1	..	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Malignant disease of larynx	2	1	1	...	...	...	...	...	..	2	...	...	1	...	...	1	...	...	...	...
Croup	3	1	2	3	...	...	...	...	...	...	..	2	1	...	...	...	...	...	...	...
Bronchitis	83	46	37	20	2	2	3	8	21	12	15	13	21	33	14	2	...	...	...	...
Asthma	7	3	4	...	...	1	4	1	1	...	...	2	4	1	...	...	...	...	...	...
Broncho-pneumonia	38	20	18	33	2	...	...	...	...	2	1	12	14	7	4	1	...	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	...	1	...	...	...	...	...	
2	2	...	...	...	...	...	...	
4	...	...	...	...	...	...	...	
...	...	5	1	...	...	2	2	Of the fatal cases, P.M. negative in 3, phthisis in 1.
...	...	...	1	...	...	...	...	
...	...	...	...	...	1	...	...	
...	...	1	...	...	...	...	...	
1	...	...	...	...	...	1	...	
...	10	2	14	...	1	...	...	Mental derangement in 1. 1 transferred to surgical side on account of hæmorrhoids.
...	...	...	1	...	...	...	2	No P.M. in 1.
...	...	2	1	...	...	...	...	
...	...	...	...	...	...	2	1	No P.M. in 1.
2	1	...	...	...	...	..	...	
3	...	...	...	...	...	...	...	2 after burns.
1	3	...	...	...	...	...	...	
...	...	1	...	...	...	...	...	
...	...	1	2	...	...	...	...	
...	1	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	
...	1	...	...	...	...	..	...	
...	...	...	2	...	...	...	...	
...	...	...	1	...	...	...	...	
1	...	...	...	...	...	...	...	
5	1	...	1	...	...	1	...	Fatal case probably septicæmic in origin, complicated with double pneumonia.
...	...	...	1	...	...	...	...	
...	...	...	1	...	...	...	...	
...	...	1	...	...	...	...	1	Tracheotomy performed in both cases.
1	2	...	...	...	...	...	...	
35	20	3	15	...	...	8	2	Of the fatal cases: no P.M. in 3; œdema of lungs in 2; emphysema in 2; 1 died from pneumonia after influenza contracted in the hospital. Aortic valvular disease in one of the non-fatal cases.
1	4	2	...	...	...	...	...	
11	14	...	...	1	...	8	4	Rickets in 2; pertussis in 1. Of the fatal cases: no P.M. in 4; cerebellar abscess in 1; cirrhosis of liver in 1.

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.							
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
III. DISEASES OF THE RESPIRATORY SYSTEM — *continued.*																			
Acute pneumonia	120	94	26	5	14	24	31	21	21	3	1	25	22	54	17	2	...	...	...
Chronic pneumonia	3	3	...	1	...	1	...	1	...	...	...	...	...	1	1	1	...	...	...
Phthisis	49	29	20	1	1	4	17	13	9	4	...	6	7	19	11	5	1	...	...
Hæmoptysis	5	4	1	...	...	...	2	3	...	...	...	1	1	2	...	1	...	...	...
Pleurodynia	3	2	1	...	...	...	1	1	1	...	...	...	1	2	...	...	...	...	...
Pleurisy	41	30	11	...	3	11	12	7	4	3	1	6	5	16	14	...	...	...	...
Pleuritic thickening	2	2	...	1	...	...	...	1	...	...	...	1	1	...	...	...	...	...	...
Empyema	19	18	1	6	5	5	1	1	1	...	...	1	...	2	3	11	1	1	...
Gangrene of lung	1	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...
Hydatid of lung	2	2	...	...	1	1	...	...	...	...	...	...	1	1	...	...	...	...	...
IV. DISEASES OF THE ORGANS OF CIRCULATION.																			
Pericarditis	13	9	4	1	1	7	1	...	1	1	1	3	1	6	2	...	1	...	...	...
Adherent pericardium	2	1	1	...	1	...	...	...	...	...	1	...	1	1	...	...	...	...	...	...
Congenital heart disease	2	2	...	2	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...
Mitral valvular disease	51	21	30	...	5	13	10	10	8	4	1	4	4	20	12	7	3	1	...	...
Aortic valvular disease	27	24	3	...	...	2	3	6	4	8	4	9	6	7	4	1	...	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
72	21	1	...	...	...	21	5	No P.M. in 3 cases. For details see special report on pneumonia, published in the 'St. Thomas's Hospital Reports,' 1889.
...	...	2	...	...	...	1	...	Bronchiectasis also in the fatal case.
...	...	20	11	1	1	8	8	No P.M. in 3 of the fatal cases; amyloid disease in 2; laryngeal phthisis in 2; ulceration of the intestines in 3; fatty liver in 1; tubercular kidney in 1. Among the non-fatal cases there was mitral disease in 1, purpura in 1, and tubercular disease of sternum in 1.
4	...	...	1	...	...	...	...	
...	...	2	1	...	...	...	...	
24	10	3	1	1	...	2	...	15 of the right side, 26 of the left. 3 probably tubercular. Paracentesis performed in 17, in 2 cases on more than one occasion; largest quantity removed 86 ounces. In the fatal cases there were also pericarditis and pneumonia.
...	...	2	...	...	...	...	...	
12	1	3	...	...	...	3	...	7 were of the right side, 10 of the left; 2 were double. Resection of the ribs was performed in 18 cases. The case not operated on was fatal, and the empyema in this case was limited to the upper half of the pleuritic cavity. In one of the cases noted as relieved, the patient was readmitted on the surgical side for further operation, and died under chloroform. Purulent pericarditis in 1 of the fatal cases.
...	...	...	...	...	...	1	...	
...	...	...	...	...	...	2	...	1 proved fatal during aspiration (see Special Abstract); 1 died from broncho-pneumonia after resection of rib for secondary empyema.
8	1	...	...	..	...	1	3	History of acute rheumatism in 6. Insanity in 1; pneumonia in 1. Chronic renal disease in 3 of the fatal cases.
...	...	...	...	...	...	1	1	Ascites and enlargement of liver in 1 fatal case.
...	...	2	...	...	...	...	...	
...	...	18	21	...	...	3	9	History of rheumatism in 24, of chorea in 4; absence of rheumatic history specially noted in 6. Ascites in 6; chorea in 1. Of the fatal cases: no P.M. in 2; stenosis in 7; valve calcareous in 4; vegetations in 1; stenosis of the tricuspid also in 2; adherent pericardium in 2.
...	...	14	1	1	...	9	2	History of rheumatism in 10; absence of rheumatic history specially noted in 7. Anginoid attacks in 1; hemiplegia in 1; erysipelas in 1. Of the fatal cases: no P.M. in 1; enormous hypertrophy of heart in 1; fungoid masses on valve in 1; perforation and ulceration of valve in 1; pulmonary apoplexy in 1; contracted granular kidneys in 2; cirrhosis of liver in 1; gout in 1.

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
IV. DISEASES OF THE ORGANS OF CIRCULATION—*continued.*																				
Aortic and mitral valvular disease	24	14	10	...	1	5	3	8	5	2	...	4	3	6	6	4	1	...	...	...
Ulcerative endocarditis	5	2	3	...	...	1	2	1	1	...	...	1	...	1	2	1	...	...	...	...
Angina	1	1	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...
Cardiac hypertrophy	1	1	...	...	...	..	...	...	...	...	1	1	...	...	...	...	...	...	...	...
Cardiac dilatation	1	...	1	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...
Cardiac aneurysm	1	...	1	...	...	...	...	...	...	1	...	...	...	1	..	...	...	...	...	...
Palpitation	1	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Thoracic aneurysm	12	11	1	...	...	...	...	3	6	2	1	3	1	1	4	2	1	...	...	...
Abdominal aneurysm	1	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...
Thoracic aneurysmal varix	2	1	1	...	...	...	...	2	...	...	...	1	...	1	..	...	...	...	...	...
Atheroma of aorta	1	...	1	...	...	...	...	...	...	1	...	1	...	...	..	...	...	...	...	...
Thrombosis	6	1	5	...	...	...	2	1	1	2	...	2	...	...	4	...	...	...	...	...
Raynaud's disease	3	3	...	...	...	2	...	1	...	...	...	...	1	2	...	...	...	...	...	...
V. DISEASES OF THE DUCTLESS GLANDS.																				
Goitre	1	...	1	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
Exophthalmic goitre	5	...	5	...	...	...	1	3	1	...	...	1	1	2	1	...	...	...	...	...
Addison's disease	2	1	1	...	...	...	1	...	1	...	...	1	...	1	...	...	...	...	...	...
Enlarged spleen	3	1	2	...	...	...	3	...	...	...	...	...	1	...	1	1	...	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	...	9	6	...	...	5	4	History of rheumatism in 10; absence of rheumatic history specially noted in 4. Of the fatal cases: no P.M. in 2; adherent pericardium in 2; mitral stenosis in 3; tricuspid stenosis in 1; vegetations on the valves in 2; pulmonary apoplexy in 1; fibroid phthisis in 1.
...	...	...	...	...	...	2	3	Tricuspid alone affected in 1; mitral alone in 3; mitral and aortic in 1; cerebral embolism occurred in 3, the right middle cerebral being blocked in 2, the left in 1; old hydatid of liver in 1.
...	...	1	...	...	...	...	...	Aortic valvular disease.
...	...	...	...	...	...	1	...	Slight aortic incompetence also. Intestinal hæmorrhage before death.
...	...	...	...	..	...	...	1	Dilatation great; heart also hypertrophied, weighing 26½ ounces.
...	...	...	...	...	...	...	1	Aneurysm of left ventricle; heart hypertrophied; contracted granular kidneys. See Special Abstract.
...	...	1	...	...	...	...	...	
...	...	6	...	...	...	5	1	Of the fatal cases: the ascending arch affected in 3, the transverse in 3; in 2 death resulted from rupture into the right pleuritic cavity; communication of the aneurysm with the superior vena cava in 1 (see 'Pathological Society's Transactions,' 1891); dissecting aneurysm, contracted granular kidneys in 1.
...	...	...	...	...	...	1	...	Death resulted from rupture into the left pleuritic cavity, the aneurysm commencing at the pillars of the diaphragm.
...	...	1	1	...	...	...	...	The nature of these cases uncertain. The bruits were such as are heard when a communication exists between an artery and vein.
...	...	...	...	...	...	...	1	Died in casualty room.
1	4	...	...	...	...	...	1	2 of the right femoral; 2 of the left popliteal; 1 of both femorals. In the fatal case there was thrombosis of the left external and internal iliac veins; the patient died probably from pulmonary embolism.
...	...	3	...	...	...	...	...	
...	...	...	...	...	...	...	1	The goitre, which had existed for 11 years, became acutely inflamed, an abscess formed, and death ensued from pyæmia. See Special Abstract.
...	...	...	5	...	...	...	...	
...	...	...	...	...	...	1	1	Caseation of supra-renals, with old cicatrices at the apices of the lungs (see Special Abstract) in 1; atrophy of the supra-renals in 1.
...	...	1	2	...	...	...	...	

TABLE III—

DISEASE.	Number of cases.			Age.							Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
VI. DISEASES OF THE DIGESTIVE ORGANS.																				
1. *Alimentary canal.*																				
Cancrum oris	2	1	1	2	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...
Glossitis	1	...	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Pharyngeal catarrh	1	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Tonsillitis	61	31	30	1	5	23	26	5	1	...	...	28	28	4	1	...	...	...	...	...
Stricture of œsophagus	5	4	1	...	...	...	..	1	2	1	1	1	...	2	2	...	...	...	...	...
Dyspepsia	18	4	14	...	...	5	7	4	1	1	...	2	7	4	4	1	...	...	...	...
Gastric ulcer	25	1	24	...	...	3	14	3	4	1	...	1	1	8	14	1	...	...	...	...
Hæmatemesis	8	3	5	...	...	1	2	1	2	1	1	...	2	5	1	...	...	...	...	...
Vomiting	18	9	9	2	2	1	6	3	3	1	...	5	3	4	6	...	...	...	...	...
Malignant disease of stomach	10	6	4	...	...	...	...	...	2	6	2	3	2	1	4	...	...	...	...	...
Gastro-intestinal catarrh	3	1	2	3	...	...	...	...	.	...	...	1	1	...	...	1	...	...	...	...
Diarrhœa	45	22	23	29	...	2	5	3	6	...	..	19	9	6	9	2	...	...	...	...
Dysentery	5	4	1	...	...	...	3	1	1	...	...	...	...	2	2	1	...	...	...	...
Colic	16	15	1	...	1	4	4	3	1	...	3	10	4	2	...	...	...	...	...	...
Constipation	21	13	8	2	3	6	4	...	3	2	1	6	7	7	1	...	...	...	...	...
Internal strangulation by band	1	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Strangulated hernia	1	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Intussusception	1	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Acute obstruction, other forms	2	2	...	1	...	...	...	...	1	...	...	2	...	...	...	...	...	...	...	...
Chronic obstruction	2	2	...	...	...	...	1	1	...	...	...	...	...	...	1	1	...	...	...	...
Malignant disease of intestines	10	6	4	...	...	1	...	...	2	4	3	5	...	1	1	2	1	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	...	...	...	...	...	1	1	Brother and sister, both after measles; broncho-pneumonia in both. See Special Abstract.
...	1	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	
31	30	...	...	...	...	...	...	Tonsillar abscess in 2. Among the cases were 5 students, 2 nurses, and 2 ward-maids.
...	...	1	...	...	...	3	1	The 3 fatal male cases all malignant; in 1 communication with trachea and aorta. In the fatal female case ulceration of lower half of œsophagus and cardiac end of stomach.
...	4	4	10	...	...	...	...	
...	...	1	24	...	...	...	...	Recent hæmatemesis in 7.
3	1	...	4	...	...	...	...	Alcoholic history in 2.
1	9	8	...	...	...	...	...	
...	...	4	...	...	...	2	4	No P.M. in 2 cases. In 1 death resulted from acute purulent peritonitis, the result of perforation. The pylorus affected in 4 cases.
...	...	...	...	...	...	1	2	Broncho-pneumonia also in 1.
12	7	3	10	1	...	6	6	The fatal cases all but one infants. History of starvation in adult fatal case, in which there was great emaciation, with atrophy of heart, &c. (see 'Pathological Soc. Transactions,' 1891). Congestion of small intestine in 3; enteritis in 1; ulceration of ileum in 1; nothing definite in 6. No P.M. in 1.
1	...	3	1	...	...	...	...	
15	1	...	...	...	...	...	...	
13	8	...	...	...	...	...	...	
...	...	...	...	...	...	1	...	
...	1	...	...	...	...	...	...	Cured by operation.
1	...	...	...	...	...	...	...	
...	...	...	...	...	...	2	...	Obstruction due to kink produced by old adhesion in 1; due to cicatricial stricture of sigmoid flexure in 1. Abdominal section and colotomy were performed in the latter case, and purulent peritonitis ensued.
...	...	2	...	...	...	...	...	
...	...	1	2	1	...	4	2	Malignant disease of rectum in 4; colotomy performed in 3 of these with relief in 2 cases. Communication between bladder and rectum in 1; malignant disease of liver and surgical kidneys in the same case. Splenic flexure affected in 1, and in this case there was a communication with the stomach. Ileo-cæcal valve and ascending colon affected in 1; puncture of intestines for relief of tympanites performed in this case. The ileum 4 inches above valve affected in 1; colotomy and abdominal section performed. 1 case, in which the sigmoid flexure was probably the seat of disease, was relieved by colotomy. No P.M. in 1 case in which abdominal section was performed; the peritoneum was also affected in this case.

TABLE III—

DISEASE.	Number of cases.			Age.							Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
VI. DISEASES OF THE DIGESTIVE ORGANS—*continued.*																				
Perityphlitis	28	20	8	...	...	21	3	1	3	...	...	1	6	11	9	1	...	...	...	...
Perforation of vermiform appendix	3	2	1	...	...	1	1	1	...	...	...	2	...	1	...	...	...	...	...	...
2. *Peritoneum.*																				
Acute peritonitis	2	2	...	...	...	1	1	...	...	...	...	1	...	...	1	...	...	...	...	...
Chronic peritonitis	2	...	2	...	...	...	1	...	...	...	1	...	...	...	1	1	...	...	...	...
Tubercular peritonitis	8	5	3	2	...	3	...	3	...	...	...	3	...	1	2	2	...	...	...	...
3. *Liver.*																				
Cirrhosis	14	7	7	1	...	...	...	1	5	5	2	1	...	1	9	1	1	1	...	...
Malignant disease	5	3	2	...	...	...	...	...	2	2	1	...	2	2	...	1	...	...	...	...
Biliary colic	10	4	6	...	...	...	1	3	4	2	...	...	2	5	1	2	...	...	...	...
Catarrhal jaundice	1	1	..	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Obstructive jaundice, other forms	2	1	1	...	...	...	...	...	1	1	...	...	...	1	1	...	...	...	...	...
Enlargement of liver	5	1	4	...	1	...	...	1	1	1	1	...	...	3	2	...	...	...	...	...
Hydatid of liver	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Tumour of liver	3	3	...	...	...	...	...	...	1	2	...	...	1	1	...	...	...	...	...	...
Chronic congestion of liver	2	...	2	...	1	...	...	1	...	...	...	...	...	...	2	...	...	...	...	...
4. *Various.*																				
Abdominal tumour	16	4	12	...	1	...	...	2	5	2	6	1	1	5	7	1	1	...	...	...
Pelvic abscess	1	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Ascites	5	...	5	...	...	...	...	2	1	2	...	...	...	1	1	3	...	...	...	...
VII. DISEASES OF THE GENITO-URINARY SYSTEM.																				
Acute nephritis	12	6	6	2	1	4	3	1	...	1	...	...	2	3	4	3	...	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
18	8	2	...	...	...	...	...	Perityphlitic abscess in 1; cured by incision and drainage.
...	...	...	...	...	...	2	1	Abdominal section was performed in 2 cases, in both of which there was acute peritonitis, and the perforation was probably recent. In the other case the perforation was old, and the coils were matted with old adhesions; acute peritonitis had supervened.
1	...	...	...	...	...	1	...	In fatal case early kidney disease; no cause found.
...	...	...	...	...	...	...	2	In 1 abscess communicating with intestine and bladder.
...	1	1	1	...	...	4	1	Adherent pericardium in 1; large fatty liver in 2 (both alcoholic); pulmonary phthisis in 2. Tubercular salpingitis in fatal female case.
...	...	5	6	...	...	2	1	Ascites in 9. Contracted granular kidneys in 1 of the fatal cases. Tubercle of peritoneum, lungs, liver, &c., in female fatal case, a girl aged 4½.
...	...	1	...	1	...	1	2	Of the fatal cases: jaundice in 2; ascites in 2.
4	6	...	...	...	...	...	...	No jaundice in 2. Gall-stones found in the evacuations in 1. In 1 case an exploratory operation was performed for small umbilical tumour, which it was thought might be a hernia. In another case, in which repeated attacks had occurred, an incision was made over the gall-bladder, and the gall-bladder and duct were explored; no stone could be detected; the patient made a good recovery.
1	...	...	...	...	...	...	...	
1	...	...	...	...	...	...	1	In the fatal case ulcer of duodenum, malignant growths in liver. See Special Abstracts.
...	...	1	4	...	...	...	...	Jaundice in 2, no jaundice in 3.
1	...	...	...	...	...	...	...	The hydatid tumour, which had suppurated, was treated by incision and drainage.
...	...	3	..	...	...	...	...	2 probably gummatous.
...	...	...	2	...	...	...	...	In both ascites and anasarca developed. Jaundice in 1.
...	...	3	7	..	...	1	5	Of the fatal cases: no P.M. in 3; the others proved to be malignant. Of the non-fatal 7 probably malignant.
...	1	...	...	...	...	...	...	
...	...	...	5	...	...	...	...	In all paracentesis abdominis was performed.
1	...	3	4	...	...	2	2	3 scarlatinal, of which 1 died; after parturition in 1 fatal case. No P.M. in 1.

TABLE III—

DISEASE.	Number of cases.			Age.							Duration of residence.							
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
VII. DISEASES OF THE GENITO-URINARY SYSTEM—*continued.*																				
Chronic nephritis	44	22	22	...	1	7	2	9	7	10	8	4	9	13	11	6	1	...	...	...
Suppurative nephritis	1	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...
Renal colic	4	4	...	...	...	...	...	3	1	...	...	...	1	2	...	1	...	...	...	...
Pyelitis	2	2	...	...	...	...	1	...	1	...	...	...	...	...	1	1	...	...	...	...
Cystitis	3	2	1	...	...	...	...	1	...	1	1	1	...	2	...	...	...	...	...	...
Hæmaturia	4	3	1	...	...	2	...	...	...	1	1	...	2	...	2	...	...	...	...	...
Paroxysmal hæmoglobinuria	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...
Tubercular kidneys	5	...	5	...	...	...	3	1	1	...	...	...	1	1	1	2	...	...	...	...
Pyonephrosis	1	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Hydronephrosis	3	...	3	...	...	1	2	...	...	...	...	...	1	1	1	...	...	...	...	...
Movable kidney	4	...	4	...	...	...	1	2	1	...	...	...	...	...	3	1	...	...	...	...
Malignant disease of kidney	1	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...
Bilharzia hæmatobia	1	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
VIII. DISEASES OF THE NERVOUS SYSTEM.																				
Acute meningitis	6	6	...	1	1	2	2	...	...	...	...	5	...	...	...	...	1	...	...	...
Tubercular meningitis	15	8	7	9	2	1	2	...	1	...	...	9	3	3	...	...	...	...	...	...
Hemiplegia	18	10	8	2	...	1	2	...	6	4	3	...	2	...	12	4	...	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	...	18	17	2	...	2	5	History of alcoholism in 4, of plumbism in 2. Convulsions in 4, hemiplegia in 2, dyspnœa in 1, ascites in 2, gangrene of leg in 1. Of the fatal cases no P.M. in 2, contracted granular kidneys in 4, "large white" in 1, hypertrophy of heart in 4, adherent pericardium in 1, "nutmeg" liver in 1.
..	...	...	...	...	...	1	...	Enlarged prostate.
1	...	2	...	1	...	...	...	1 transferred to surgeon for operation; enlargement of liver in 1.
...	...	2	...	...	...	...	...	
...	...	2	1	...	...	...	...	
1	...	2	1	...	...	...	...	Mitral disease in 1.
...	...	1	...	...	...	...	...	
...	...	...	2	...	1	...	2	The case unrelieved was transferred to the surgeon. 1 of the fatal cases was treated by incision and drainage; there were miliary tubercles in the lungs in this case; in the other fatal case both kidneys were affected, and there was also cystitis.
...	...	...	1	...	...	...	...	
...	...	...	3	...	...	...	...	
...	...	...	4	...	...	...	...	
...	...	...	...	...	...	1	...	The right kidney affected; secondary growths in liver and lungs.
...	...	1	...	...	...	...	...	
...	...	1	...	...	...	5	...	The case relieved probably cerebro-spinal meningitis. Of the fatal cases: in 2 there was no cause found; in 1 there was pus in the mastoid cells on the left side; in 1, an infant of 12 months, there was hydrocephalus.
..	...	...	...	...	1	8	6	Of the fatal cases: in 1 the brain alone was examined, in 6 there was general tuberculosis, in 1 tubercle of cerebellum, in 1 tubercle of the choroid, in 1 tubercle of the pleura, in 1 tubercular pneumonia, in 1 tubercle of the lung and intestine, in 1 tubercle of the lung and spleen, and in 1 there was spinal caries and double psoas abscess.
...	...	10	8	...	...	...	...	13 on the right side, 7 of whom were aphasic; 4 on the left side; 1 double. 2 cases of infantile hemiplegia. Cardiac valvular disease in 4, 1 male and 3 females; in the latter the hemiplegia probably due to embolism. Albuminuria in 5. Alcoholic history in 5; 3 were cases of second attack. Hemianæsthesia on the same side in 2, 1 of which was probably a case of ulcerative endocarditis. For fatal cases of hemiplegia see under ulcerative endocarditis and cerebral hæmorrhage.

TABLE III—

DISEASE.	Number of cases.			Age.							Duration of residence							
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
VIII. DISEASES OF THE NERVOUS SYSTEM — *continued.*																				
Hemianæsthesia	1	1	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Cerebral hæmorrhage	4	3	1	...	...	...	...	1	1	1	1	3	1	...	...	...	...	...	...	...
Cerebral embolism	1	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Cerebral tumour	13	8	5	1	1	1	4	2	3	1	...	2	1	5	5	...	...	...	...	...
Cerebral abscess	3	1	2	...	...	1	2	...	...	...	...	2	1	...	...	...	...	...	...	...
Cerebral bruising	1	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Chronic hydrocephalus	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Headache	12	9	3	...	1	3	2	4	2	...	...	4	3	3	2	...	...	...	...	...
Defective speech	3	3	...	...	1	2	...	...	...	...	...	...	...	...	1	1	1	...	...	...
Optic neuritis	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Oculo-motor paralysis	1	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Hemicrania	1	...	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Menière's disease	1	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...
Paralysis agitans	1	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Tetanus	1	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
Coma	1	1	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
General paralysis	6	6	...	...	...	...	...	2	4	...	...	2	...	2	1	1	...	...	...	...
Melancholia	2	1	1	...	...	1	...	1	...	...	...	...	...	2	...	...	...	...	...	...
Other mental disorders	5	1	4	...	...	1	2	...	1	1	...	2	1	1	1	...	...	...	...	...
Chorea	23	5	18	1	5	16	1	...	...	...	...	2	1	3	13	4	...	...	...	...
Epilepsy	13	11	2	...	1	6	3	3	...	...	...	10	1	...	2	...	...	...	...	...
Infantile convulsions	11	7	4	11	...	...	...	...	...	...	...	8	3	...	...	...	...	...	...	...
Hysteria	31	5	26	...	...	14	11	4	1	...	1	8	7	7	6	3	...	...	...	...

continued.

Cured.		Re-lieved.		Unre-lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
1	...	...	...	...	.	...	...	
...	...	...	...	...	...	3	1	Hæmorrhage into ventricles in 1, into right hemisphere in 1, over middle third of left hemisphere in 1, subdural in 1. Contracted granular kidneys in 1.
...	...	...	...	...	...	1	...	Aortic valvular disease, abscess in wall of left ventricle, embolism of right middle cerebral with softening and of left middle cerebral without.
...	1	3	3	...	...	5	1	Optic neuritis in 7, optic atrophy in 1. 3 syphilitic, of which one was fatal, and disseminated gummata were found in the brain. Hydrocephalus in 1. 1 tubercular. In 2 the cerebellum, in 1 the pons, in 1 the right temporo-sphenoidal lobe, in 1 the left temporal convolutions, in 1 the left optic thalamus, were the seat of the disease.
...	...	...	..	...	..	1	2	1 secondary to ear disease, 2 followed influenza. See Special Abstracts.
...	...	...	...	...	...	1	...	The result of a fall on the ice. See Special Abstracts.
...	...	1	...	...	...	...	...	
2	3	7	...	...	...	...	...	
1	...	2	...	...	...	...	...	
...	...	...	1	...	...	...	...	
...	...	1	...	...	...	...	...	
...	1	...	...	...	...	...	...	
...	...	1	...	...	...	...	...	
...	...	1	...	...	...	...	...	
...	...	...	...	...	...	1	...	P.M. negative. Exciting cause injury to sole of foot by nail in boot.
...	...	...	...	...	...	1	...	P.M. negative, except broncho-pneumonia of left lower lobe.
...	...	3	..	2	...	1	...	In the fatal case there was disease of the basilar artery.
...	...	1	1	...	...	...	...	
...	...	1	4	...	...	...	...	Aortic and mitral valvular disease and history of numerous attacks of chorea in 1.
...	8	5	9	...	...	...	1	18 cases of first attack, 1 of second, 3 of third, 1 of fourth. Rheumatic history in 7. No rheumatic history in 11. Cardiac disease in 9. History of chorea in other members of the family in 5. Herpes affecting the branches of the external cutaneous of the thigh developed in 1 while under arsenic. In the fatal case there was intense diphtheritic inflammation of the tonsils, pharynx, and larynx, and minute vegetations on the mitral and aortic valves.
...	...	11	2	...	...	...	...	
4	3	...	...	...	..	3	1	No P.M. in 1, P.M. negative in 2, capillary hæmorrhages in brain and broncho-pneumonia in 1.
2	13	3	10	...	3	...	...	Fits in 6, choreiform movements in 2, paraplegia in 3, paresis of extremities in 3, contraction of foot in 1, aphonia in 2, aphemia in 1, pains in 5, wasting in 2, both treated by massage and cured.

TABLE III—

DISEASES.	Number of cases.			Age.							Duration of residence.							
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week.	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts 9–12	Above 1 year
VIII. DISEASES OF THE NERVOUS SYSTEM — *continued.*																				
Athetosis	1	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Tremors of head	1	...	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Paraplegia	17	9	8	...	1	...	3	7	4	2	...	...	...	1	9	4	2	1	...	...
Locomotor ataxy	4	3	1	...	...	...	2	1	1	...	...	...	...	...	1	2	...	1	...	...
Disseminated sclerosis	3	1	2	...	...	...	1	2	...	...	...	...	...	1	1	1	...	...	...	...
Idiopathic muscular atrophy	1	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Spinal injury	1	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Spinal meningitis	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Musculo-spinal paralysis	1	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...
Crutch palsy	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...
Paralysis of arm	1	...	1	...	...	...	...	...	...	...	1	...	...	1	...	..	...	...	...	...
Neuralgia	6	3	3	...	...	...	...	2	2	1	1	1	1	4	...	...	...	...	...	...
Torticollis	1	...	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...
IX. POISONING.																				
Alcoholism—																				
(1) Delirium tremens	4	4	...	...	...	...	1	2	1	...	...	1	3	...	...	...	...	...	...	...
(2) Fits	2	2	...	...	...	...	1	...	1	...	...	1	1	...	...	...	...	...	...	...
(3) Paralysis	4	...	4	...	...	...	1	2	...	1	...	...	1	...	...	1	2	...	...	...
(4) Other forms	6	3	3	...	...	...	2	2	1	..	1	2	3	1	...	...	...	...	...	...
Plumbism	12	10	2	...	...	...	3	4	5	...	...	5	4	1	1	1	...	...	...	...
Opium	3	1	2	...	...	...	...	3	...	...	...	1	...	2	...	...	...	...	...	...
Belladonna	2	...	2	...	...	...	...	2	...	...	...	2	...	...	...	...	...	...	...	...
Strychnine	1	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
Chloroform	2	2	...	1	...	...	1	...	...	...	...	2	...	...	...	...	...	...	...	...
Carbolic acid	1	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Sulphuric acid	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Hydrochloric acid	1	1	...	...	...	...	...	1	...	...	...	1	..	...	...	...	...	...	...	...
Red oxide of mercury	2	1	1	...	...	1	...	...	.	1	...	1	1	...	...	...	...	...	...	...
Carbon bisulphide	1	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Chloral hydrate	1	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Compound camphor liniment	1	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	...	...	...	1	..	...	...	
...	...	...	1	...	...	...	...	
...	1	8	5	1	1	...	1	Caries of vertebræ in 2, syphilis in 2. Case of recovery from myelitis. In fatal case malignant disease of vertebræ.
...	...	3	1	...	...	...	...	History of syphilis in 2. 1 case treated by suspension; no marked benefit.
...	...	1	2	...	...	...	...	Imbecility in 1.
...	...	...	...	...	1	...	...	
...	...	1	...	...	...	...	...	
...	...	1	...	...	...	...	...	
...	...	1	...	..	...	...	...	
...	...	1	...	...	...	...	...	
...	...	...	1	...	...	...	...	Cause doubtful. Patient had mitral valvular disease.
...	...	3	3	...	...	...	...	3 facial, 2 lumbar, 1 sciatic.
...	...	...	...	...	1	...	...	
2	...	1	...	...	...	1	...	In fatal case hypostatic pneumonia, pulmonary apoplexy, fatty liver.
1	...	...	...	...	...	1	...	No P.M. in fatal case.
...	...	...	4	..	...	...	...	
1	...	2	2	...	1	...	...	Mania in 1, mitral disease and old hemiplegia in 1.
7	1	2	1	...	...	1	...	Palsy in 3, fits in 2, mania in 1, colic in 8. 3 were painters, 3 employed in white-lead works, 1 japanner. In the fatal case, in which the symptoms were palsy, colic, and fits, there was a slight deposit of urate of soda in great toe-joints, and the affected muscles were pale fawn-coloured, soft, and shrunken.
...	1	...	1	...	...	1	...	1 chronic morphinism.
...	2	...	...	...	...	...	...	
...	...	...	...	...	...	1	...	Died in casualty-room.
2	...	...	...	...	...	...	...	
1	...	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	
...	...	...	...	...	...	1	...	Supposed amount taken 5 ounces.
1	1	...	...	...	...	...	...	
1	..	...	...	...	...	...	...	Employed in india-rubber works.
...	...	1	...	...	...	...	...	
...	1	...	...	...	...	...	...	

TABLE III—

DISEASES.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week.	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
X. SURGICAL AND MISCELLANEOUS.																				
Debility	19	8	11	...	...	2	6	4	4	2	1	8	6	4	1	...	...	...	...	...
Marasmus	7	6	1	7	...	...	...	...	...	...	...	2	1	1	2	...	1	...	...	...
Immersion	2	2	...	...	...	2	...	...	...	...	...	1	...	1	...	...	...	...	...	...
Disease of ear	7	3	4	...	2	2	...	1	...	1	1	...	5	1	1	...	...	...	...	...
Malingering	3	2	1	...	...	...	...	1	...	1	1	...	...	3	...	...	...	...	...	...
Abscess	5	3	2	1	...	1	3	...	...	...	...	...	2	1	...	1	1	...	...	...
Spinal caries	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...
Various	29	13	16	6	6	1	6	3	3	2	2	10	9	6	2	1	...	1	..	...
Unclassified	24	13	11	7	3	...	8	2	3	...	1	18	4	1	1	...	...	...	...	...
XI. DISEASES OF THE FEMALE GENERATIVE ORGANS.																				
Ovarian tumour	2	...	2	...	...	...	...	...	1	...	1	1	1	...	...	...	...	...	...	...
Parametritis	1	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Carcinoma of uterus	1	...	1	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...
Fibro-myoma of uterus	1	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...
Total	1891	1057	834																	

continued.

Cured.		Relieved		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
3	10	5	1	...	...	...	...	1 after influenza, 1 after enteric fever, 1 after acute rheumatism, 1 after tonsillitis.
1	...	3	1	...	...	2	...	All young infants. 2 due to starvation, in 1 of which there was a gain of 4 lbs. in weight while in the hospital. No P.M. in 1 of the fatal cases. P.M. negative in the other.
2	...	...	...	...	...	...	...	Both accidental. In 1 pneumonia supervened.
...	...	3	4	...	...	...	...	
1	1	1	...	...	...	...	...	1 simulated right hemiplegia, 1 loss of power in right arm.
3	1	...	1	...	...	...	...	1 dyspnœa and hyperpyrexia.
...	...	...	...	..	1	..	...	
6	5	3	3	4	4	..	4	3 malignant disease of neck, 1 fatal, in which tracheotomy was performed; 1 malignant disease of hip; 2 gangrene of foot, of which 1 was transferred, 1 was fatal; 2 enlarged cervical glands, 1 fatal, no P.M.; 2 strabismus, 2 syncope, 2 lumbago, 1 phantom tumour, 1 dentition, 1 pregnancy, 1 obesity, 1 swollen tongue, 1 varicose abdominal veins, 1 catarrh, 1 epistaxis, 1 periostitis, 1 disease of knee-joint, 1 talipes, 1 phimosis, 1 sinus after empyema; 1 premature birth, fatal.
6	4	2	2	3	4	2	1	Of the fatal cases, 1 admitted moribund. P.M. negative in all.
...	...	...	...	...	2	...	...	Transferred to surgeon.
...	1	...	...	...	...	...	...	After parturition.
...	...	...	...	...	1	...	...	
...	...	...	1	...	...	...	...	
629	388	287	280	21	26	219	101	
917		567		48		359		

1891

Table IV.—*Table of Mortality.*

DISEASE.	Total.		Age.									Mortality per cent.
	No. discharged.	No. died.	Under 5	5–10	–20	–30	–40	–50	–60	–70	Above 70	
1. General Diseases.												
Influenza	88	6	...	...	1	1	...	2	2	...	...	6·4
Measles	13	4	4	...	...	...	...	...	...	...	...	23·5
Scarlet fever	13	2	1	...	...	1	...	...	...	...	...	13·3
Enteric fever	51	18	...	1	5	9	3	...	...	...	...	26
Erysipelas	20	1	...	...	...	...	1	...	...	...	...	4·7
Diphtheria	47	45	38	7	...	...	...	...	...	...	...	48·9
Diphtheritic paralysis	2	1	...	...	...	...	...	1	...	...	...	33·3
Pyæmia	...	2	...	...	...	1	...	1	...	...	...	...
Pertussis	8	1	1	...	...	...	...	...	...	...	...	11·1
Syphilis	4	1	1	...	...	...	...	...	...	...	...	20
Acute rheumatism	87	2	...	...	1	1	...	...	...	...	...	2·2
Diabetes mellitus	6	4	...	...	...	3	...	1	...	...	...	40
Purpura	3	1	...	1	...	...	...	...	...	...	...	25
Pernicious anæmia	1	2	...	...	...	...	1	1	...	...	...	66·6
General tuberculosis	...	3	3	...	...	...	...	...	.	...	...	...
2. Diseases of the Respiratory Organs.												
Acute laryngitis	7	1	...	...	...	...	1	...	...	...	...	12·5
Malignant disease of larynx	1	1	...	...	...	...	...	...	1	...	...	50
Bronchitis	73	10	3	...	...	...	...	1	2	2	2	12
Broncho-pneumonia	26	12	10	...	...	...	...	...	1	1	...	31·6
Acute pneumonia	94	26	1	...	1	6	10	7	1	...	...	21·6
Chronic pneumonia	2	1	...	...	...	1	...	...	...	...	...	33·3
Phthisis	33	16	1	1	1	3	8	1	1	...	...	32
Pleurisy	39	2	...	...	...	...	1	1	...	...	...	4·8
Empyema	16	3	2	...	...	...	...	1	...	...	...	15·7
Hydatid of lung	...	2	...	1	1	...	...	...	...	...	...	...
Gangrene of lung	...	1	...	...	...	...	...	1	...	...	...	...
3. Diseases of the Organs of Circulation.												
Adherent pericardium	...	2	...	1	...	...	...	...	...	1	...	...
Pericarditis	9	4	1	...	...	...	...	1	1	1	...	30·7
Mitral	39	12	...	2	2	1	3	1	2	1	...	23·5
Aortic	16	11	...	...	1	1	4	2	2	...	1	40·7
Mitral and aortic	15	9	.	...	1	2	4	2	...	...	...	37·5
Cardiac aneurysm	..	1	...	...	...	...	...	...	1	...	...	...
Cardiac hypertrophy and dilatation	...	2	...	...	...	...	...	...	...	...	2	...

TABLE IV—*continued.*

DISEASE.	Total.		Age.								Mortality per cent
	No. discharged.	No. died.	Under 5	5–10	–20	–30	–40	–50	–60	–70	Above 70	
3. DISEASES OF THE ORGANS OF CIRCULATION—*continued.*												
Ulcerative endocarditis	...	5	...	...	1	2	1	1	...	...	...	...
Thoracic aneurysm	6	6	...	...	...	...	...	3	2	1	...	50
Abdominal aneurysm	...	1	...	...	...	...	...	1	...	...	...	...
Thrombosis	5	1	...	...	...	...	...	...	1	...	...	16·6
4. DISEASES OF DUCTLESS GLANDS.												
Addison's disease	...	2	...	...	...	1	...	1	...	...	...	...
Goitre	...	1	...	...	...	...	1	...	...	...	...	...
5. DISEASES OF THE DIGESTIVE ORGANS.												
Cancrum oris	...	2	2	...	...	...	...	...	...	...	...	...
Stricture of œsophagus	1	4	...	...	...	...	1	1	1	1	...	80
Malignant disease of stomach	4	6	...	...	...	...	...	...	4	2	...	60
Gastro-intestinal catarrh	...	3	3	...	...	...	...	...	...	...	...	...
Diarrhœa	33	12	11	...	...	1	...	...	...	...	...	26·6
Acute intestinal obstruction	1	3	...	1	...	1	...	1	...	...	...	75
Malignant disease of intestines	4	6	...	...	1	...	1	...	3	1	...	60
Perforation of vermiform appendix	...	3	...	...	1	1	1	...	...	...	...	...
Acute peritonitis	1	1	...	...	...	1	...	...	...	...	...	50
Chronic peritonitis	...	2	...	...	...	1	...	...	...	1	...	...
Tubercular peritonitis	3	5	1	...	1	...	3	...	...	...	...	62·5
Cirrhosis of liver	11	3	1	...	...	...	1	...	...	1	...	21·4
Obstructive jaundice	2	1	...	...	...	...	1	...	...	...	...	66·6
Abdominal tumour	10	6	...	...	...	...	...	4	...	...	2	37·5
Malignant disease of liver	2	3	...	...	...	...	...	2	1	...	...	60
6. DISEASES OF THE GENITO-URINARY SYSTEM.												
Acute nephritis	8	4	...	...	1	1	1	...	1	...	...	33·3
Chronic nephritis	37	7	...	...	1	...	3	...	1	2	...	16
Suppurative nephritis	...	1	...	...	...	...	...	...	...	1	...	...
Tubercular nephritis	3	2	...	...	...	1	...	1	...	...	...	40
Malignant disease of kidney	...	1	...	...	...	...	...	...	1	...	...	...
7. DISEASES OF THE NERVOUS SYSTEM.												
Acute meningitis	1	5	1	1	2	1	...	...	...	...	...	83·3
Tubercular meningitis	1	14	8	2	1	2	...	1	...	...	...	93·3
Cerebral hæmorrhage	...	4	...	...	...	...	1	1	1	1	...	...

TABLE IV—*continued.*

DISEASE.	Total.		Age.								Mortality per cent.
	No. discharged.	No. died.	Under 5	5–10	–20	–30	–40	–50	–60	–70	Above 70	
7. DISEASES OF THE NERVOUS SYSTEM—*continued.*												
Cerebral embolism	...	1	...	...	1	...	...	...	...	...	...	...
„ tumour	7	6	1	...	...	2	1	2	...	...	...	46·1
„ abscess	...	3	...	...	1	2	...	...	...	...	...	...
„ bruising	...	1	...	...	1	...	...	...	...	...	...	...
Tetanus	...	1	...	...	...	...	1	..	...	...	...	...
General paralysis	5	1	...	...	...	...	1	...	...	...	...	16·6
Infantile convulsions	7	4	4	...	...	...	...	...	...	...	...	38·2
Chorea	22	1	...	...	1	...	...	...	...	...	...	4·3
Paraplegia	16	1	...	...	...	...	...	...	1	...	...	5·8
8. POISONING.												
Alcoholism	14	2	...	...	...	..	1	1	...	...	...	12·5
Plumbism	11	1	...	...	...	...	...	1	...	...	...	8·3
Opium	2	1	...	...	...	...	1	...	...	...	...	33·3
Hydrochloric acid	...	1	...	...	...	...	1	...	...	...	...	...
Strychnine	...	1	...	...	...	...	1	...	...	...	..	...
9. SURGICAL AND MISCELLANEOUS.												
Marasmus	5	2	2	...	...	...	...	...	...	...	...	28·5
Various	25	4	2	...	...	...	...	..	1	...	1	13·8

TABLE V.—*Cases of Infectious Diseases originating in the Hospital.*

Initials.	Sex.	Age.	Disease for which admitted.	Disease originating in hospital.	Date of attack.	Duration of previous residence in hospital.	Result.	Remarks.
G. D.	F.	29	—	Scarlet fever	Dec. 29, 1889	—	C. Feb. 18	Probationer.
A. N.	M.	3	Diphtheria	,,	Jan. 4	4 days	D. Jan. 8	From Luke Ward.
E. W.	F.	6	,,	,,	Mar. 9	2 ,,	C. April 27	Ditto.
G. P.	F.	5	Disease of leg	,,	Mar. 21	23 ,,	C. May 17	From Victoria Ward.
A. F. S.	M.	23	—	,,	,,	—	C. May 1	House Surgeon.
A. S.	F.	29	Diphtheria	,,	May 3	18 ,,	C. May 25	From Luke Ward.
G. B.	M.	12	Scald	,,	April 21	11 ,,	C. June 25	From Clayton Ward.
A. R.	F.	5	Empyema; resection of rib May 26	,,	May 29	6 ,,	C. July 23	From Charity Ward.[1]
L. H.	F.	3	Fracture of leg	,,	July 21	9 ,,	C. Oct. 3	From Alexandra Ward.
B. C.	M.	1½	Scald	,,	Aug. 21	1 day	D. Sept. 13	From Victoria Ward.
S. B.	M.	$\frac{8}{12}$	—	,,	Sept. 19	21 days	D. Sept. 24	Ditto.
A. H.	F.	2	Fractured pelvis	,,	Oct. 1	4 ,,	C. Nov. 19	From Elizabeth Ward.
A. W.	M.	16	Enteric fever	,,	Oct. 10	15 ,,	C. Nov. 26	From Arthur Ward.
E. C.	M.	23	Abscess of thigh	,,	Nov. 11	22 ,,	D. Nov. 14	From Albert Ward.
E. G.	F.	4	Cervical glands	,,	Nov. 13	4 ,,	—	From Alexandra Ward.
E. F.	M.	19	Idiopathic muscular atrophy	,,	Nov. 15	40 ,,	C. Dec. 17	From Arthur Ward.
R. C.	F.	3	Hip disease	,,	Nov. 23	48 ,,	R. Dec. 30	From Victoria Ward.
S. B.	F.	1½	—	Varicella	Feb. 20	13 ,,	C. Mar. 14	Ditto.
C. C.	F.	10	—	Measles	Mar. 14	4 ,,	C. Mar. 28	From Alexandra Ward.
K. B. W.	F.	3	—	,,	Mar. 16	2 ,,	D. Mar. 21	From Victoria Ward.
G. B.	M.	9	Disease of hip	,,	May 14	9 ,,	C. May 26	From Albert Ward.
E. F.	M.	2½	Scrotal hernia	,,	May 18	25 ,,	C. June 7	From Victoria Ward.
G. P.	F.	2	Scald of leg	,,	May 20	3 ,,	C. Aug. 23	Ditto.
A. W.	F.	3	Scald of buttocks	,,	May 23	4 ,,	C. June 8	Ditto.
W. P.	M.	14	Peritonitis	,,	May 29	5 ,,	C. June 24	From George Ward.
L. S.	M.	3	Disease of elbow	,,	May 30	64 ,,	C. June 26	From Victoria Ward.
F. G.	M.	4	Tuberculosis	,,	May 31	25 ,,	C. July 9	Ditto.
C. S.	F.	2	Wry-neck	,,	June 3	63 ,,	C. June 24	Ditto.
D. W.	F.	1	Burn	,,	June 4	2 ,,	C. July 28	Ditto.

[1] A case which proved to be scarlatina was admitted to Charity Ward on May 12th, and was transferred to No. 8 Block next day.

TABLE V—*continued.*

Initials.	Sex.	Age.	Disease for which admitted.	Disease originating in hospital.	Date of attack.	Duration of previous residence in hospital.	Result.	Remarks.
A. S.	M.	2½	Harelip	Measles	June 4	8 days	C. June 22	From Victoria Ward.
E. S.	F.	2½	—	,,	Aug. 19	5 ,,	C. Sept. 1	Ditto.
D. C.	F.	4½	Spinal caries	,,	Sept. 2	20 ,,	C. Sept. 16	Ditto.
R. G.	F.	4	Diphtheria	,,	Nov. 21	20 ,,	C. Nov. 30	From Luke Ward.[1]
E. H.	F.	14	Chorea	Diphtheria	May 9	18 ,,	D. May 26	From Charity Ward.
— M.	F.	28	—	,,	Sept. 29	—	C. Oct. 16	Probationer.
F. C.	F.	25	—	Influenza	Dec. 31, 1889	—	C. Jan. 4	Nurse.
M. H.	F.	25	—	,,	Jan. 1	—	C. Jan. 4	Ditto.
H. B.	M.	12	Morbus cordis	,,	Jan. 2	7 weeks	C. Feb. 19	From Arthur Ward.
H. F.	M.	25	—	,,	Jan. 4	—	C. Jan. 8	Ward maid.
E. W.	F.	21	—	,,	Jan. 5	—	C. Jan. 11	House Physician.
H. R.	M.	29	Morbus cordis	,,	Jan. 6	4 days	C. Jan. 12	From Arthur Ward.
H. L.	M.	23	Diabetes mellitus	,,	Jan. 7	7 weeks	C. Mar. 4	From George Ward.
L. C.	M.	25	—	,,	,,	—	C. Jan. 13	House physician.
E. B.	F.	23	—	,,	Jan. 10	—	C. Jan. 13	Ward maid.
A. B.	F.	25	—	,,	Jan. 11	—	C. Jan. 14	Nurse.
— M.	F.	25	—	,,	Jan. 13	—	C. Jan. 18	Ditto.
— E.	F.	25	—	,,	,,	—	C. Jan. 20	Ditto.
— H.	F.	25	—	,,	,,	—	C. Jan. 20	Ditto.
J. A.	F.	19	Gastric ulcer	,,	Jan. 15	13 days	C. Feb. 16	From Charity Ward.
T. B.	M.	50	Chronic bronchitis	,,	Jan. 18	17 ,,	D. Jan. 21	From Arthur Ward.
W. B. de J.	M.	26	—	,,	,,	—	C. Jan. 21	House physician.
— J.	F.	25	—	,,	Jan. 28	—	C. Feb. 3	Nurse.
C. B.	F.	15	Hysterical paraplegia	,,	,,	12 days	C. Mar. 5	From Charity Ward.
R. V. S.	M.	25	—	,,	Jan. 30	—	C. Feb. 7	House surgeon.
F. J.	M.	36	Dysentery	,,	Feb. 6	13 days	C. Feb. 9	From Arthur Ward.
— B.	F.	25	—	,,	Feb. 10	—	C. Feb. 24	Nurse.
A. F. S.	M.	24	—	,,	Dec. 2	—	C. Dec. 6	House surgeon.

[1] The brother of this patient was admitted to Luke Ward with what proved to be measles on Nov. 5th, and was transferred to Dorcas on Nov. 11th.

SPECIAL ANALYSES AND ABSTRACTS.

I.—INFLUENZA.

Fatal Cases.

(1) *Influenza; acute broncho-pneumonia, both lungs.*—T. J. M—, surgeon, æt. 45, died in the casualty-room January 14th, 1890. He was said to have been taken ill recently with influenza.

Post-mortem examination.—Body well nourished.

Respiratory system.—No disease of pharynx or tonsils except a slight degree of congestion, the latter more marked on under surface of epiglottis and in larynx, and much developed in trachea and larger bronchi. Both lungs were greatly congested and œdematous, and pneumonia was well marked in both. The lower half of each lung was solid, granular on section, and pink in colour. The consolidation was not so complete as is usually the case in acute lobar pneumonia, and separate islets of pneumonia could be seen to be ranged closely together, with unconsolidated lung between them. The same condition was seen in the upper confines of the disease, where it was spreading into the upper lobes. Here well-defined and rather large islands of granular pink aspect were clearly defined in lung tissue, which was only hyperæmic and œdematous.

Other organs.—Heart soft and pale, otherwise normal. Liver large, soft, pale, and friable. Kidneys, capsule removed with difficulty; surface very finely granular, dotted with small cysts; on section no abnormal appearances. Spleen large, $6\frac{3}{4}$ oz., medium consistence. Brain healthy. Stomach, considerable congestion of mucous membrane.

(2) *Influenza; acute pneumonia; pericarditis.*—H. S—, gas stoker, æt. 21, admitted January 10th, and died January 12th, 1890.

He had always been a healthy man with the exception of a slight cough, which was worse in winter.

On January 2nd he was suddenly seized with shivering and pains in the back. On January 4th frontal headache and pains behind the eyes were added to these symptoms. No discharge from nose. No soreness of throat. On January 7th he had a severe pain in the right side, much aggravated by the respiratory movements. Next day he went to another hospital, where his throat was sprayed, and he was given some medicine. On January 10th, as his pains had

increased, his cough was much worse, and his breath was very short, he came to this hospital.

On admission.—Anxious and distressed. Face dusky, lips livid. Looking extremely ill. Very restless, and not quite coherent in his answers. Tongue dry, and coated with thick brown fur. Lips cracked and crusted. No herpes.

Respiration very shallow and rapid, 48 to the minute. Cough short and hacking. Expectoration thick, purulent, not rusty, not profuse. Both lungs resonant in front. Dulness at right base, with tubular breathing and bronchophony. Vocal fremitus increased. Rhonchi audible all over. Tenderness in the præcordial region. No increased dulness. Sounds healthy.

Tenderness in right hypochondrium and over whole of hepatic area. No palpable enlargement of liver. Tip of spleen felt on inspiration. Urine a considerable trace of albumen, chlorides markedly diminished.

On the night of admission he scarcely slept at all. He continued in great pain, extremely restless and ill. On the 12th he was much worse. Expectoration profuse, dark brown in colour, uniformly mixed with much blood. During the afternoon he became very delirious and extremely restless, with constant vomiting. He died the same night.

The temperature was only once as high as 103°. The pulse-rate, however, was never less than 132, and the respirations rose in frequency from 48 on the 11th to 70 on the 12th.

Post-mortem examination.—There were old adhesions between the abdominal wall and the diaphragm, and the upper surface of the liver. The parietal and visceral layers of the pericardium were coated with recent lymph. The lower lobe of the right lung was solid, and in the stage of red hepatisation in some parts and of grey in others. The upper lobe was congested and friable. The left upper lobe was congested and œdematous; the lower congested and friable. The liver, spleen, and kidneys were normal. The brain was injected all over, but there was no excess of fluid.

(3) *Influenza; pneumonia.*—T. W—, waterside labourer, æt. 45, admitted January 13th, and died January 16th, 1890.

Only previous illness erysipelas 6 months before, but he had had a bad cough for some weeks.

On the afternoon of January 5th he was suddenly taken ill with "cold shivers." On January 7th he seemed better, but later in the day he had a fit of sickness, and began to complain of pains in his back. On January 8th and 9th he seemed much better, but on the evening of the 9th he again became very ill with just the same symptoms as before. On the 10th he was very hot and feverish.

When admitted on the 13th he was delirious and difficult to keep in bed. Respiration 42; pulse 120; temp. 104·2. Breath foul. Tongue thickly coated with brownish-white fur. There were general bronchitic signs over the front of the chest. In the right axillary region, where the patient complained of much pain and tenderness, friction-sounds were distinctly audible. The right base slightly duller than left, especially about the angle of the scapula. Crepitations in left axillary region. Not much cough. Expectoration scanty, viscid, rusty. Urine acid, distinct trace of albumen.

On the night of admission he was extremely delirious, requiring two porters to

keep him in bed. On the 14th still very delirious. Profuse perspiration. Still pain on the right side. On the night of the 14th violent delirium, no sleep. He was worse next day, and early on the morning of the 16th he died. The temperature after the first day was never over 102·6°; the pulse was not more rapid than 120, but the respirations increased from 42 on the 13th to 50 on the 15th.

Post-mortem examination.—Respiratory system. The right pleura contained half a pint of turbid serum. The surface of the right lung was everywhere coated with tenacious lymph. The middle lobe of the right lung was entirely consolidated, grey in colour, with granular surface. A small part of the upper part of the lower lobe was in the same condition. Elsewhere the lung was intensely œdematous. The left pleura contained about a quarter of a pint of turbid serum, and there was some lymph on the surface of the lung, which was intensely œdematous, but nowhere consolidated. The liver was large, weighing over 5 lbs., but showed no disease. There was no sign of disease in the other organs.

(4) *Influenza; congestion and œdema of lungs; diarrhœa; commencing peritonitis.*—J. G—, labourer, æt. 58, admitted January 21st, and died January 25th, 1890.

No previous illnesses. Temperate. About fourteen days before admission he began to suffer from a severe cold, which came on suddenly with shivering and running from the eyes and nose. No headache. No pains in the bones. He did not stop work although a bad cough came on, and he still suffered from attacks of shivering, especially at night. Feeling worse on January 21st, he came to the hospital.

On admission he was thin and pale. Tongue red, dry, superficially fissured transversely. No sordes. No herpes. Appetite poor. Skin hot. Lungs everywhere resonant, breath-sounds harsh. At both bases and in left axilla numerous moist crepitations; no tubular breathing. Respirations 28. Sputum viscid, no blood. Heart-sounds indistinct. Pulse soft, regular, 94. Neither spleen nor liver palpably enlarged. Erythematous blush irregularly distributed over the left leg below the knee, and over the dorsum of the foot.

The temperature, which was 102·4° when first taken, varied between 103·6° and 100·4° subsequently.

There were two or three attacks of sickness during the night of the 22nd, and patient suffered from pain in the left side of the abdomen. The bowels were relaxed. Urine, a trace of albumen. Sickness several times during day on 23rd. Bowels continued relaxed. Slight delirium during night of 23rd. Urine, no albumen. Pulse 120. Respirations 45. Bowels moved five times in twenty-four hours before death. No alteration noted in physical signs.

Post-mortem examination.—Marked œdema and congestion of both lungs. No pneumonia. Bronchi stained, empty. Heart, right side dilated. Liver fatty, normal size and weight. Spleen very soft, slightly enlarged, 7¾ oz., one small recent infarct. Stomach, some recent hæmorrhages over cardiac half. A little recent lymph over one or two coils of intestines, but no perforation found or other cause for the peritonitis. Intestines themselves normal. Thickening of arachnoid at vertex of the brain.

(5) *Influenza; double pneumonia.*—J. K—, labourer, æt. 53, was admitted on January 6th, 1890, and died on January 12th.

Previously a healthy man, he was attacked on the 4th with violent pains in the head, and a feeling of chilliness with cold sweats. He had pains in the limbs and running from the eyes and nose. No vomiting, but nausea. On the 5th he felt worse.

On admission, in addition to general pains he complained of pain in the left side of the chest. Tongue moist, furred in the centre. Pulse 112, hard and full; arteries thickened. There were signs of consolidation at the left base. Respiration shallow and rapid, 36.

On January 7th very weak, complaining of pains in the stomach, intensified by cough, which was troublesome.

On the 8th he commenced to expectorate a large quantity of frothy muco-purulent sputum of slightly rusty colour. On the night of the 9th he became delirious, and the pulse was feebler and more rapid. The tongue was now dry and brown. The delirium increased, and the pulse-rate rose to 140, the respiration-rate to 72, and he died about midday on the 12th. The temperature varied between about 101° and 103·4°; on the day he died it rose to 105·8°. Diarrhœa came on during the last two days of life.

Post-mortem examination.—The right upper lobe was in a state of hepatisation midway between red and grey. There was lymph on the surface. The left lower lobe showed typical grey hepatisation, and there was recent lymph on the surface. There was great œdema of the left upper lobe. The liver and kidneys showed cloudy swelling. There was also much uric acid deposit in the pyramids of the kidneys, and slight adhesion of the capsules. There was excess of fluid on the surface and in the ventricles of the brain.

II.—PYÆMIA.

Fatal Cases.

(1) *Pyæmia; thrombosis of right common iliac vein.*—T. J—, sawyer, æt. 40, admitted September 21st, 1890, died September 26th, 1890.

With the exception of smallpox in 1869, he had never been ill before. About fourteen days before admission he complained of a sore throat and cough, which came on a day or two after going to sleep by an open window with only his night-shirt on. He was treated at home, and was relieved in four days, but he became worse again, suffering from general malaise, thirst, and anorexia.

During the night of the 19th he noticed that his right elbow-joint was swollen. His left leg also became swollen and painful. He had rigors on the 19th, 20th, and 21st.

On admission.—The left leg, especially the calf, was swollen, and pitted on pressure. From the knee-joint upwards to Poupart's ligament could be felt a hard cord. The glands below Poupart's ligament were enlarged, and another mass could be felt above the ligament through the abdominal wall. The right elbow had a red blush over it, and there seemed to be fluid in the joint. The left shoulder-joint was slightly tender, but there was no redness or swelling.

The tongue was brown and furred. The breath had a sweetish odour.

No signs of disease in thorax or abdomen. Urine, no albumen.

Progress.—The temperature when first taken was 104·8°, but it fell in the

evening to 99·6°. At 3 a.m. on the morning of the 22nd he had a rigor lasting one hour, in which the temperature rose to 105·4°, and then fell gradually to 103°. He perspired profusely. He had no further rigors, but his temperature after the 23rd, when it reached a minimum of 99·6°, varied between 103°, and 105·6°. He continued to complain of pain and tenderness, especially in the right shoulder-joint. On the 25th it was noted that there was distinct evidence of fluid there. He was treated with morphia, sulphonal, antipyrin, and quinine.

On the 26th his pulse, which had been between 140 and 132 for the previous two days, rose in frequency to 156, and the temperature rapidly ran up to 107·2°, reaching 107·6° just after death.

Post-mortem examination.—No wound anywhere visible. In the left shoulder-joint was found about an ounce and a half of pus, and in the right elbow-joint about three drachms. The left common iliac vein was blocked with clot, which was softening in the centre. The right shoulder-joint was normal. There was no evidence of disease of bone in either of the affected joints, although the cartilage of the shoulder-joint was partially eroded. The brain and sinuses appeared normal. There were no obvious changes in the viscera.

(2) *Pyæmia secondary to acute inflammation of a goitre.*—E. H—, laundress, æt. 35, admitted November 28th, died November 30th, 1890.

Since eleven years of age she had had a goitre. No illnesses except confinements.

She was taken suddenly ill on November 23rd with pains all over her. She continued ill until the 26th, when the goitre commenced to swell and to pain her, which was relieved by poulticing. On the 27th she had a shivering fit lasting half an hour. Vomiting occurred twice.

On admission she was described as stout, with stigmata on her cheeks. Delirious. Stridor on breathing. Goitre of moderate size, soft, elastic, almost fluctuating. Pulse 144. Temp. 104·2°. Redness over the left elbow.

The goitre was punctured in the mid-line with a trocar, but only a few drops of blood issued from the canula.

During the night of the 28th she was noisily delirious.

On the afternoon of the 29th the goitre was incised in the mid-line, and a large cyst extending to the right was opened, from which escaped about two ounces of bloody fluid, possibly containing some pus. There was a good deal of bleeding.

She continued delirious. She seemed tender all over, but the left shoulder and elbow were particularly so, and pained her.

The temperature and pulse did not vary much.

Post-mortem examination.—The incision over the right lateral lobe of the thyroid opened an ill-defined cavity about the size of a walnut. There were three or four calcareous plates embedded in its wall. The gland, which was enlarged to the size of an orange, was everywhere extremely soft, and broken down into a reddish pulp. Near the cavity the gland tissue was infiltrated with pus, and outside the right lateral lobe, between it and the trachea, there was a small quantity of yellow pus. The upper half of the trachea on the right side was bulged towards the middle line. There was a little pus in the left shoulder and elbow joints. Knee-joints and sterno-clavicular joints normal. There was cloudy swelling of the liver and kidneys. The spleen was enlarged and diffluent. The lungs were congested and œdematous.

III.—HYDATID OF LUNG, PARACENTESIS, DEATH.

S. L—, male, æt. 9, was admitted on October 7th, 1890, and died October 21st. He had always been a healthy boy. A fortnight before admission he complained of pain in the left side, worse on coughing and on deep inspiration. The pain becoming worse, he was brought to the hospital.

On admission.—Lungs: Dulness over the lower part of the left lung below the fourth space in front, and the lower third of the chest behind. Over this area the breath-sounds were very faint, the vocal resonance impaired, and the vocal fremitus imperceptible. No friction. *Heart:* Impulse felt over the sternum. Sounds best heard just to the left of the lower end of the sternum. No dulness to the right of the sternum. Spleen not felt.

On October 10th the pain was gone. It was noted that the dulness now extended over the lower two thirds or three fourths behind, being complete in the lower half. Dull in front up to the nipple level. High-pitched resonance over the left apex in front. Heart displaced to the right. The pain, however, returned, and on the 17th friction was audible at the lower part of the chest on the left side in front. On the 10th the measurements were—left side 11½ inches, right 12 inches; on the 21st left 12¼ inches, right 12 inches.

On the 21st, at 4 p.m., the largest aspirating needle was inserted immediately below the angle of the scapula on the left side to a depth of about 1½ inches. After withdrawing the trocar, leaving in the canula, there was a delay of a few seconds before the tube from the vacuum bottle was connected with the canula, and during these few seconds clear fluid escaped freely, but on opening the stopcock no fluid was drawn out. At this moment clear frothy fluid began to pour out of the boy's mouth, and in a few seconds, with hardly any coughing, quite ʒiij to ʒiv were collected in a porringer. His lips became blue, the pulse feeble, and the canula was withdrawn. Subcutaneous emphysema developed all over the left side, and on percussion the left side of the chest was found to be quite resonant. A trocar and canula were introduced in the left anterior axillary line, and pent-up air at once issued. Respiration ceased, but the heart continued to beat. Artificial respiration was employed, but the heart ceased beating in about seven or eight minutes after the puncture.

Post-mortem examination.—Only a very partial one was allowed. Subcutaneous emphysema extended over the left half of the body as far as Poupart's ligament, and on the right side as far as the umbilicus. The left pleura contained a small quantity of blood-stained fluid. The lower lobe of the left lung was firmly adherent by old adhesions over an area of about four square inches situated in the posterior axillary region. Into this the aspirating needle had passed. On breaking down the adhesions a hydatid cyst was found occupying a large part of the lower lobe, and only covered by pleura. It was a little less than the size of the closed fist. It was collapsed, and the hydatid was also collapsed and lay free in it. The hydatid presented a single small orifice like that which would be made by a fine needle, and another larger rent with ragged edges. The hydatid was single. The cyst formed in the lung by compression was not very thick-walled, and its internal surface was covered with the results of

chronic inflammation. Into this cyst opened by a largish orifice the main bronchus, and a bristle was passed into it. There were other smaller openings into the lung. There was a similar single cyst, but somewhat smaller, in the right lobe of the liver at its lower border.

IV.—ADHERENT PERICARDIUM; ENLARGEMENT OF LIVER DUE TO CHRONIC CONGESTION; ASCITES; ANASARCA.

W. G—, a female child, æt. 5, was admitted April 29th, 1890.

Her illness commenced two months previously with diarrhœa, vomiting, and pain in the stomach. She got thin and weak. No history of any serious illness before this.

On admission the liver was found to be uniformly much enlarged, nearly reaching to the iliac crest. No jaundice. No sign of disease elsewhere.

She suffered only from cough, and pain and discomfort in the region of the liver. She was treated with iodide of potassium, and discharged relieved on May 30th.

On July 23rd she was readmitted. The abdomen was now more distended. Her cough was more troublesome; she was capable of little exertion without fatigue.

On examination there was found to be ascites, and paracentesis was performed, three quarters of a pint of serum being removed.

She became rapidly worse. The legs and vulva became œdematous. She had great abdominal pain.

On August 12th the abdomen was again tapped, but this afforded her no relief, and she died on the next day.

Post-mortem examination.—The pericardial sac was completely obliterated, and there was very great thickening of the combined pericardial layers, being nearly half an inch thick over the right auricle where it was greatest. The cardiac muscle was thinned, soft and pale. The liver was very large, in typical nutmeg condition, and showing increase of connective tissue. In the ileum there were two tubercular ulcers, and the corresponding mesenteric glands were much enlarged.

V.—ANEURYSM OF THE HEART; CONTRACTED GRANULAR KIDNEYS.

C. F—, female, æt. 55, admitted August 6th, 1890; died August 25th, 1890.

She had had no illnesses since childhood, but she had been failing in health for some time before October, 1889, when she was suddenly attacked with palpitation of the heart, for which she was treated for fifteen days in St. Mary's Hospital. She then went to Brighton, where she had an attack of bronchitis. In January, 1890, her legs became swollen and painful, and the dropsy continued until admission.

On admission she was described as well-nourished. Orthopnœa. Lips blue. Stigmata on cheeks. Moderate œdema of legs and thighs. *Heart:* Dulness began at third space, and extended directly outwards to a spot in the sixth space well outside the nipple line and 5 inches from the middle line. The impulse at this point was feeble. The cardiac dulness extended also to the right of the sternum, following the fourth rib to a line passing about 1 inch internal to the nipple. Sounds faint, no bruit. Pulse very feeble. Lungs resonant. Breath-sounds faint. Fine crepitations at the bases.

Liver enlarged, reaching to the level of the umbilicus, dulness commencing at the fifth rib. Urine contained a small quantity of albumen. No alteration was noted in the condition of the patient.

Post-mortem examination.—Marked dropsy in legs. Both pleuræ contained about a pint and a half of clear fluid. *Lungs* generally congested, pigmented, and œdematous, as ordinarily seen in chronic heart disease. *Heart:* Pericardium contained about half a pint of clear serum. The visceral layer was a little roughened near the base on the anterior aspect. At the apex, or rather to the right of it, it was firmly adherent to the external layer both by old and recent adhesions. There was, too, at that spot a little recent fibrinous exudation. The heart was clearly much enlarged, especially the left ventricle. Upon the external surface to the right of the apex, and looking as if it sprang from the right ventricle, was a bulging prominence about the size of a walnut or somewhat larger. It bulged forwards, and the wall felt in some places very thin. This was due to an aneurysm of the left ventricle at the apex. The sac internally was much larger than it appeared externally. A Tangerine orange could almost have fitted into it. It was quite filled with clot, the deepest layers being laminated pinkish white, and rather friable, the others dark. The remaining cavity of the left ventricle was small. The sac had actually reached the visceral pericardium, and in some places no muscular tissue remained beneath it. Valves healthy and competent. No apparent cause for the aneurysm. The walls of the left ventricle where they thinned off into the sac were thin, hard, and fibrous. *Kidneys* congested and hardish. Cortex not much reduced or uneven on section. Capsule thick, and on removal exposed a very irregular granular surface. *Liver* and *spleen* congested. *Brain* healthy; a little atheroma of vessels.

VI.—ADDISON'S DISEASE.

Fatal Case.

H. F—, sailor, æt. 40, was admitted January 30th, 1890; died February 6th, 1890.

He had had very good health before the illness for which he was admitted. In the summer of 1885, while working in a garden, he fell down fainting, and was laid up for a week with what the doctor called stoppage. He had been all over the world, but for the last ten years he had lived in Ireland and Cornwall in the Coastguard Service. Generally temperate, for the last twelve years he had been teetotal.

In the summer of 1888 he was laid up in bed in Ireland with general weak-

ness for about fourteen days. He was fairly well for six months, and was then attacked with weakness of the legs, became unable to walk, and was in bed for twenty-eight days. At this time he first noticed brown spots on the inner part of the thighs. He also suffered from sickness. From this time onwards he felt ill off and on, being occasionally sick after meals. The pigmentation increased. He attended various doctors and took their medicines, as well as "patent medicines." On the 17th of January he was attacked with great weakness, inability to walk, and pain across the umbilicus. He was in bed three days and then came up to London, just being able to walk a little. For the week before admission he was occasionally sick after meals. He had no pain. He had emaciated, but not conspicuously so.

On admission.—The face, neck, and hands very dark, giving him a dark olive complexion. There was general pigmentation of the limbs and trunk, as well as of the face and neck, but this was less marked on the trunk, more so on the legs and on the dorsum of the feet, as well as on the extensor surface of the arms and backs of hands. Axillæ and flexor aspects of joints not pigmented. There were deep patches of pigment on the legs and thighs, which patches were of different size, the largest being situated on the posterior and outer surfaces of the calves, some being quite small, the size of peas, others an inch or two in diameter. The margins of the larger patches were irregular, and honeycombed by small patches of atrophied skin, appearing like small cicatrices in the midst of the darker pigment. Some of the dark spots were said to have commenced as white patches. On the right arm a few small spots of pigment were present. There were also some patches over the lower part of the back, but these were quite smooth, and not honeycombed as many of those on the legs were. The skin over the legs was a little dry, but over the trunk was smooth and natural in feel. On the lips were several small patches of dark pigment, especially where the lips meet. There were no pigment marks from pressure of the teeth on the gums. No pigment on soft palate or buccal mucous membrane. The pulse was 76, weak. There were no signs of disease in the heart, lungs, or abdominal organs. Urine, no albumen.

Progress.—He had repeated attacks of retching and sickness, and suffered from severe abdominal pain. On February 5th the retching was violent, the pain very severe. He brought up small quantities of green bile-stained fluid. Pulse imperceptible. Legs flexed, pain at knees on extension. Knee-jerks not obtained. There was very little retching after noon on the 5th, but the abdominal pains continued. Towards evening pains were experienced all over. He became drowsy, and slept from midnight till 4 a.m. He complained of pain again in the morning. Slept again about 8 a.m., and died in his sleep about 9.30.

Post-mortem examination.—Body emaciated and generally deeply bronzed. The neck, penis, and legs even more deeply pigmented than other parts; axillæ not much darker than parts around. The *heart* very small and deeply coloured, otherwise normal. *Lungs.*—The right everywhere adherent by old tough adhesions. The left similarly adherent in the upper third. Both healthy except for old pigmented cicatrices with small caseous masses at the apices. No tubercles. Liver, kidneys, spleen, all quite healthy. Liver rather small, rich chocolate in colour. Both supra-renals were the seat of caseation, and firmly adherent to the

surrounding parts, the right to the liver, the left to the stomach. The caseous material was firm and in irregular masses, leaving a small portion of each body not quite destroyed, but no healthy supra-renal tissue was seen. Where the caseation was less complete but going on, some small round dots like tubercle could be seen.

VII.—CANCRUM ORIS FOLLOWING MEASLES.

(1) A. M—, æt. 3, was admitted on November 10th, 1890, and died on November 17th.

The boy had measles three weeks previously, and ulceration commenced on the buccal aspect of the mouth, and gradually extended through to the cheek on both sides.

On admission.—The face was swollen, and there was a large hole on each cheek beyond the angle of the mouth. These holes were conical, and lined with black slough. The mucous membrane over the hard palate opposite was also ulcerated, and one of the teeth had dropped out. The sloughing tissue had a very offensive odour. There seemed to be no pain.

Progress.—The child was fed with the nasal tube, as it was unable to swallow, and the mouth was syringed with Condy's fluid. On the 12th the isthmus separating each hole from the mouth gave way; seven teeth fell out. A black swelling appeared next day on the left cheek, and gradually spread upwards along the side of the nose. The ulceration completely surrounded the mouth. The child got weaker each day, and latterly it became almost impossible to feed it.

Post-mortem examination.—The greater part of both cheeks had been destroyed, and as far up as the lower eyelids the surface was converted into a black, highly offensive mass. The gums were gangrenous, and most of the teeth in the lower jaw were wanting. The palate and tonsils were not involved. Cervical glands much swollen. The anterior half of each lung was dotted with small yellow masses, probably degenerated broncho-pneumonic nodules, and with patches of pulmonary collapse. The right lung was more affected than the left. There was recent lymph over the surface of the left lung. No other abnormality.

(2) H. M—, æt. 13 months, sister of the preceding patient, was also admitted on November 10th. Died November 13th.

On the 4th November she had a slight attack of measles. Ulceration commenced on the inner side of the mouth, for which strong carbolic acid was applied by the doctor.

On admission the lips were sloughing, yellow, and corrugated, and there were lines of yellow running downwards towards the chin, probably the stains produced by the application of the acid. The child was unable to swallow, and it was fed by the nasal tube.

On the 13th it was much worse, convulsions came on, and it died. The temperature was highest just before death, being then 103·6°.

Post-mortem examination.—Body emaciated. Parts of the lips and the tip

of the tongue ulcerated away, but the parts having become dry it was difficult to determine the exact extent of the lesions. In the lungs were a few scattered grey tubercular granulations, and here and there patches of broncho-pneumonia.

VIII.—DUODENAL ULCER; OBSTRUCTION OF COMMON BILE-DUCT; JAUNDICE; MALIGNANT DISEASE OF LIVER; INTESTINAL AND CEREBRAL HÆMORRHAGE.

E. K—, a married woman, æt. 47, admitted July 3rd, 1889, on account of jaundice and pain and swelling in the region of the liver. Her illness commenced five weeks previously with severe paroxysms of pain in the region of the liver, accompanied with vomiting.

The liver was much and uniformly enlarged. A pyriform swelling existed in the situation of the gall-bladder.

The patient remained in the hospital on this occasion two months. During this time she steadily lost flesh, her weight, which was 8 st. 4 lbs. on July 6th, being 7 st. 5 lbs. on August 24th. There was no marked change in her symptoms except that the jaundice became less marked.

She was readmitted on February 10th, 1890. During the interval the jaundice had deepened, and she had suffered from attacks of pain in the region of the liver. She was now described as extremely jaundiced. The liver was larger than formerly and somewhat nodulated, and the gall-bladder formed a larger tumour. She was nearly 8 lbs. lighter than when she left, but she gained in weight 5 lbs. during the next few weeks. On March 15th she had epistaxis. On March 16th she was found to be comatose, and died after about 18 hours.

Post-mortem examination.—In the duodenum an ulcer, the size of a shilling, surrounded the orifice of the common duct. Its edges were adherent to the floor, but otherwise there was little evidence of cicatrisation, and there was no sign of growth about it. The liver was very large, containing many masses of yellowish-white, rather firm growth. The gall-bladder was dilated, thickened, and full of slightly yellow, glairy fluid. On squeezing it fluid exuded slowly through the orifice of the common duct. Both hepatic ducts were moderately dilated. The diaphragm was adherent and infiltrated with growth. The small intestine below the duodenum was full of thick, reddish-brown blood. Beneath the dura mater on each side a thin film of black blood covered the convolutions of the middle three fifths of the convex surface.

IX.—CASES OF CEREBRAL ABSCESS.

(1) *Cerebral abscess of left hemisphere; meningitis.*—C. M—, carman, æt. 24, admitted February 25th, 1890; died February 28th, 1890.

About the end of December he was taken suddenly ill with shivering, severe headache, and aching pains all over. The illness was supposed to be influenza, the epidemic being then very prevalent. He remained in bed one week, and

then complained of severe pains in the back of the right thigh. Two days after this he had a fit in the morning, which lasted about ten minutes, the jaws being tightly closed and the right hand clenched. The eyes were turned up, and there was frothing at the mouth. Consciousness was not lost, although the patient was unable to speak. A second fit occurred at night, after which his speech was confused. For about 14 days there were no fits. He had, however, during the next fortnight seven more fits, the last, five weeks before admission, the most severe. Since this fit he was unable to swallow any but liquid food. Shortly after it he lost power in his right side, and became aphasic. He continued to understand what was said to him. He had severe attacks of headache.

On admission.—Complete right hemiplegia. Mental hebetude. Incomplete ptosis on the left side. The inward movement of left eyeball certainly impaired. Well-marked optic neuritis, with hæmorrhages round the discs. Incontinence of urine.

He became very drowsy on the 27th; the drowsiness deepened into coma, the breathing became stertorous, and he died on the 28th.

Post-mortem examination.—The meninges contained much blood; the arachnoid markedly sticky. Convolutions flattened. Occupying the posterior part of the frontal and the anterior part of the parietal lobe on the left side, there was an abscess, two ounces of tenacious green pus being contained in a smooth-walled cavity. The ventricles contained excess of fluid and there was softening of their surroundings, as in ordinary meningitis.

(2) *Cerebral abscess of right occipital lobe.*—C. C—, a girl, æt. 14, admitted April 17th, 1890; died April 19th, 1890. In the beginning of February she had influenza, and remained weak after it. In March she began to complain of headache. In the beginning of April she had attacks of vomiting. On April 15th the vomiting returned with greater severity than before. She complained then of pain in the head, eyes, and temples, and down the neck. She had dimness of vision. On April 16th the headache became intense, coming on in paroxysms every twenty minutes.

On admission she was described as lying in bed, and from time to time uttering piercing shrieks on account of the agonising pain in her head, coming on every five or ten minutes, not localised but general. Neck muscles rigid. Marked photophobia. No optic neuritis. No paralysis or affection of sensation anywhere.

She passed a bad night on the 18th. She had fits of screaming from 1 a.m. to 4 a.m. She was given opium, which quieted her. She remained drowsy in the morning. Later she became comatose, and died about 11.30.

Post-mortem examination.—Brain: Convex surface dull, pale, and sticky. In the right occipital lobe an abscess the size of a Tangerine orange, containing greenish, thick, offensive pus. The cortex on the lateral and under aspect softened and slate-coloured. The walls of abscess well defined. The posterior part of the temporal convolutions were involved. An opening was found between the right lateral ventricle and the abscess near the posterior end of the descending cornu. No sign of bone disease, either of ears or frontal sinuses. Thoracic and abdominal viscera healthy.

(3) *Cerebellar abscess; broncho-pneumonia.*—J. W—, æt. 54, a hairdresser, admitted August 21st, 1890, died August 23rd.

No history of previous illnesses, except influenza during the prevalence of the epidemic in the winter.

Three months before admission he began to suffer from cough, shortness of breath, wheezing, and pain in the head, and lost flesh very much.

On admission he looked very ill. He lay in bed almost unable to give any account of himself. Eyes sunken, cheeks fallen in, and generally emaciated. Respiration shallow and rapid, 44 to the minute, almost entirely diaphragmatic. Percussion note resonant both in front and behind. Over the middle third of the right lung the breathing was almost cavernous in character, and pectoriloquy was well marked. Cough troublesome. Expectoration muco-purulent. Tongue dry and cracked. Pulse 120. He gradually sank, and died two days after admission.

Post-mortem examination.—Lungs: Numerous patches of grey and red broncho-pneumonia, forming by their confluence large tracts of consolidation in the left lower lobe. Hypostatic congestion of the posterior part of the upper lobe. At extreme apex some puckering of the surface; on section the connective tissue was slate-coloured and dense. Red and grey broncho-pneumonia in the right lower lobe, with much hypostatic congestion. In the right lower lobe, extending from the root of the lung, there was some pale, rather firm new growth. No sign of disease in other parts except in the brain.

Brain: Surface injected all over, vessels and sinuses normal. Both ears quite healthy. In the white matter of the left half of the cerebellum, but not reaching to the cortex, was an ill-defined abscess about the size of a marble, containing about two drachms of brownish pus. There was no defined membrane, and the white matter around was soft, but showed no sign of new growth or hæmorrhage.

(4) *Abscess of cerebellum secondary to disease of right middle ear; trephining of mastoid cells.*—E. B—, æt. 23, unmarried, domestic servant, admitted November 7th, 1890; died November 19th, 1890.

As a child she suffered from earache and "gatherings" in the right ear. She had influenza in February, 1890, which was followed by earache and renewed discharge from the right ear, which continued more or less until her present attack.

About a fortnight before admission, the discharge having stopped for a few days, she had a gathering in the right ear which burst. On October 26th she had a rigor and pain in the right side of the head and right eye. She vomited on the 28th and 29th, and felt giddy all the following week.

On admission there was paresis of the right side of the face, and she was quite deaf in the right ear. On November 11th she had a shivering attack. On the 13th the mastoid cells on the right side were trephined. On the 16th she was sick three times, and once on the 17th. The optic discs were examined several times, and found to be normal. Both before and after the trephining she suffered from severe headache, which came on in paroxysms. The temperature varied between 99° and 102·2° before the operation, and between 100·4° and 104° after the operation, although for the last two days of her life it was not above 100·6°.

Post-mortem examination.—The dura mater over the roof of the right tympanum was softened and pulpy, but not wanting anywhere. The roof

itself was carious, and the diseased bone was infiltrated with pus. The membrana tympani was not ruptured, though very pulpy and much thickened. The ossicles were normal. The mastoid cells were healthy. There was an abscess in the anterior half of the right hemisphere of the cerebellum, measuring an inch from before backwards, and half an inch from side to side. Externally it reached to the cortex, which was discoloured a dirty grey. The contents were offensive dirty green pus, about a drachm in quantity. The under surface of the temporo-sphenoidal lobe contiguous was slightly discoloured, but not otherwise affected.

X.—CEREBRAL BRUISING FROM FALL ON THE ICE.

J. W—, printer's boy, æt. 16, fell on the ice on 28th December. He was not stunned by the fall, and was able to walk home. His mother noticed that in the evening he became stupid and dull. This condition became more marked next day.

On admission, December 30th, he seemed dull and drowsy. When spoken to loudly he could be aroused to give his name correctly, but his speech was stammering. His legs were flexed at both the hip and knee-joints, and if passively extended were at once drawn up again. Arms flexed and drawn across the chest. Pupils contracted, equal, reaction to light sluggish. Later in the evening it was noted that he was unconscious, unable to swallow, that his right arm was constantly being brought up to his head. Cheyne-Stokes respiration. He died just before midnight the same evening. His temperature was 103° on admission, at 6 p.m. was 105·4°, but was somewhat lower before death.

Post-mortem examination.—No external mark of injury. No fracture of skull nor bruising of pericranial tissues. There was slight but undoubted ante-mortem extravasation of blood in pia mater over the tip of the right occipital lobe and the tip of the left temporo-sphenoidal lobe, and a few less certain patches here and there over the frontal lobes. The intra-cerebral vessels were also unnaturally full, and there was a little bloody fluid in both lateral ventricles.

SURGICAL REPORT.

1890.

By E. SOLLY, M.B., F.R.C.S.

Preface.

The Surgical Report has been drawn up on the same general lines as its predecessors, Tables I, II, and III giving the diseases, injuries, and surgical operations respectively; the Special Tables I, II, III, and IV giving the cases of "Erysipelas," "Pyæmia," "Hernia Operations," and "Fractures and Dislocations treated in the Casualty Department;" to these are added the special summaries of selected cases of diseases and injuries.

Attention is directed to the fact of the death-rate being below the average of recent years, 1 per cent below that of last year.

The number of erysipelas cases arising in Hospital is less

than usual; and of the pyæmia cases, all arose in connection with acute bone disease, and, as will be seen from the Table, the disease must have commenced before the admission of the patients to Hospital.

General Surgical Statement, not including the Ophthalmic Cases.

Number of surgical beds	241*
„ of patients in hospital, January 1st, 1890	364
„ of surgical patients in hospital, January 1st, 1890	188
„ of patients in hospital, December 31st, 1890	348
„ of surgical patients in hospital, December 31st, 1890	191†
„ of patients treated to a termination in 1890	2231‡

	Total.	Males.	Females.
Discharged cured	1552	1071	481
„ relieved	397	202	195
„ unrelieved	139	63	76
Died	143	98	45
Totals	2231	1434	797

Average number of deaths 6·4 per cent.

„ „ days in hospital of each surgical patient 29·5.

Ophthalmic cases (in-patients):

Cured	116	59	57
Relieved	130	61	69
Unrelieved and other causes	18	10	8
Died	1	1	0
Totals	265	131	134

Average number of days of each patient's stay in hospital 22·7.

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* Including William, Anne, and Magdalen Wards, and counting small wards as one bed each.

† Including ophthalmic cases, 211.

‡ Total, including ophthalmic cases, 2496.

Table I.—*Abstract, showing Diseases in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not
GENERAL DISEASES.																		
Erysipelas	29	26	10	4	7	6	7	11	7	3	34	10	3	...	...	...	...	
Syphilis—																		
Primary	1	2	...	...	1	1	...	...	1	...	...	...	1	2	...	...	...	
Secondary	1	22	...	...	9	12	1	...	...	1	...	...	2	5	7	4	...	
Tertiary	...	7	...	...	2	3	1	1	...	...	...	...	...	1	...	...	6	
Congenital	...	3	3	...	...	...	...	...	...	...	...	2	...	...	...	...	...	
Tetanus	3	...	...	...	1	...	...	1	1	...	2	1	...	...	...	...	...	
Rachitis	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	
LOCAL DISEASES.																		
Tumours—																		
Carcinoma—																		
Scirrhus of breast	1	22	...	...	1	...	2	9	2	9	...	...	...	1	1	12	9	
Do., breast and glands	1	12	...	...	...	...	3	3	4	3	...	...	...	...	4	5	3	
Do., do. (recurrent)	1	3	...	...	...	...	...	2	2	...	...	...	...	...	1	1	1	
Duct cancer of breast (recurrent)	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	
Nipple, recurrent	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	
Lip and nose	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
Larynx and glands	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	
Œsophagus	1	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	
Liver	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	
Stomach and intestines	1	1	...	...	...	...	1	...	...	1	...	...	...	...	2	...	...	
Rectum	3	7	...	...	...	...	2	2	4	2	...	1	...	...	1	4	4	
Do. (recurrent)	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	
Prostate	1	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	
Bladder	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	
Upper jaw	2	...	...	...	...	...	1	...	1	...	...	...	...	...	1	...	1	
Epithelioma—																		
Scalp	1	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	
Ear	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	
Cheek	5	...	...	...	...	...	...	1	2	2	...	...	...	...	4	...	1	
Lip	3	...	...	...	...	...	...	1	...	2	...	...	...	...	1	2	...	
Tongue	5	...	...	...	...	...	...	3	2	...	...	...	...	2	2	...	1	
Do. (recurrent)	3	...	...	...	...	...	...	1	2	...	...	...	...	...	...	3	...	
Tonsil and glands	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	
Submaxillary gland	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	
Neck	1	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	
Glands of neck	2	...	...	...	...	...	...	...	1	1	...	...	...	1	1	...	...	

according to authorised Nomenclature.

Duration of residence.							Result.				Remarks.
s. –4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
3	23	18	6	5	...	...	50	2	...	3	Fatal cases: septicæmia 1, shock 1 (scald), malignant disease of rectum 1.
.	2	...	1	...	...	...	1	2	...	...	
1	2	12	6	2	...	...	6	16	1	...	
.	1	...	4	2	...	...	4	3	...	...	
2	1	...	...	...	...	...	...	...	...	3	Fatal cases: 2 under 1 month old; 1, age 2, exhaustion (nævus).
2	1	...	...	...	...	...	...	...	...	3	Nail in boot 1; compound fracture of thumb 1; anal fistula 1.
.	...	1	...	...	...	...	...	1	...	...	
.	...	...	...	...	...	...	15	1	5	2	Fatal cases: 1 septicæmia; 1 exhaustion, unfit for operation.
.	1	3	9	...	...	...	3	9	1	...	
1	...	2	1	...	...	...	1	3	...	...	Discharge from nipple 10 years.
.	...	1	...	...	...	...	1	...	...	...	
.	...	1	...	...	...	...	1	...	...	...	Carcinoma. Removed in 1887.
.	...	1	...	...	...	...	...	...	1	...	Supposed rhinoscleroma.
.	...	...	1	...	...	...	...	1	...	...	
.	...	1	...	...	...	...	...	...	...	1	Œsophagostomy.
.	1	...	...	...	...	...	...	1	...	...	
.	...	2	...	...	...	...	...	...	1	1	Exploratory laparotomy.
1	1	1	5	2	...	...	4	2	1	3	Fatal cases: exhaustion 2; third case moribund on admission.
.	...	...	1	...	...	...	1	...	...	...	
.	...	...	...	1	...	...	...	...	...	1	Colotomy. Death from cystitis and exhaustion.
.	...	...	...	1	...	...	...	...	1	...	
.	...	...	1	1	...	...	1	...	...	1	"Spheroidal cells" in antrum.
.	...	1	...	...	...	...	1	...	...	...	
.	1	...	...	...	...	...	1	...	...	...	
.	2	1	1	1	...	...	3	...	2	...	
.	...	2	...	1	...	...	2	1	...	...	
.	...	2	1	2	...	...	4	1	...	...	
.	...	2	1	...	...	...	...	2	1	...	
.	1	...	...	...	...	...	...	...	1	...	
.	...	1	...	...	...	...	1	...	...	...	
.	...	1	...	...	...	...	...	...	1	...	Supervening on lupus.
.	1	1	...	...	...	...	2	...	...	..	

TABLE I.—*Abstract, showing Diseases in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Chronic
LOCAL DISEASES—*continued.*																	
Tumours.																	
Epithelioma—																	
Glands of neck (recurrent)	2	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	2
Jaw and neck (recurrent)	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...
Penis	2	...	...	...	...	...	...	2	...	...	...	...	...	...	1	...	1
Thigh	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...
Rodent ulcer of face	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1
Sarcoma—																	
Neck	1	1	..	...	...	...	...	1	1	...	...	...	...	...	2	...	...
Axilla	1	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...
Pectoralis	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Back	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1
Breast (recurrent)	...	2	...	...	...	...	...	2	...	...	...	...	...	...	...	1	1
Parotid	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Scalp	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Upper jaw	2	2	..	..	...	1	...	2	...	1	...	...	...	1	1	...	2
Hard palate	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1
Orbit	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...
Do. (recurrent)	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Sternum	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Spine	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Ilium	2	...	...	...	...	1	...	1	...	...	...	...	...	...	1	1	...
Thigh	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...
Kidney	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Testis	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...
Malignant Disease (nature undetermined)—																	
Neck	3	...	...	...	...	...	...	...	1	2	...	...	...	...	2	...	1
Thyroid	2	...	...	...	..	...	...	...	...	2	...	...	...	1	...	...	1
Prostate	2	...	...	...	...	...	...	...	...	2	...	...	...	1	...	...	1
Rectum	6	...	...	...	...	...	...	1	1	4	...	2	...	1	1	2	...
Leg	1	...	...	...	...	.	...	1	...	...	...	...	...	...	...	...	1
Cheek	2	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	1
Larynx	2	...	...	.	...	...	...	...	2	...	...	...	...	...	...	2	...
Abdomen	1	1	1	...	...	...	...	1	...	...	...	...	...	...	1	1	...
Bladder	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...
Simple Tumours—																	
Lymphadenoma	1	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...
Adenoma	.	6	...	...	...	3	...	3	...	...	...	...	...	...	3	2	1
Angeioma, cavernous	...	6	1	2	1	2	...	...	...	...	...	...	...	..	1	...	5
Do., capillary	1	3	1	1	1	...	...	...	...	...	...	...	...	...	...	...	3

according to authorised Nomenclature—continued.

Duration of residence.							Result.				Remarks.
ys. −4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R	U.	D.	
..	...	1	1	...	...	...	...	...	...	2	Too advanced for operation.
..	...	1	...	...	...	...	...	1	...	...	
..	1	1	...	...	...	...	2	...	...	...	
..	...	...	1	...	...	...	...	...	...	1	Supervening on old burn-scar. Amputation at hip-joint.
..	1	...	...	...	...	...	...	1	...	...	
1	...	1	...	...	..	...	...	...	1	1	Syncope. No operation.
..	...	...	1	...	...	...	...	...	1	...	
..	1	...	...	...	...	...	...	...	...	1	Second recurrence. Death from acute septicæmia.
..	...	1	...	..	...	...	1	...	...	...	
..	...	2	...	...	...	...	2	..	...	...	
..	...	1	...	...	...	...	1	...	...	...	
..	1	...	...	...	...	...	...	...	1	...	
1	...	1	2	...	...	...	2	..	2	...	1 male and 1 female recurrent.
..	...	...	1	...	...	...	1	...	...	..	
..	...	...	1	...	...	...	1	...	..	...	
..	1	...	...	...	...	...	1	..	...	...	
..	...	...	...	1	...	...	1	...	...	...	
..	1	...	...	...	...	...	...	...	1	...	
..	2	...	...	...	...	...	...	...	2	...	
..	...	...	...	1	...	...	1	...	...	...	
..	1	...	...	..	...	...	...	...	..	1	Abdominal nephrectomy.
..	...	...	1	...	...	...	1	.	...	...	
..	...	2	1	...	...	...	...	1	2	...	
..	1	1	...	...	...	...	..	...	1	1	Fatal case: syncope. No operation.
..	...	...	...	2	..	. .	...	1	...	1	Fatal case: colotomy. Death from exhaustion.
2	...	2	...	2	...	...	...	3	1	2	
..	...	1	...	...	...	...	...	...	1	...	
..	1	1	...	...	...	...	...	1	1	...	
1	...	...	. .	1	...	...	...	2	.	...	
1	...	1	...	...	...	...	...	...	2	...	
..	...	...	...	1	...	...	...	...	1	...	
..	...	...	1	...	...	...	...	1	...	...	
..	3	2	1	...	...	...	6	...	...	. .	
..	3	1	2	...	...	...	5	...	1	..	Axilla 2, lip 1, foot 1, abdominal wall 1, wrist 1.
..	...	2	...	1	...	...	2	2	...	...	

Table I.—*Abstract, showing Diseases in Classes,*

Disease.	Sex.		Age.								Duration before admission.							
	M.	F	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not
Local Diseases—*continued.*																		
Simple Tumours.																		
Fibroma	3	2	...	...	2	...	1	...	2	...	...	1	...	...	...	1	3	.
Fibro-myoma	...	3	...	...	1	1	...	1	..	..	...	...	1	1	...	...	1	.
Lipoma	4	12	...	...	5	...	3	6	2	...	...	...	...	...	1	3	12	.
Chondroma	1	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...	2	.
Exostosis (ivory)	...	1	...	...	...	1	...	..	...	...	...	...	...	...	...	...	1	.
Do. (spongy)	1	2	...	..	3	...	...	...	...	...	...	...	...	...	...	2	1	.
Epulis	1	4	...	1	...	1	...	2	...	1	...	...	...	...	2	1	2	.
Polypus	2	3	...	...	2	1	...	1	...	1	...	...	...	...	...	1	4	.
Urethral caruncle	...	1	...	...	...	...	...	...	...	1	...	...	...	...	..	1	...	.
Parotid tumour	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	.
Cysts—																		
Dermoid	1	1	...	...	2	...	..	...	...	...	...	...	...	...	...	...	2	.
Sebaceous	...	3	...	...	...	1	...	2	...	...	...	...	...	...	...	...	3	.
Synovial	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	.
Of neck	...	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	.
Of breast	...	6	...	...	...	1	2	2	1	...	...	...	...	1	2	...	3	.
Of lower jaw	...	1	...	...	...	...	1	..	...	...	...	...	...	1	...	...	...	.
Ovarian	...	5	...	...	...	...	1	2	...	2	...	1	...	...	1	2	1	.
Digestive System.																		
Tonsillitis, acute	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
Do., chronic	...	2	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	
Glossitis, acute	...	1	..	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
Do., chronic	3	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	3	
Pharyngitis, acute	1	1	...	...	...	...	1	..	1	...	2	...	...	...	...	...	...	
Do., tubercular	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	
Hypertrophy of gums	...	2	...	...	2	...	...	...	...	...	...	...	...	1	1	...	...	
Stricture of œsophagus	1	1	...	...	...	...	...	...	2	...	...	...	...	...	...	...	1	
Gastro-enteritis	...	1	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	
Hernia—																		
Inguinal, reducible	24	1	7	2	3	10	1	1	...	1	...	...	...	2	1	9	13	
,, irreducible	9	...	...	...	1	1	1	...	3	3	1	..	1	...	...	1	6	
,, congested	14	1	...	...	2	3	...	6	1	3	6	...	...	1	...	1	6	
,, strangulated	12	1	1	...	...	5	1	...	2	4	8	1	...	...	...	1	3	
,, incarcerated	2	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	2	
Inflamed herniotomy scar	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	
Hernia—																		
Femoral, irreducible	...	8	...	...	1	...	4	1	...	...	1	...	1	...	...	...	8	
,, congested	...	5	...	...	1	2	1	1	...	...	2	...	...	...	...	1	1	
,, strangulated	1	15	...	...	...	...	3	5	5	3	11	3	...	...	...	...	...	

according to authorised Nomenclature—continued.

Duration of residence.						Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts 2–6	Mts 6–12	Mts. +12	C.	R.	U.	D.	
...	3	2	...	...	...	5	...	...	...	Spermatic cord 1, back 1, foot 2, jaw 1.
1	1	...	1	...	...	2	...	1	...	
8	6	...	...	...	...	15	...	1	...	Of neck 2, of shoulder 3, arm 1, back 3, buttock 2, thumb 1, popliteal space 2.
2	...	...	...	...	...	2	...	...	...	Of parotid.
...	1	...	...	...	...	...	1	...	...	In external auditory meatus.
1	2	...	...	...	...	3	...	...	...	1 of tibia, 2 subungual.
5	...	...	...	...	...	4	...	1	...	
4	...	...	...	...	...	4	...	1	...	
...	1	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	1	...	...	...	Myxo-adenoma.
1	1	...	...	...	...	2	...	...	...	
1	1	1	...	...	...	3	...	...	...	
...	...	1	...	...	...	1	...	...	...	
...	1	...	...	...	...	1	...	...	...	
1	4	1	...	...	...	6	...	...	...	
...	1	...	...	...	...	1	...	...	...	
1	2	1	...	...	...	2	...	...	3	Fatal cases: 1 shock, 1 hæmorrhage, 1 exhaustion (chronic peritonitis and intestinal obstruction).
...	...	...	...	...	...	...	...	...	1	Dying on admission.
...	...	1	...	...	...	2	...	...	...	
1	...	...	...	...	...	1	...	...	...	
2	1	...	...	...	...	1	2	...	...	
...	1	...	1	...	...	1	...	...	1	Fatal case: Ludwig's angina.
...	...	...	1	...	...	...	...	...	1	Following syphilitic ulceration.
1	1	...	...	...	...	1	1	...	...	
...	1	1	...	...	...	1	...	1	...	
1	...	...	...	...	...	1	...	...	...	
7	4	10	2	...	...	11	4	8	2	See Special Table III.
2	1	4	...	...	...	6	2	...	1	
6	3	1	...	...	...	13	2	...	...	
1	6	3	...	...	...	10	...	...	3	
1	...	1	...	...	...	...	...	...	2	
1	...	...	...	...	...	1	...	...	...	
2	2	3	...	...	...	5	3	...	...	
1	...	...	...	...	...	5	...	...	...	
1	6	4	2	...	...	11	1	...	4	

TABLE I.—*Abstract, showing Diseases in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.
DIGESTIVE SYSTEM — *continued.*																	
Hernia—																	
Umbilical, irreducible	...	2	...	...	...	...	...	...	...	2	...	...	...	1	...	...	1
„ strangulated	...	2	...	...	...	...	...	1	...	1	2	...	...	...	...	...	...
Ventral	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1
Hydrocele of hernial sac	1	1	...	...	...	...	1	...	...	1	...	...	...	...	...	1	1
Fæcal fistula after strangulated hernia	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Thickened hernial sac	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Stricture of large intestine	...	1	...	...	...	...	...	1	...	...	...	...	...	..	...	...	1
Intestinal obstruction	2	2	...	...	...	2	...	1	1	...	1	...	2	...	...	...	1
Hæmorrhoids	14	14	...	...	1	4	8	9	6	...	...	...	...	...	...	2	26
Fistula in ano	26	5	1	...	1	10	5	6	7	1	...	...	1	2	3	7	16
Stricture of rectum	...	6	...	...	...	1	3	2	...	...	...	...	...	...	...	...	4
Prolapsus ani	...	2	...	...	1	...	1	...	...	...	1	...	...	...	...	...	1
Ischio-rectal abscess	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Ulcer of rectum	1	3	...	...	...	2	...	...	...	1	...	...	1	...	1	1	...
Perityphlitis	4	1	...	1	4	...	...	...	...	...	...	3	...	...	1	1	...
Tubercular peritonitis	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Enlarged liver	1	1	...	...	...	1	...	1	...	...	...	...	...	1	...	1	...
Abdominal abscess	1	...	...	1	...	...	...	...	...	...	1	...	...	.	...	...	...
Chronic constipation	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Abdominal hæmatoma, suppurating	...	1	...	...	...	1	...	...	...	...	...	. .	...	...	1	...	...
GENITO-URINARY SYSTEM.																	
Phimosis	4	...	...	...	3	1	...	...	...	...	...	...	...	...	...	...	4
Paraphimosis	4	...	1	...	...	1	...	1	1	...	2	1	1	...	...	...	...
Gonorrhœa	1	8	...	...	6	3	...	...	...	...	...	...	1	2	1	2	...
Warts	...	2	...	...	...	2	...	...	..	...	...	...	...	...	1	...	1
Soft sores	4	4	...	...	4	4	...	...	...	...	...	1	2	1	1	...	...
Sloughing chancre	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...
Phagedæna	2	...	...	...	...	1	1	...	...	...	...	...	...	...	1	1	...
Labial abscess	...	2	...	...	...	1	1	...	...	...	...	...	2	...	...	...	...
Œdema of scrotum	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Urethritis	1	...	.	...	...	...	...	1	...	...	...	1	...	...	...	...	..
Urethral stricture	34	...	...	...	2	4	12	5	4	7	...	...	...	...	...	1	30
Perineal fistula	3	...	...	...	...	...	1	...	...	2	...	...	...	...	1	1	1
Enlarged prostate	3	...	...	...	...	...	..	...	...	3	...	...	...	...	...	...	3
Prostatis, acute	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...

according to authorised Nomenclature—continued.

Duration of residence.						Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts 6–12	Mts. +12	C.	R.	U.	D	
...	2	...	...	...	...	1	1	...	...	} See Special Table III.
1	...	...	...	...	...	2	...	...	...	
...	1	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	1	...	1	...	
...	...	...	1	...	...	1	...	...	...	
...	...	...	1	...	...	1	...	...	...	
...	...	1	...	...	...	...	1	...	...	
1	...	2	...	...	...	2	...	1	1	2 fæcal accumulation. Fatal case: fruit stones impacted on simple stricture.
4	17	5	...	...	...	25	1	2	...	(Hæmorrhage from alcoholism 1.)
8	17	4	...	...	...	27	2	2	...	
2	2	...	1	...	...	2	3	1	...	Syphilis 2.
2	...	...	...	...	...	2	...	...	...	
...	1	...	...	...	...	1	...	...	...	Erysipelas.
...	3	...	...	...	...	2	2	...	...	
...	2	1	2	...	...	4	1	...	...	2 suppurating.
...	...	1	...	...	...	...	1	...	...	Abdominal section.
...	2	...	...	...	...	...	...	2	...	1 transferred to medical ward. 1 displaced, ? due to "tight-lacing."
...	...	1	...	...	...	1	...	...	...	
1	...	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	1	...	...	...	
2	2	...	...	...	...	4	...	...	...	
1	2	1	...	...	...	3	1	...	...	
4	4	1	...	...	...	7	2	...	...	
...	1	1	...	...	...	2	...	...	...	
5	1	2	...	...	...	7	1	...	...	
...	1	...	...	...	...	1	...	...	...	
...	2	...	...	...	...	2	...	...	...	
1	1	...	...	...	...	2	...	...	...	
...	...	1	...	...	...	...	1	...	...	? Elephantiasis.
1	...	...	...	...	...	...	1	...	...	
7	12	10	4	...	...	20	9	2	3	1 sudden death, dyspnœic symptoms; 1 cystotomy; 1 dying on admission, ? uræmia.
...	2	1	...	...	...	3	...	...	...	
1	1	...	1	...	...	...	3	...	...	
...	1	...	...	...	...	1	...	...	...	

TABLE I.—*Abstract, showing Diseases in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not
GENITO-URINARY SYSTEM—*continued.*																		
Cystitis	5	3	...	...	...	2	2	2	1	1	...	...	...	...	3	2	3	
Tubercular disease of bladder	2	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	2	
Vesical irritability	2	1	...	...	1	1	...	1	...	...	...	...	1	...	...	...	2	
Retention of urine	26	...	1	...	...	2	6	6	2	9	21	...	1	...	...	...	4	
Extravasation of urine	2	...	...	...	...	...	1	1	...	...	...	1	...	...	...	...	1	
Hæmaturia	4	...	1	...	1	1	...	...	...	1	...	...	...	1	2	...	1	
Pyuria	2	1	...	...	...	1	2	...	...	...	...	...	...	1	...	...	2	
Varicocele	37	...	...	1	16	18	2	...	...	...	2	3	3	4	3	3	16	
Spermatocele	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
Hydrocele	17	...	...	...	6	3	3	5	...	...	...	...	...	...	1	5	11	
Hæmatocele	2	...	...	...	...	...	...	2	...	...	...	...	...	1	...	. .	1	
Epididymitis	2	...	...	...	...	...	1	...	...	1	...	...	...	2	...	...	...	
Tubercular testis	5	...	3	2	...	...	...	...	...	...	...	...	...	2	1	...	2	
Vesical calculus	8	1	3	1	2	...	...	...	1	2	...	1	1	...	...	2	4	
Supra-pubic sinus	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Renal calculus	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	
Tubercular kidney	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	
Pyonephrosis	1	3	...	...	...	2	1	1	...	...	...	...	...	...	2	1	1	
Renal sinus	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	
Congenital anteflexion of uterus	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	
Pyosalpinx	...	1	...	...	. .	...	1	...	...	...	1	...	...	...	...	...	...	
Parametric abscess	...	2	...	...	...	2	...	...	...	...	...	...	...	...	1	...	1	
Mastitis, acute	...	2	...	...	...	2	...	...	...	...	...	...	1	1	...	...	...	
„ chronic	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	
Sinus in breast	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	
CIRCULATORY SYSTEM.																		
Varicose veins	22	6	...	...	4	19	2	1	2	...	...	2	...	1	...	5	19	
Thrombosis	...	4	...	...	...	2	2	...	...	...	...	1	1	1	1	...	...	
Aneurysm—																		
Common carotid	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	
Brachial	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	
Radial	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	
Popliteal	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	
Phlebitis	1	1	...	...	...	1	...	1	...	...	...	...	1	...	...	...	...	
LYMPHATIC SYSTEM.																		
Tuberculosis of glands	29	23	...	4	27	13	4	1	2	1	...	...	1	13	2	11	24	

according to authorised Nomenclature—continued.

Duration of residence.						Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
2	2	2	1	...	...	...	4	2	2	Perineal section in 1885, 1 (fatal); other fatal case surgical kidney.
1	...	...	1	...	...	...	1	...	1	Fatal case: exhaustion.
1	2	...	...	...	...	...	2	1	...	
10	4	7	...	...	...	16	8	...	2	2 moribund on admission; 14 stricture; perineal abscess 3; enlarged prostate 4; spasmodic 3.
...	...	1	1	...	...	2	...	...	...	Behind stricture.
2	2	...	...	...	...	1	2	1	...	
1	...	2	...	...	...	...	1	2	...	
2	17	18	...	...	...	34	1	2	...	
...	...	1	...	...	...	1	...	...	...	
4	5	6	...	...	...	13	1	3	...	
...	...	1	1	...	...	...	2	...	...	
...	1	1	...	...	...	2	...	...	...	
...	3	2	...	...	...	3	2	...	...	Castration 3, cured; congenital hernia 1 (radical cure).
...	2	5	2	...	...	8	1	...	...	See Special Summary.
...	1	...	...	...	...	...	...	1	...	After supra-pubic lithotomy.
...	...	1	...	...	...	1	...	...	...	Nephro-lithotomy.
...	...	...	...	1	...	1	...	...	...	Nephrectomy in 1887.
...	1	2	...	1	...	1	3	...	...	Nephrotomy 2, nephrectomy 1.
...	1	...	...	...	...	...	1	...	...	After pyonephrosis.
1	...	...	...	...	...	...	...	1	...	
...	..	...	...	...	...	...	...	...	1	Acute peritonitis.
...	1	1	...	...	...	1	1	...	...	
2	...	..	...	...	...	2	...	...	...	
...	1	...	...	...	...	1	.	...	...	
1	...	...	...	...	...	1	...	...	...	
3	9	15	1	...	...	25	2	1	...	
1	1	1	1	...	...	4	...	...	...	
...	1	...	...	...	...	...	...	1	...	Tufnell's treatment.
1	...	...	...	...	...	...	...	...	1	Ulcerated endocarditis.
...	1	...	...	...	...	1	...	...	...	Circumscribed traumatic (sac excised)
...	1	...	...	...	...	1	...	...	...	Ligature of femoral.
1	...	1	...	...	...	2	...	...	...	
14	29	6	...	...	...	36	11	5	...	

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not
OSSEOUS SYSTEM.																		
Acute periostitis—																		
Femur	3	...	1	1	1	...	...	...	...	...	1	2	...	...	...	...	...	
Tibia	2	...	...	...	2	...	...	...	...	...	...	1	...	...	...	...	...	
Knee	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	
Subacute periostitis—																		
Tibia, traumatic	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
Fibula	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Acute epiphysitis—																		
Ankle	1	...	1	...	...	...	...	...	...	...	1	. .	...	...	...	...	...	
Humerus (suppurating)	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	
Tibia	...	1	1	...	. .	...	...	...	...	...	...	1	...	...	...	...	...	
Chronic epiphysitis—																		
Femur	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	
Tibia	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
Osteitis	...	2	...	1	...	1	...	...	...	...	...	...	...	...	...	...	1	
„ acute	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	
Caries—																		
Temporal bone	8	6	2	3	2	4	1	1	1	...	...	1	3	3	1	2	4	
Tooth	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	
Nasal septum	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
Sternum	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	
Rib	4	2	...	1	3	...	...	1	1	...	...	...	...	3	2	...	1	
Carpus	...	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	
Finger	...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	
Ileum	6	1	1	. .	2	1	3	...	...	...	...	...	1	...	...	...	4	
Femur	3	2	...	...	1	3	...	1	...	...	...	...	...	...	1	1	3	
Tibia	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	
Tarsus	1	3	...	2	1	...	1	...	...	...	1	...	...	...	1	...	2	
Necrosis—																		
Multiple	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	..	
Superior maxilla	4	2	1	3	1	...	1	...	...	...	...	1	...	2	1	2	...	
Inferior maxilla	2	4	1	...	2	1	2	...	...	...	...	...	...	1	2	1	1	
Humerus	2	1	...	...	1	...	2	...	...	...	...	...	...	...	...	...	2	
Femur	6	1	...	...	4	2	...	1	...	...	...	...	...	...	1	1	3	
Tibia	6	...	...	...	4	1	1	...	...	...	...	...	...	1	...	1	4	
Metatarsus	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	
Toe	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	
Osteitis deformans	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	

according to authorised Nomenclature—continued.

Duration of residence.						Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
1	...	...	1	...	...	1	...	...	2	See Special Summary.
...	1	...	1	...	...	2	...	...	...	See Special Summary.
...	1	...	...	...	...	...	...	...	1	See Special Summary.
...	...	..	...	...	...	1	...	...	...	
...	1	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	1	...	...	...	
...	...	...	...	...	...	...	...	...	1	
...	1	...	...	...	...	1	...	...	...	
...	...	...	1	. .	...	...	1	...	...	Tubercular.
...	...	1	...	...	...	1	...	...	...	Tubercular.
...	1	1	...	...	...	...	2	...	...	
1	...	...	...	...	...	...	...	...	1	In acetabulum. Old hip disease.
3	7	1	2	...	...	9	3	...	2	Trephining for mastoid 5; 2 fatal from septicæmia; scraping 7.
1	...	...	...	...	...	1	...	...	...	
...	...	...	...	...	...	...	...	1	...	
...	1	...	...	...	...	1	...	...	...	
1	4	1	...	...	...	3	3	...	...	
...	...	...	1	...	...	1	...	...	...	Erysipelas.
...	...	1	...	...	...	...	1	...	...	
...	...	3	2	...	...	...	4	2	1	
1	1	...	2	...	1	1	4	...	...	
...	1	...	...	...	...	1	...	...	...	
...	1	2	1	...	...	2	2	...	...	1 erysipelas.
...	...	1	...	...	...	1	...	...	...	
...	2	1	3	...	...	4	2	...	...	1 erysipelas.
3	2	1	...	...	...	6	...	...	...	
1	1	1	...	...	...	3	...	...	...	
...	...	...	5	2	...	3	4	...	...	
2	...	2	2	...	...	1	4	1	...	
...	1	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	1	...	...	
...	1	...	...	...	...	...	...	1	...	

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic. Not
DISEASES OF JOINTS.																	
Synovitis—																	
Multiple	2	...	...	...	...	2	...	...	...	...	...	...	...	...	1	...	...
Knee	11	3	1	...	1	4	3	5	...	...	...	2	2	2	1	...	6
Gonorrhœal, multiple	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	..	...
„ knee	3	...	...	...	...	2	1	...	...	...	..	1	1	...	...	...	1
„ foot	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Rheumatic, knee	2	2	...	1	1	1	1	...	...	...	...	1	1	...	...	...	...
Ankle	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Arthritis—																	
Hip	23	17	7	17	11	2	1	2	...	...	1	...	...	3	5	11	17
Knee	20	13	2	10	16	3	2	...	...	...	1	2	4	1	...	6	17
Ankle	5	2	1	2	3	1	...	...	...	...	...	...	...	1	1	2	3
Great toe	1	...	...	...	...	...	...	...	...	1	...	.	...	...	...	...	1
Chronic rheumatoid—																	
Multiple	2	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	2
Knee	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Arthralgia, multiple	...	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Ankylosis—																	
Shoulder	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...
Elbow	1	1	...	...	1	...	1	...	...	...	...	...	...	...	...	1	1
Hip	4	...	...	1	2	1	...	...	...	...	...	...	...	...	...	...	4
Knee	1	2	...	1	1	...	1	...	...	...	...	...	...	...	...	1	2
Ankle	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Old excision—																	
Hip	2	5	2	5	...	...	...	...	...	...	...	...	...	...	...	...	7
Displaced semilunar cartilage	3	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	3
Loose body in knee	1	3	...	...	1	...	1	1	1	...	...	...	...	1	1	...	2
Hysterical hip	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
„ knee	...	2	...	...	...	1	1	...	...	...	...	...	...	...	1	...	1
DISEASES OF SPINE.																	
Cervical region	4	1	...	...	2	1	1	...	1	...	...	...	...	1	...	2	2
Dorsal	5	4	1	2	4	1	1	...	...	...	...	...	1	...	...	3	5
Dorso-lumbar	6	3	...	1	4	3	...	1	...	...	...	...	...	...	2	2	5
Lumbar	3	5	1	3	2	2	...	...	...	...	...	...	...	...	1	1	5
Lumbo-sacral	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...
Lateral curvature	1	2	...	...	2	...	1	...	...	...	...	...	...	...	...	1	2

according to authorised Nomenclature—continued.

Duration of residence.							Result.				Remarks.
s. -4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
.	...	1	1	...	...	...	1	1	...	...	
2	2	6	3	1	...	...	7	6	1	...	
.	1	...	...	...	...	...	...	...	1	...	
1	...	1	1	...	...	...	1	1	1	...	
.	...	1	...	...	...	...	...	1	...	...	
.	3	1	...	...	...	...	...	4	...	...	
.	1	...	...	...	...	...	1	...	...	...	
.	4	6	9	15	6	...	7	30	1	2	Excision 10.
1	...	7	5	20	...	...	20	12	...	1	Arthrectomy 6; excision 3; amputation 8.
.	1	1	3	2	...	...	3	3	1	...	Arthrectomy 1; amputation of leg 1; Symes' amputation 1.
.	1	...	...	...	...	...	...	1	...	...	
.	1	1	...	...	...	...	...	...	2	...	
.	1	...	...	...	...	...	...	...	1	...	
.	...	1	...	...	...	...	...	...	1	...	? cause.
.	1	...	...	...	...	...	...	1	...	...	
.	...	...	1	1	...	...	..	2	...	...	
.	...	1	...	3	...	...	4	...	...	...	
.	1	...	...	2	...	...	3	...	...	...	Excision 1.
.	...	...	...	1	...	...	1	...	...	...	
.	2	1	...	2	2	...	2	4	...	1	1 male, both hips excised in 1888. Sinuses. Death from lardaceous disease.
.	...	1	2	...	...	...	1	1	1	...	
.	1	1	2	...	...	...	2	1	1	...	1 case doubtful.
.	...	...	1	...	...	...	1	...	...	...	
.	...	1	1	...	...	...	2	...	...	...	
.	...	1	2	2	...	...	...	5	...	...	
.	1	3	1	4	...	...	1	7	1	...	Removal of sequestra 2; both relieved.
.	...	2	1	6	...	...	2	4	1	2	
.	2	1	...	5	...	...	...	6	...	2	
.	...	...	...	1	...	...	...	1	..	...	
.	...	2	1	...	...	...	...	3	...	...	

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.							Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not
MUSCULAR SYSTEM AND ITS APPENDAGES.																		
Enlarged bursa	1	9	...	1	2	4	1	2	...	...	...	...	...	1	1	7	1	
Inflamed bursa	6	5	...	...	3	6	...	2	...	...	3	4	1	1	...	1	1	
Tubercular bursa	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	
Tubercular dis. of tendon sheath	...	2	...	1	1	...	...	...	...	...	...	...	...	1	1	...	...	
Ganglion	7	2	...	...	4	3	...	1	1	...	...	...	...	...	1	...	8	
DEFORMITIES.																		
Torticollis	3	2	1	1	3	...	...	...	...	...	...	...	...	...	1	...	3	
Talipes equinus	3	...	1	2	...	..	...	...	...	...	...	...	...	...	...	...	3	
„ equino-varus	1	2	1	1	1	...	...	...	...	...	...	...	...	...	...	...	3	
„ valgus	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	
Pes cavus	2	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	2	
Flat-foot	3	1	...	1	1	2	...	...	...	...	...	...	...	...	...	...	3	
Cicatricial contraction, multiple—																		
Of eyelid	1	...	...	1	...	..	...	...	...	...	...	...	...	...	...	...	1	
Lip	1	2	...	...	...	2	...	1	..	...	...	...	...	...	...	1	2	
Gum	..	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	
Neck and face	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	
Hand	1	2	1	1	...	1	...	...	...	...	...	...	...	...	1	...	2	
Forearm	...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	
Foot	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	
Destruction of nose	..	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	
Genu valgum	6	3	1	3	5	...	...	...	...	...	...	...	...	...	...	...	9	
„ varum	3	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	3	
Hammer-toe	3	2	...	...	3	1	1	...	...	...	...	...	...	...	1	...	4	
Hallux valgus	...	2	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2	
Fracture, deformity, &c.—																		
Femur	4	...	1	...	2	...	...	...	...	1	...	...	...	...	1	1	2	
Bones of leg	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
Foot	2	...	...	...	...	2	..	...	...	...	...	...	...	...	...	...	2	
Forearm	3	1	...	1	3	...	...	...	...	...	...	...	...	...	1	1	2	
Contracted knee	2	2	..	1	1	1	...	1	...	...	...	...	...	...	...	1	3	
„ palmar fascia	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	
„ fingers	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
Dupuytren's contraction	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	
Arrested development of leg	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	

according to authorised Nomenclature—continued.

Duration of residence.							Result.				Remarks.
ys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
...	1	6	3	...	...	...	10	...	...	...	
1	1	9	...	...	...	...	11	...	...	...	
...	...	...	1	...	...	...	...	1	...	...	
...	...	2	...	...	...	...	1	1	...	...	
...	1	7	...	1	...	...	8	1	...	...	Wrist 5 (1 compound); foot 3; hand 1.
...	...	2	2	1	...	...	4	1	...	...	
...	1	1	...	...	1	...	1	2	...	...	
...	...	...	1	2	...	...	3	...	...	...	Tarsectomy 2.
..	...	...	1	...	...	...	1	...	...	...	
..	1	...	1	...	...	...	...	2	...	...	
1	...	2	1	...	...	...	1	3	...	...	
..	1	...	...	...	...	...	...	...	1	...	
..	1	2	...	...	...	...	2	1	...	...	
..	...	...	1	...	...	...	1	...	...	...	
..	...	...	...	1	...	...	...	1	...	...	
..	...	...	...	3	...	...	1	2	...	...	
..	...	...	1	...	...	...	...	...	1	...	
..	...	...	...	1	..	...	1	...	...	...	
..	...	1	...	...	...	...	1	...	...	...	Rhinoplasty, Indian method.
..	...	...	4	5	...	...	8	...	1	...	
..	...	...	2	1	...	...	1	...	1	1	
..	1	...	4	...	...	...	4	1	...	...	1 recurrent.
..	...	2	...	...	...	...	2	...	...	...	
..	...	1	...	2	...	...	3	...	1	...	
..	...	...	1	...	...	...	1	...	...	..	
..	1	...	1	...	...	...	...	1	1	...	
..	1	2	1	...	...	...	3	...	1	...	
..	...	...	1	3	...	..	3	1	...	...	
..	1	...	...	...	...	...	1	...	...	...	
..	...	1	...	...	...	...	1	...	...	...	
..	...	1	...	...	...	...	...	1	...	...	
..	1	...	...	...	...	...	...	...	1	...	Old hip disease.

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not stated
MALFORMATIONS.																		
Harelip, double	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
„ single	2	2	4	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...
Cleft palate	5	7	3	2	5	2	...	...	...	...	...	...	...	...	...	...	12	...
Adhesion of meatus urinarius	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Recto-urethral fistula	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Imperforate anus	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...
Congenital absence of lower two thirds of rectum	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Epispadias	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	2	...
Congenital dislocation of femur	...	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Arrested development of leg	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Congenital stricture of anus	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Congenital webbing of fingers and toes	...	4	3	...	...	1	...	...	...	...	...	...	...	...	...	...	4	...
NERVOUS SYSTEM.																		
Anæsthesia	1	2	...	...	...	2	1	...	...	...	...	...	...	1	...	1	1	...
Paresis and paræsthesia	2	...	...	...	...	1	...	...	...	1	...	...	...	...	...	1	...	...
Neurotic dystrophy	1	2	...	...	...	2	...	1	...	...	...	...	...	...	...	2	1	...
Paraplegia	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Paralysis of musculo-spiral and circumflex nerve	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Painful stump	2	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	2	...
„ cicatrix	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...
Neuralgia	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
RESPIRATORY SYSTEM.																		
Empyema	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Hæmoptysis	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Dyspnœa	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...
THYROID—																		
Bronchocele	...	2	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	...
Cyst of lobe of thyroid	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...

according to authorised Nomenclature—continued.

Duration of residence.							Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
...	...	...	1	1	...	..	...	1	..	1	1 also double harelip and malformation of eyes and ears.
...	1	2	1	...	...	...	3	...	...	1	
...	...	6	5	1	...	...	2	8	2	...	
1	...	...	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	1	...	...	...	
...	1	...	2	..	...	...	1	...	...	2	Inguinal colotomy in all three cases.
...	1	...	...	...	...	...	...	...	...	1	Inguinal colotomy.
...	...	...	...	2	...	...	...	1	1	...	Same case twice admitted. Plastic operation.
...	1	...	...	1	...	...	...	...	2	...	
...	...	...	1	...	...	...	...	...	1	...	Congenital.
...	1	...	...	...	...	...	1	...	...	...	Dilatation.
...	...	1	2	1	...	..	1	1	1	1	Fatal case: marasmus. Plastic operation 2.
...	...	2	1	...	..	...	2	...	1	...	1 hysterical; 1 partial division of median nerve; 1 division of ulnar nerve.
...	1	...	...	1	...	...	...	1	1	...	
...	...	1	1	1	...	...	1	1	1	...	
...	...	...	...	1	...	...	...	1	...	...	Syphilitic.
...	...	1	...	...	...	...	...	...	1	...	
...	1	...	1	...	...	...	2	...	...	...	
..	...	...	1	...	...	...	...	...	1	...	
...	...	...	1	...	...	...	1	...	...	...	Inferior dental nerve excised.
...	1	...	...	...	...	...	...	...	...	1	Death under chloroform before operation.
...	1	...	...	...	...	...	...	1	...	...	
...	...	1	...	...	...	...	...	1	...	...	Old case of thyrotomy for papilloma of larynx.
...	2	...	...	...	...	...	...	...	2	...	Division of isthmus in 1887, 1.
...	...	1	...	...	...	...	1	...	...	...	Excised.

TABLE I.— *Abstract, showing Diseases in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks. 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic	Not stated.
MEDICAL.																		
Bilharzia hæmatobia	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...
Epigastric pain	1	...	...	...	...	...	..	...	1	...	...	...	...	...	...	...	1	...
Hæmophilia	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Hysterical pain in wrist	...	1	...	...	...	1	...	..	...	...	...	...	...	...	1	...	...	...
SKIN AND SUBCUTANEOUS TISSUE.																		
Abscess—																		
Scalp	1	1	...	...	1	...	...	...	1	...	...	...	1	1	...	...	...	...
Face	2	...	1	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...
Jaw	2	1	...	...	...	2	1	...	...	...	...	...	1	2	...	...	..	...
Tonsil	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Neck	5	1	1	...	...	2	...	3	...	...	1	...	2	1	2	...	...	...
Retro-pharyngeal	2	...	...	...	...	1	1	...	...	...	...	1	...	1	...	...	...	...
Axilla	1	3	3	1	...	...	...	...	...	...	2	1	1	...	...	...	...	...
Shoulder	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Thecal	...	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Chest wall	...	2	...	...	1	...	...	...	1	...	...	...	...	...	2	...	...	...
Dorsal	1	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	...
Lumbar	2	1	...	1	...	...	1	...	...	1	.	1	...	...	1	...	1	...
Abdominal wall	2	2	2	1	...	...	1	...	...	...	...	1	1	...	2	...	...	...
Pelvic	2	1	...	1	1	...	1	...	...	...	...	1	...	...	...	...	1	1
Sacral	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Gluteal	...	3	...	1	2	...	...	...	...	...	1	1	...	...	...	1	...	...
Perineal	1	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...
Inguinal	2	2	...	...	2	...	1	1	...	...	1	1	1	1	...	...	...	...
Ischio-rectal	8	...	1	...	...	1	2	...	4	...	1	5	1	1	...	...	...	..
Thigh	10	6	3	5	4	2	1	1	...	...	1	2	4	4	4	...	...	]
Leg	6	3	2	2	2	1	1	...	...	1	3	1	2	...	1	...	...	...
Foot	1	2	1	...	2	...	...	...	...	...	...	...	...	...	...	...	..	...
Ulcer—																		
Palate	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	..
Neck	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	..
Wrist	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	..
Hand	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	..
Thigh	1	3	...	...	3	1	...	...	...	...	1	...	...	1	...	...	...	..
Leg	5	4	...	...	1	...	2	2	2	2	...	...	...	...	...	1	8	..
Foot	5	...	1	1	...	1	...	...	1	1	...	...	...	1	...	...	3	..
Multiple	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	..

according to authorised Nomenclature—continued.

Duration of residence.							Result.				Remarks.
s. 4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
	1	...	...	...	...	...	...	...	1	...	Transferred to medical ward.
	1	...	...	...	...	...	...	..	1	...	
	1	...	...	...	...	...	1	...	...	...	
	1	...	...	..	...	...	...	1	...	...	
	1	...	...	1	...	...	1	...	...	1	Mastoid region 1. Fatal case: erysipelas.
	...	2	...	..	...	...	2	...	...	...	
	1	2	...	...	...	...	2	1	...	..	
	...	1	...	..	...	...	1	...	...	...	
	3	2	1	...	...	...	4	2	...	...	
	1	1	..	...	...	...	2	...	...	...	Spontaneous rupture 1.
	2	2	...	...	...	...	4	...	...	...	
	1	..	...	...	...	...	1	...	...	...	
	1	...	...	...	...	...	1	...	...	...	
	1	...	1	...	...	...	2	...	...	...	
	1	1	...	...	...	..	1	...	1	...	
	...	1	1	1	...	...	1	2	...	...	
	2	1	1	...	...	...	3	1	...	...	
	...	1	1	1	...	...	3	...	...	...	
	...	1	...	...	...	...	...	1	...	...	
	...	1	2	...	...	...	3	...	...	...	
	...	...	1	...	...	...	1	...	..	...	
	1	...	3	...	...	...	4	...	...	...	
	1	3	4	...	...	...	8	...	...	...	
	3	8	3	2	...	...	11	3	...	2	Phthisis 1. 1 acute; 1 lymphatic. Fatal cases: scarlatina 1, acute 1.
	6	2	1	...	...	...	8	1	...	...	
	...	2	...	...	...	...	1	2	...	...	
	...	...	1	...	...	...	...	...	...	1	Tubercular disease of alimentary tract; phthisis.
	...	1	...	..	...	...	1	..	...	...	
	...	1	...	...	...	...	...	1	...	...	
	1	...	...	...	...	...	1	...	...	...	
	1	...	2	1	...	...	4	...	...	...	Skin grafting 1.
	2	1	4	1	1	...	3	5	...	1	Skin grafting 3. Fatal case: cellulitis.
	...	2	...	1	...	...	2	1	2	...	Locomotor ataxy 1.
	1	...	...	...	...	...	1	...	...	...	

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Chronic.	Not
SKIN AND SUBCUTANEOUS TISSUE—*continued.*																		
Sinus	14	9	2	4	8	5	2	1	...	1	...	...	1	2	3	4	12	
Cellulitis—																		
Head and neck	3	2	2	2	...	...	1	...	...	...	1	1	...	...	...	...	...	
Trunk	5	1	3	...	...	1	1	1	...	...	1	3	...	...	...	...	...	
Upper extremity	15	6	2	2	...	6	6	2	1	2	4	5	5	1	2	1	...	
Lower extremity	14	6	2	3	9	1	1	3	1	...	2	10	3	1	1	...	1	
Lupus	8	7	...	...	4	9	1	1	...	...	...	...	...	...	...	...	15	
Carbuncle	2	...	...	...	...	1	...	...	1	...	...	1	.	1	...	...	...	
Anthrax	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	
Cancrum oris	4	...	4	...	...	..	...	...	...	...	1	2	1	...	...	...	...	
Noma of scrotum	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	
Impetigo	2	...	1	..	...	1	...	...	...	...	...	1	...	...	...	1	...	
Painful scar	2	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	2	
Ingrowing toe-nail	1	2	...	..	1	2	...	...	...	...	...	...	. .	...	...	1	2	
Gangrene of foot	5	...	...	...	...	...	...	...	1	2	...	...	1	...	...	...	...	
„ finger	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	
Eruptions, various	1	2	1	...	1	1	...	...	...	...	1	1	1	..	...	...	..	
TRIVIAL AND MISCELLANEOUS	12	5	...	2	3	3	6	1	1	1	4	1	...	...	...	...	8	
Malingering	7	...	...	...	...	4	1	2	.	...	1	...	...	...	1	4	1	
Total "Diseases"	892 + 590 = 1482																	

according to authorised Nomenclature—continued.

Duration of residence.							Result.				Remarks.
s. –4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
..	4	6	8	4	1	...	7	15	1	...	
2	1	...	2	...	...	...	3	1	...	1	Fatal case: "Ludwig's angina;" tracheotomy.
1	1	1	3	...	...	...	6	...	...	...	
1	3	10	7	...	...	...	21	...	...	...	
..	7	5	6	2	...	...	19	...	...	1	Fatal case: diarrhœa.
2	2	4	6	1	...	...	3	11	1	...	Erysipelas 1.
..	2	...	...	...	...	...	2	...	...	...	
..	...	1	...	...	...	...	1	...	...	...	
..	2	2	...	...	...	...	1	3	...	...	
1	...	...	..	...	...	...	...	...	...	1	Erysipelas.
..	1	1	...	...	...	..	2	...	...	...	1 onychia.
..	1	1	...	...	...	...	1	1	..	...	
..	1	2	...	...	...	...	3	...	...	...	
1	1	...	...	1	...	...	1	1	...	1	
..	...	...	1	...	...	...	1	...	...	...	Cellulitis.
..	3	...	...	...	...	...	2	1	.	...	Urticaria 1, erythema 1 eczema 1.
4	7	4	2	...	...	...	12	3	2	...	
1	3	2	1	...	...	...	2	...	5	...	
							895	365	131	91	
							1482				

Table II.—*Abstract showing Injuries, &c., in*

Injuries.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not stated
General Injuries.																		
Burns	17	19	12	3	8	6	3	2	...	2	36	...	...	...	...	...	...	...
Scalds	17	17	20	4	6	...	1	2	...	1	34	...	...	...	..	...	...	...
Shock	7	...	...	2	1	2	1	...	...	1	...	..	...	...	...	...	...	...
Local Injuries.																		
Contusion of head	2	...	1	1	...	...	...	...	...	...	2	...	...	..	...	...	...	...
Wounds of scalp	16	6	...	3	1	5	6	4	1	2	22	...	...	...	...	...	...	...
Concussion	57	30	17	14	13	11	13	9	4	6	87	...	...	...	...	...	...	...
Fractures—																		
Vault of skull	2	...	...	...	...	...	1	...	...	1	2	...	...	...	...	...	...	...
Do., compound	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Do., depressed	1	1	1	1	...	...	...	...	...	...	2	...	...	...	...	...	...	...
Do., comp. depressed	3	...	...	1	1	1	...	...	...	...	3	...	...	...	..	...	...	...
Base of skull	8	1	3	...	...	2	1	1	1	1	9	...	...	...	...	...	...	...
Do., doubtful	4	1	...	...	2	...	...	3	...	...	5	...	...	...	...	...	...	...
Base and vault of skull	1	...	..	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Contusion of the face	3	1	...	1	1	1	1	...	...	...	4	...	...	...	...	...	...	...
Wounds of the face	8	2	1	...	2	2	2	2	1	...	10	...	...	...	...	...	...	...
Fracture of nasal bones	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Do., compound	1	...	...	...	...	...	...	...	...	1	1	...	..	...	...	...	...	...
Do., do., sup. maxilla	2	...	...	...	2	...	...	...	...	...	2	...	...	...	...	...	...	...
Do., inferior maxilla	2	...	...	1	...	...	...	1	...	...	2	...	...	...	...	...	...	...
Do., do., comminuted	1	...	...	...	1	...	...	...	...	...	1	..	...	...	...	...	...	...
Wounds of eyeball	6	...	...	...	...	3	1	2	...	...	6	...	...	...	...	...	...	...
Ruptured eyeball	1	1	...	...	1	...	1	...	...	...	2	...	...	...	...	...	...	...
Gunshot wound of forehead	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Foreign body in palate	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Injuries to the neck—																		
Wounds of neck	5	...	...	...	...	2	...	1	1	1	5	...	...	...	...	...	...	...
„ of larynx	3	...	...	...	...	1	1	...	1	...	3	...	...	...	...	...	...	...
Injuries to the chest—																		
Contusion	2	1	..	1	1	1	...	...	...	...	3	..	...	...	...	...	...	...
Wound	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...
Crushed chest	...	1	...	1	...	...	...	...	...	..	1	...	...	...	...	...	...	...
Fracture of ribs	20	4	1	2	1	2	1	3	5	9	23	1	...	...	...	...	...	...
„ of sternum	1	...	...	...	..	1	...	...	...	...	1	...	...	...	...	...	...	...
Rupture of lung	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Traumatic pneumonia	2	...	...	...	1	1	...	...	...	..	2	...	...	...	...	...	...	...
Foreign body in œsophagus	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Do., trachea (supposed	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...

Classes, according to authorised Nomenclature.

Duration of residence.						Result.				Remarks.
Dys. 0–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
9	7	3	2	...	...	16	2	...	18	Scarlatiniform eruption 3.
13	8	6	1	...	...	29	2	...	3	Scarlatiniform eruption 2; erysipelas 1; measles 1.
3	1	...	...	...	...	7	...	...	...	
2	..	...	...	...	...	2	...	...	...	
9	8	1	...	...	...	21	1	...	...	Serous discharge in 2 cases; ? cerebro-spinal.
46	12	7	...	...	...	84	1	...	2	
..	...	...	...	...	...	...	...	...	2	
...	...	...	1	...	...	1	...	...	...	
...	...	2	...	...	...	2	...	...	...	
...	2	1	...	...	...	2	...	...	1	Trephining 1; elevating 1.
3	3	...	...	...	...	4	2	...	3	Anterior fossa 3; middle fossa 4.
2	2	1	...	...	...	5	..	...	...	
...	...	...	...	...	...	...	...	...	1	
4	...	...	...	...	...	3	1	...	...	
7	1	...	...	...	...	8	2	...	...	Erysipelas 1; doubtful 2.
...	...	...	...	...	...	1	...	...	...	
...	...	...	...	...	...	...	...	...	1	
...	2	...	...	...	...	2	...	...	...	
...	1	1	...	...	...	2	...	...	...	
...	1	...	...	...	...	1	...	...	...	
5	...	...	...	...	...	6	...	...	...	
1	...	1	...	...	...	1	1	...	...	
...	...	...	..	...	...	...	...	...	1	Tetanus 1 day.
1	...	...	...	...	...	1	...	...	...	Slate pencil.
2	2	...	...	...	...	4	...	...	1	3 suicidal.
1	2	...	...	...	...	2	...	...	1	Suicidal. P.M.—Pneumonia.
2	1	...	...	...	...	3	...	...	...	
1	...	...	...	...	...	1	...	...	...	
...	...	...	...	...	...	...	...	...	1	Fractured ribs, ruptured spleen and kidney, hæmorrhage into peritoneum.
7	10	3	1	...	..	21	...	...	3	Pneumothorax 1; pneumonia 1, shock; traumatic empyema 2 cases, cured.
...	1	...	...	...	...	1	...	...	...	
...	...	...	...	...	...	...	...	...	1	
1	1	...	...	...	...	2	...	...	...	
...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	1	...	

TABLE II.—

INJURIES.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts 6-12	Chronic.	Not
LOCAL INJURIES — *continued.*																		
Injuries to the back—																		
Contusion	4	...	...	...	3	1	...	...	...	...	4	...	...	...	...	...	...	
Injuries to the spine—																		
Sprain	2	...	...	...	...	2	...	...	...	...	2	...	...	...	...	...	...	
Fracture	2	1	...	...	1	1	1	...	...	...	3	...	...	...	...	...	...	
Spinal concussion	5	1	...	...	1	2	2	1	...	...	4	...	...	...	...	1	1	
Do., doubtful	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	
Injuries to the abdomen—																		
Contusion	5	...	1	3	1	...	...	...	...	...	5	...	...	...	...	...	...	
Wound	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	
Ruptured intestine	2	...	1	1	...	...	...	...	...	...	2	...	...	...	...	...	...	
Traumatic peritonitis	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Foreign body in intestinal tract	...	1	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	
Injuries to pelvis—																		
Contusion	2	...	...	...	...	1	...	1	...	...	2	...	...	...	...	...	...	
„ of vulva	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Rupture of urethra	3	...	...	...	2	...	...	1	...	...	2	1	...	...	...	...	...	
Wound of perinæum	1	2	...	...	3	...	...	...	...	...	2	...	1	...	...	...	...	
„ of scrotum	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	
„ of vulva	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Fracture of pelvis	4	...	...	...	...	1	...	1	1	1	4	...	...	...	...	...	...	
Do., do., compound	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	
Do. of ilium	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	
Injuries to upper extremity—																		
Wound of arm	...	2	...	...	...	...	2	...	...	...	2	...	...	...	...	...	...	
„ of forearm	6	2	...	...	2	3	1	...	...	2	7	...	...	1	...	...	...	
„ of wrist	1	6	...	2	1	2	2	...	...	...	7	...	...	...	...	...	...	
„ of hand	10	...	...	...	2	2	1	4	...	1	9	...	1	...	...	...	...	
Division of palm	2	1	...	...	1	1	...	...	1	...	3	...	...	...	...	...	...	
„ of ulnar nerve	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
Crush of hand	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
„ of fingers	2	...	...	...	...	1	...	1	...	...	2	...	...	...	...	...	...	
Needle in hand	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Glass in hand	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Traumatic aneurism between fingers	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	
Divided tendons of fingers	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	

continued.

Duration of residence.						Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
	2	1	...	...	...	...	4	...	...	...	
	1	...	...	1	...	...	2		...	...	
	...	1	1	...	...	...	1	...	...	2	Cervical region 2; dorso-lumbar, cured.
	2	1	2	...	1	...	3	2	1	...	
	1	...	...	...	...	...		1	...	...	Run over.
	3	...	...	...	...	...	5	...	...	...	
	1	...	...	...	...	...	1	...	...	...	
	...	...	...	...	...	...	...	...	...	2	Enterrhoraphy 1.
	...	1	...	...	...	...	1	...	...	...	
	...	...	...	...	...	...	1	...	...		Tooth-plate with 5 teeth; passed spontaneously.
	...	...	1	...	...	...	2	...	...	...	
	...	1	...	...	...	...	1	...	...	...	
	...	1	1	1	...	...	3	...	...	...	
	2	1	...	...	...	...	3	...	...	...	
	...	1	...	...	...	...	1	...	...	...	
	1	...	...	...	...	...	1	...	...	...	
	...	3	...	1	...	...	3	1	...	...	
	...	...	1	...	...	...	1	...	...	...	
	1	...	...	...	...	...		1	...	...	
	...	1	1	...	...	...	2	...	...	...	
	4	3	1	...	...	...	7	...	1	...	1 erysipelas.
	3	3	1	...	...	...	7	...	...	...	
1	5	3	1	...	...	...	9	1	...	...	1 gunshot.
	2	...	...	1	...	...	3	...	...	...	
	...	1	...	...	...	...	1	...	...	...	
	...	...	1	...	...	...	1	...	...	...	
	2	...	...	...	...	...	2		...	...	1 erysipelas.
1	...	...	...	...	...	...	1	...	...	...	
	...	1	...	...	...	...	1	...	...	...	
	...	1	...	...	...	...	1	...	...	...	
	1	...	...	...	...	...	1	...	...	...	

TABLE II.—

INJURIES.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.
LOCAL INJURIES — *continued.*																	
Injuries to upper extremity—																	
Divided tendons of hand	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Subcoracoid dislocation of humerus	2	...	...	...	...	...	1	1	...	...	2	...	...	...	...	...	...
Do. of radius and ulna	...	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...
Dislocation of radius	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Compound dislocation of ulna	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Do. of terminal phalanx of thumb	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Separation of lower epiphysis of radius	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Comp. do. of humerus	1	...	1	...	...	...	...	...	...	...	1	...	..	...	...	...	...
Fracture of humerus	3	1	1	1	...	...	1	...	...	1	3	...	1	...	...	...	...
Do., ununited	2	...	...	...	...	...	...	1	1	...	...	...	...	...	...	1	...
Do., compound	3	...	...	1	...	...	2	...	...	...	3	...	...	...	...	...	...
Fracture of radius and ulna	2	2	...	...	1	1	...	...	1	1	4	...	...	...	...	...	...
Do., compound	1	1	1	...	1	...	...	...	...	...	2	...	...	...	...	...	...
Fracture of ulna	3	...	...	...	1	2	...	...	...	...	1	...	.	1	1	...	...
Do., ununited	1	...	..	...	...	1	...	...	...	...	1	...	...	..	...	...	...
Refracture of ulna	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Malunion of radius	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
Comp. fracture of hand	2	...	...	...	1	...	...	1	...	...	2	...	...	...	...	...	...
Old fracture of hand	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Comp. fract. of fingers	4	1	...	1	...	...	4	...	..	...	4	1	...	...	...	...	...
Injuries to lower extremity—																	
Contusion of hip	8	1	...	1	2	2	3	...	...	1	9	...	...	...	...	...	...
„ of thigh	2	...	1	1	...	...	...	...	...	...	2	...	...	...	...	...	...
Hæmatoma of thigh	2	...	...	...	...	1	...	1	...	...	1	...	1	...	...	...	...
„ of leg	1	1	...	...	...	1	..	1	...	...	2	...	...	..	...	...	...
„ of foot	...	1	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...

continued.

Duration of residence.						Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
1	...	...	...	...	...	...	...	1	...	
1	...	...	...	...	...	2	...	...	...	
...	...	1	...	...	...	...	1	...	...	
...	1	...	...	...	...	...	...	1	...	
...	1	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	1	...	...	...	
...	1	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	1	...	...	...	
1	1	...	1	...	...	3	1	...	...	
...	...	1	1	...	...	2	...	...	...	
...	...	2	1	...	...	3	...	...	...	
3	...	...	...	...	...	3	...	...	1	1 greenstick. Fatal case: tetanus.
...	2	...	...	...	...	2	...	...	...	1 transverse.
1	1	1	...	...	...	3	...	...	...	1 double.
...	...	1	...	...	...	1	...	...	...	
...	...	1	...	...	...	1	...	...	...	
1	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	2	...	...	.	
...	...	1	...	...	...	1	...	...	...	
2	2	...	1	...	...	5	...	...	...	
4	4	...	.	...	...	7	2	...	...	
...	...	1	...	...	...	2	...	...	...	
...	2	...	...	...	...	2	...	...	...	
...	1	1	...	..	...	2	...	...	...	
...	1	...	...	...	...	1	...	...	...	

TABLE II.—

INJURIES.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not
LOCAL INJURIES — *continued.*																		
Injuries to lower extremity—																		
Crushed legs (both)	1	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	
„ foot	1	1	...	...	...	...	2	...	...	...	2	...	...	...	...	...	...	
„ toe	2	...	...	...	..	1	1	...	...	...	2	...	...	...	...	...	...	
Bullet wound of thigh	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
„ of leg	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Old dislocation at hip-joint	1	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	
Dislocation of foot	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	
Do., subastragular	3	...	...	...	...	...	2	1	...	...	3	...	...	...	...	...	...	
Wound of knee	1	2	...	2	...	1	...	...	...	...	3	...	...	...	...	...	...	
„ of leg	3	3	...	1	2	...	3	...	...	...	6	...	...	...	...	...	...	
„ of foot	5	...	1	...	2	1	...	1	...	...	4	1	...	...	...	...	...	
„ of popliteal space	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	
Traumatic gangrene of toe	1	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	
Compound separation of epiphysis of tibia and fibula	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	
Fracture of neck of femur	3	5	...	...	...	1	...	...	1	6	8	...	...	...	...	...	...	
Fracture of shaft	43	24	21	22	5	2	2	3	3	9	67	...	...	...	...	...	...	
Fracture through condyles	1	1	...	...	...	1	1	...	...	...	2	...	...	...	...	...	...	
Fracture, compound	3	...	...	...	...	...	..	1	1	1	3	...	...	...	...	...	...	
Fracture of patella	15	11	...	...	...	3	15	5	2	1	26	...	...	...	...	...	...	
Do., compound	1	...	...	...	...	...	1	...	...	...	1	...	...	...	..	...	...	
Do., comminuted	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	
Fracture of tibia and fibula	79	27	8	6	9	12	17	27	15	12	106	...	...	...	...	...	...	
Do., compound	4	...	...	...	...	...	3	1	...	...	4	...	...	...	...	...	...	
Do., comminuted	4	...	...	...	...	2	...	1	1	...	4	...	...	...	...	...	...	
Do., compound comminuted	3	1	...	...	1	1	...	2	...	...	4	...	...	...	...	...	...	
Do., ununited	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	..	...	
Do., old comminuted	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	

continued.

Duration of residence.						Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
...	...	...	...	...	...	...	...	...	1	
...	...	2	...	...	...	2	...	...	...	
...	1	1	...	...	...	2	...	...	...	
1	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	1	...	Everted dorsal.
...	1	...	...	...	...	1	...	...	...	
...	2	1	...	...	...	3	...	...	...	
3	...	...	...	...	...	3	...	...	...	
1	2	3	...	...	...	5	...	...	1	Fatal case: delirium tremens.
2	2	1	...	...	...	5	...	...	...	
1	...	...	...	...	...	...	...	...	1	Pneumonia.
...	...	1	...	...	...	1	...	...	...	
...	...	...	1	...	...	1	...	...	...	
...	...	7	1	...	...	7	1	...	...	2 unimpacted.
1	34	24	5	1	...	61	2	...	4	1 non-union, osteitis deformans; 1 greenstick.
...	...	...	2	...	...	2	...	...	...	
...	...	1	1	...	1	2	1	...	...	
2	7	17	...	...	...	24	2	...	...	1 vertical; rest transverse. Wire suture in 10.
...	...	1	...	...	...	1	...	...	...	
...	...	1	...	...	...	1	...	...	...	
13	81	10	...	...	...	104	1	1	...	
2	1	...	1	...	...	4	..	...	...	
...	2	2	...	...	...	4	...	...	...	
...	2	...	2	...	...	4	...	...	...	
...	...	...	1	...	...	1	...	...	...	
...	...	1	...	...	...	1	...	...	...	

TABLE II—

INJURIES.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.
LOCAL INJURIES — *continued.*																	
Injuries to lower extremity—																	
Fracture of tibia	16	6	...	7	5	...	3	4	...	3	22	...	...	...	...	...	...
Do., compound	1	1	...	...	...	...	...	2	...	...	2	...	...	...	...	...	...
Fracture of fibula	13	...	...	1	2	1	6	3	...	...	13	...	...	...	...	...	...
Old fracture of fibula	1	...	..	...	...	...	1	...	...	...	...	...	...	...	1	...	...
Fracture of foot	2	...	...	...	...	1	1	...	...	...	2	...	..	...	...	...	...
Do., compound	3	...	...	1	...	1	...	1	...	...	3	...	...	...	...	...	...
Multiple fracture, compound	4	...	...	...	1	...	1	1	1	...	4	...	...	...	...	...	...
Do., simple	...	1	...	...	...	...	...	...	...	1	1	...	. .	...	...	...	...
Injuries to joints—																	
Synovitis—																	
Shoulder	1	1	1	...	...	...	...	...	1	...	1	...	...	...	...	...	1
Knee	13	3	...	1	4	3	4	4	...	...	16	...	...	...	...	...	...
Ankle	2	...	...	1	1	...	...	...	...	...	2	...	...	...	...	...	...
Hæmatoma of knee	...	2	...	...	...	1	1	...	...	...	2	...	...	...	...	...	...
Displaced semilunar cartilage	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Needle in knee	1	...	...	1	...	...	...	...	...	...	1	...	...	...	.	...	...
Total injuries	542	207	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	749																
Total diseases	892	590	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	1482																
Total injuries and diseases	1434	797	...	...	...	...	...	...	...	...	...	..	...	...	...	...	..
	2231																
Total ophthalmic cases	131	134	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	265																
Grand total injuries, diseases, and ophthalmic cases	2496																

continued.

	Duration of residence.						Result.				Remarks.
s. 4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts +12	C.	R.	U.	D.	
l	9	11	1	...	...	...	20	2	...	...	
.	...	2	...	...	...	...	2	..	...	...	
3	2	8	...	...	...	..	13	..	...	...	
	...	...	1	...	...	..	1	...	...	...	
	...	2	...	...	...	...	2	...	...	...	1 traumatic aneurism of toe.
	...	...	3	...	...	...	3	..	...	...	
	...	1	1	1	...	...	3	...	...	1	Railway crush; both legs; double primary amputation.
	...	...	1	...	...	...	1	..	...	...	
	1	...	...	...	...	...	1	...	1	...	
	6	5	3	...	...	...	15	...	1	..	
	...	...	1	...	...	...	2	...	...	...	1 supposed acute epiphysitis.
	2	...	...	...	...	...	2	...	...	..	
	...	...	...	...	...	...	...	1	...	...	
	...	...	...	...	...	...	1	...	...	...	
	...	...	...	...	...	...	657	32	8	52	
							749				
	...	...	...	...	...	...	395	365	131	91	
							1482				
	...	..	...	...	...	...	1552	397	139	143	
							2231				
	...	...	...	...	...	...	116	130	18	1	
							265				
							2496				See Ophthalmic Report.

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+
REMOVAL OF TUMOURS AND NEW GROWTHS.										
Amputation of breast	2	10	...	...	1	...	1	3	3	
Ditto with removal of glands	...	19	...	...	...	...	3	7	5	
Removal of recurrent growths	...	2	...	...	...	...	...	...	2	
Carcinoma of upper jaw	2	...	...	...	...	...	1	...	1	
„ of rectum	...	4	...	...	...	...	1	1	2	
Epithelioma—										
Ear	1	...	...	...	...	...	...	...	1	
Lip	3	...	...	...	...	...	...	...	1	
Cheek	4	...	...	...	...	...	...	1	2	
Tongue	5	...	...	...	...	...	...	2	3	
„ (recurrent)	3	...	...	...	...	...	...	...	3	
Glands of neck (secondary)	4	...	...	...	...	...	...	1	2	
Penis	2	...	...	...	...	...	...	2	...	
Scalp	...	1	...	...	...	...	...	...	...	
Rodent ulcer	...	1	...	...	...	...	...	...	1	
Sarcoma—										
Orbit	1	2	...	...	...	1	...	1	...	
„ (recurrent)	...	1	...	...	...	1	...	...	...	
Thigh	1	...	...	...	...	...	...	1	...	
Testis	1	...	...	...	...	...	1	...	...	
Palate	...	1	...	...	...	...	...	...	...	1
Breast	...	2	...	...	...	...	...	2	...	
Sternum	...	1	...	...	...	...	1	...	...	
Back	...	1	...	...	...	...	...	...	...	1
Kidney	...	1	1	...	...	...	...	...	...	
Neck	...	1	...	...	...	...	...	...	1	
Lipoma	4	11	...	...	5	...	2	6	2	
Fibroma	3	2	...	...	2	...	1	...	2	
Exostosis, ivory	...	1	...	...	...	1	...	...	...	
„ cancellous	1	2	...	...	3	...	...	...	...	
Epulis	1	3	...	...	1	1	...	1	...	1
Nævus, electrolysis of	1	...	...	...	1	...	...	...	...	
„ removal of	...	2	1	1	...	...	...	...	...	
Cavernous angioma	...	4	...	2	...	2	...	...	...	
Parotid tumour	1	2	...	...	1	...	1	1	...	
Adenoma of breast	...	6	...	...	...	2	1	3	...	
Urethral caruncle	...	2	...	...	...	...	1	...	...	1
Chondroma	...	1	...	...	...	...	...	...	1	
Fibro-myoma	...	1	...	...	1	...	...	...	...	
Fibro-cystic of uterus	...	1	...	...	...	1	...	...	...	
Polypus of nose	1	1	...	...	...	1	...	...	...	1
„ of labium	...	1	...	...	1	...	...	...	...	

Surgical Operations.

Duration of residence.							Result.				Remarks.
ys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
...	1	9	2	...	...	...	12	...	...	...	Duct cancer 1.
...	2	11	6	...	...	...	16	2	...	1	
...	...	2	...	...	...	...	2	...	...	...	
...	...	...	1	1	...	...	1	...	...	1	
...	...	1	2	1	...	...	4	...	...	...	Excision in all cases.
...	1	...	...	...	...	...	1	...	...	...	
1	1	...	...	1	...	...	2	1	...	...	
...	2	1	1	...	...	...	3	1	...	...	
...	2	2	1	...	...	...	4	1	...	...	Preliminary ligature of lingual artery in 1.
...	3	...	...	...	...	...	...	2	1	...	
...	1	3	...	...	...	...	3	1	...	...	
...	1	1	...	...	...	...	2	...	...	...	
...	1	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	1	...	...	
1	...	1	1	...	...	...	3	...	...	...	Scraping operation 1; parosteal 1.
...	...	1	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	1	...	...	...	
...	1	...	1	...	...	...	1	...	...	1	Fatal case: secondary growth in liver. 1 recurrent.
...	...	...	...	...	1	...	1	...	...	...	Recurrent.
...	...	...	1	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	1	
...	...	1	...	...	...	...	...	1	...	...	
...	4	8	3	...	...	...	15	...	...	...	
...	2	3	...	...	...	...	5	...	...	...	Spermatic cord 1; jaw 1; foot 2; back 1.
...	...	1	...	...	...	...	...	1	...	...	Of auditory meatus.
1	1	1	...	...	...	...	3	...	...	...	
3	1	...	...	...	...	...	4	...	...	...	
...	1	...	...	...	...	...	...	1	...	...	
...	...	2	...	...	...	...	2	...	...	...	
...	2	1	1	...	...	...	4	...	...	...	Lip 1; axilla 2; hand 1.
...	2	1	...	...	...	...	2	1	...	...	
...	4	2	...	...	...	...	6	...	...	...	
...	...	2	...	...	...	...	1	...	1	...	
...	1	...	...	...	...	...	1	...	...	...	Of metacarpal.
...	1	...	...	...	...	...	1	...	...	...	Of abdominal wall.
...	...	...	...	1	...	...	1	...	...	...	Hysterectomy.
...	1	1	...	...	...	...	1	1	...	...	
...	1	...	...	...	...	...	1	...	...	...	

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+6
REMOVAL OF TUMOURS AND NEW GROWTHS —*continued.*										
Polypus of rectum	...	1	...	...	1	...	...	...	...	...
Cysts—										
Dermoid	1	1	...	...	2	...	...	...	...	..
Sebaceous	..	3	...	...	...	1	...	2	...	..
Serous	1	1	...	1	...	...	...	1	...	..
Of breast	...	5	...	...	...	1	2	2	...	..
„ aspiration of	...	1	...	...	...	...	...	...	1	..
Ovarian cystoma	...	5	..	...	...	...	1	2	...	
DIGESTIVE SYSTEM.										
Hypertrophy of gum	1	...	...	...	1	...	...	...	...	..
Lenkoplakia	2	...	...	...	...	...	...	...	...	
Œsophagostomy	1	...	...	...	...	...	...	...	...	
Colotomy, inguinal	7	1	4	...	...	...	...	1	..	
„ lumbar	3	1	...	...	...	...	1	1	1	
Abdominal section	5	2	1	...	1	2	1	1	...	
Herniotomy, inguinal	11	2	1	..	1	1	...	...	5	
„ femoral	...	15	...	...	...	...	3	5	5	
Hernia, radical cure—										
Inguinal	14	1	2	2	2	7	1	1	...	.
Strangulated	4	...	...	...	...	3	1	...	...	.
Femoral	...	3	...	...	...	...	2	1	...	.
Umbilical	...	1	...	...	...	...	...	...	...	
Excision of hernial sac	...	2	...	...	...	...	1	...	...	
Hæmorrhoids	12	11	...	...	1	5	6	8	4	.
For ulcer of rectum	1	1	...	...	...	1	...	...	...	
For artificial anus	1	...	...	...	...	...	...	1	...	.
For stricture of rectum	...	3	...	...	...	1	2	...	...	.
Fistula in ano	23	4	1	...	2	7	5	6	5	.
Prolapse of rectum	...	1	...	...	1	...	...	...	...	.
For abdominal abscess	...	1	...	...	1	...	...	...	...	.
Enterorrhaphy	1	...	...	1	...	...	...	...	...	.

continued.

Duration of residence.							Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
...	1	...	...	...	...	...	1	...	...	...	
1	1	...	...	...	...	..	2	...	...	...	
...	2	1	...	...	...	...	3	..	...	...	
...	1	1	...	...	...	...	2	...	...	...	Of calf 1, transferred for erysipelas; of neck 1.
...	4	1	...	...	...	...	5	...	...	...	
1	...	...		...	...	...	1	...	...	...	
2	1	1	1	...	...	..	2	...	...	3	
1	...	...	...	...	...	...	1	...	...	...	
...	2	...	...	...	...	...	1	1	...	...	Scraping 2.
...	1	...	...	...	...	...	...	...	...	1	
...	2	2	2	2	...	.	2	2	...	4	Malignant disease 4; imperforate anus 4.
1	...	...	3	...	...	...	...	3	...	1	Maliguant disease 3; stricture 1
2	...	2	1	2	.	...	1	1	3	2	Obstruction 3; tubercular peritonitis 1; malignant of stomach 1; renal tumour 1; suppurating hæmatoma 1.
3	2	4	4	...	...	...	8	...	...	5	Fatal cases: perforation of gut 1, peritonitis 1, moribund on admission 1, parotitis 1.
2	1	8	3	1	...	...	12	...	...	3	
...	1	5	9	...	...	...	14	...	...	1	Fatal case: acute peritonitis.
...	...	2	2	...	...	...	4	...	...	...	
...	...	3	...	...	...	...	3	...	...	...	
...	...	...	1	...	...	..	1	...	...	...	
...	...	1	1	...	...	...	2	..	...	...	
...	5	15	3	...	...	...	23	...	...	.	
...	..	2	...	...	...	...	1	1	...	...	Excision 2; 1 tubercular.
..	1	...	.	...	...	...	...	...	..	1	Previous colotomy and excision of rectum; malignant disease.
...	...	2	...	1	...	...	2	1	...	...	
1	12	13	1	..	...	...	26	1	...	...	
...	1	...	...	...	...	...	1	...	...	..	
..	..	...	...	1	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	1	For ruptured intestine.

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+
GENITO-URINARY SYSTEM.										
Circumcision	8	...	1	...	4	2	...	1	...	
Removal of warts	...	4	...	...	2	2	...	...	...	
External urethrotomy	10	...	...	...	2	1	4	2	...	
Internal urethrotomy	6	...	...	...	1	1	2	...	2	
Perineal section	6	...	...	...	...	1	1	...	2	
„ puncture	5	...	...	...	...	1	1	2	...	
For perineal fistula	3	...	...	...	...	...	1	1	...	
Lithotomy, lateral	2	...	1	1	...	...	...	...	...	
„ supra-pubic	5	...	1	...	2	...	...	...	1	
Lithotrity	2	...	...	...	...	...	...	...	1	
Nephrolithotomy	1	...	...	...	...	...	1	...	...	
Supra-pubic cystotomy	1	...	...	...	...	...	...	...	...	
Castration	3	...	2	1	...	...	...	...	...	
For hydrocele, tapping and injection	13	...	...	...	3	2	3	4	...	
„ radical cure	3	...	...	...	3	...	...	...	...	
For spermatocele, radical cure	1	...	...	...	1	...	...	...	...	
For varicocele	34	...	...	...	17	15	2	...	...	
Nephrotomy	...	2	...	...	...	1	...	1	...	
Nephrectomy	...	1	...	...	...	...	1	...	...	
For chronic mastitis	...	1	...	...	...	...	...	1	...	
Plastic of vulva	...	1	...	...	...	1	...	...	...	
CIRCULATORY SYSTEM.										
Ligature of radial artery	4	1	...	...	1	2	1	1	...	
„ ulnar artery	1	...	...	...	...	1	...	...	...	
„ palmar arch	1	1	...	...	...	...	1	...	1	
„ digital artery	1	...	...	...	...	...	1	...	...	
„ femoral artery	1	...	...	...	...	1	...	...	...	
Excision of varicose veins	21	5	...	...	4	18	2	1	1	
LYMPHATIC SYSTEM.										
Excision of glands	13	19	...	3	13	10	3	1	1	1
RESPIRATORY SYSTEM.										
Tracheotomy	7	...	...	...	...	1	2	1	3	
For empyema	2	1	...	...	...	1	...	...	1	1
Aspiration for pneumothorax	1	...	...	...	...	1	...	...	...	

continued.

Duration of residence.							Result.				Remarks.
ys. –4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
..	7	1	...	...	...	...	8	...	...	...	
..	2	1	1	...	...	...	3	1	...	...	
1	...	1	5	3	...	...	9	...	...	1	2 for ruptured urethra; others for stricture.
...	2	3	1	...	...	...	5	1	...	...	1 refused further treatment.
1	...	2	3	...	...	...	1	4	...	1	
...	2	...	2	1	...	...	3	1	...	1	
...	...	2	1	...	...	...	2	1	...	...	1 refused further treatment.
..	...	...	2	...	...	...	2	...	...	...	1 after failure of lithotrity.
...	...	2	2	1	...	...	5	...	...	...	
...	1	1	...	...	...	...	1	1	...	...	
...	...	...	1	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	1	...	...	...	
...	...	3	...	...	...	...	3	...	...	...	3 tubercular disease.
2	8	2	1	...	...	...	10	3	...	...	1 refused further treatment.
...	...	3	...	...	...	...	3	...	...	...	
...	...	1	...	...	...	...	1	...	...	...	
...	7	20	7	...	...	...	34	...	...	...	
...	...	1	1	...	...	...	1	1	...	...	
...	...	...	...	1	...	...	...	1	...	...	Pyo-nephrosis, fibromata.
...	1	...	...	...	...	...	1	...	...	...	Partial amputation.
...	...	...	...	1	...	...	...	1	...	...	For epispadias.
...	3	1	1	...	...	...	5	...	...	...	1 excision of radial aneurysm.
...	...	1	...	...	...	...	1	...	...	...	
...	1	1	...	...	...	...	2	..	...	...	
...	...	1	...	...	...	...	1	...	...	...	Incision and ligature for traumatic aneurysm.
...	...	...	1	...	...	..	1	...	...	...	
...	4	17	4	1	...	...	26	...	...	...	1 epigastric veins; others of leg.
...	16	13	3	...	...	...	32	...	...	...	1 axilla; 2 groin; others cervical.
3	2	...	2	...	...	...	...	4	...	3	Carcinoma of larynx 3; malignant of neck 1; Ludwig's angina 3.
1	...	...	2	...	...	...	2	...	...	1	Death under chloroform 1. For traumatic empyema, cured 2.
...	1	...	...	...	...	...	1	...	...	...	

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+
BONES, JOINTS, &c.										
Incision for acute periostitis	5	1	2	1	3	...	...	...	...	
„ for acute epiphysitis	2	...	1	...	1	...	...	...	...	
Removal of necrosed bone from—										
Jaw	5	4	3	1	2	1	1	1	...	
Humerus	2	1	...	...	1	...	2	...	...	
Femur	8	1	1	...	5	3	...	...	...	
Tibia	5	...	...	...	5	...	...	...	...	
Foot	1	1	...	...	...	...	1	...	...	
Dorsal spine	2	...	...	...	1	...	...	1	...	
Scraping for caries of mastoid	5	2	2	2	...	2	...	1	...	
Trephining mastoid	3	2	...	..	1	2	1	...	1	
Scraping for caries of sternum	1	...	...	1	...	...	...	...	...	
„ „ rib	3	1	...	...	2	...	...	1	1	
„ „ ilium	...	1	...	...	...	1	...	...	...	
„ „ femur	2	2	...	1	1	2	...	...	...	
„ „ multiple caries	1	...	1	...	...	...	...	...	...	
„ „ foot	1	2	...	...	3	...	...	...	...	
Arthrotomy of shoulder	2	...	1	...	...	1	...	...	...	
„ hip	1	...	...	1	...	...	...	...	...	
„ knees	4	4	1	1	3	1	1	...	1	
Excision of elbow	4	2	1	1	1	1	1	1	...	
„ wrist	2	...	...	...	...	2	...	...	...	
„ hip	3	7	...	4	4	1	...	1	...	
„ knee	2	2	...	2	...	1	...	1	...	
„ toe-joint	1	1	...	...	2	...	...	...	...	
Arthrectomy, knee	4	2	1	1	3	1	...	...	...	
„ ankle	...	1	...	1	...	...	...	...	...	
Aspiration, knee	2	1	1	...	1	...	...	1	...	
Resection—osteotomy	2	...	...	...	2	...	...	...	...	
Osteotomy, femur	12	4	1	4	10	1	...	...	...	
„ tibia	1	...	1	...	...	...	...	...	...	
For detached semilunar cartilage	1	...	...	...	...	...	...	1	...	
Excision of ganglion	3	2	...	...	1	3	...	...	1	
„ bursæ	3	8	...	...	3	4	1	3	...	
Tubercular disease of tendon sheath	...	1	...	1	...	...	...	...	...	
Tenotomy for torticollis	3	2	1	1	3	...	...	...	...	
„ talipes	7	1	...	3	2	2	...	...	1	
„ hammer-toe	1	1	...	...	...	1	1	...	...	
Tarsectomy	1	1	2	...	...	...	...	...	...	

continued.

Duration of residence.						Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
2	2	...	1	...	...	3	...	...	3	
...	1	1	...	...	...	2	...	...	...	1 incised and trephining.
4	2	1	1	...	...	9	...	...	...	
2	...	1	...	...	...	3	...	...	...	
...	...	4	5	...	...	5	4	...	...	
...	...	2	3	...	...	3	2	...	...	
1	...	...	1	...	...	1	1	...	...	
...	1	1	...	...	...	...	2	...	...	
1	4	2	...	...	...	6	1	...	...	
...	2	...	1	...	...	3	...	...	2	1 fatal case septicæmia.
1	...	...	...	...	...	1	...	...	...	
1	3	...	...	...	...	3	1	...	...	
...	1	...	...	...	...	...	1	...	...	
1	...	...	2	...	1	1	3	...	...	1 trephining and scraping.
...	...	1	...	...	...	1	..	...	...	Humerus, clavicle, and wrist.
...	1	2	...	...	...	2	1	...	...	
1	...	...	1	...	...	1	1	...	...	
...	...	1	...	...	...	...	1	...	...	
...	3	3	2	...	...	7	1	...	...	1 for acute arthritis; 2 for loose body.
...	2	3	1	...	...	4	2	...	...	1 partial excision for old fracture; 1 for ankylosis.
1	...	1	...	...	...	1	1	...	...	2 partial excision.
...	...	2	6	2	...	3	6	...	1	
...	1	3	...	...	...	4	...	...	...	For contracted knee 1.
...	1	1	...	...	...	2	...	...	...	For hallux valgus 1.
...	...	3	3	...	...	4	2	...	...	
...	1	...	...	...	...	1	...	...	...	
1	1	1	...	...	...	1	1	...	...	
...	2	...	...	...	...	2	...	...	...	For fracture—deformity of wrist 2.
..	...	4	12	...	...	16	...	...	...	3 upper third for ankylosis of hip; 1 for disease of knee. Genu valgum 8 (1 double); genu varum.
1	...	...	...	...	...	...	...	...	1	
...	...	1	...	...	...	1	...	...	...	
1	4	...	...	...	...	5	...	. .	...	Wrist 3; foot 2.
3	7	1	...	...	...	11	...	. .	...	Patellar 9; popliteal space 2.
1	...	...	...	...	...	1	...	...	...	Excision.
1	1	3	...	...	...	4	1	...	...	
1	3	4	...	...	...	6	2	...	...	
...	1	1	...	...	...	2	...	...	...	
...	...	1	1	...	...	1	1	...	...	

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60
BONES, JOINTS, &c.—*continued.*									
Amputations for disease—									
Arm	...	1	1	...	...	...	...	...	...
Hand	2	1	...	...	...	1	1	1	...
Thumb	1	...	...	...	...	...	...	1	...
Fingers	2	1	...	...	...	1	1	...	...
At hip-joint	1	...	...	...	...	...	...	...	1
Thigh	4	4	...	...	4	2	2	...	...
Through knee-joint	...	1	...	...	...	1	...	...	...
Leg (lower third)	...	1	...	...	...	1	...	...	...
„ Symes'	1	1	...	...	...	...	1	...	1
Amputations for injury—									
Primary—									
At shoulder-joint	1	...	...	...	...	...	1	...	...
Hand	...	1	...	...	1	...	...	...	...
Fingers	9	...	...	1	1	2	3	2	...
Thigh	1	...	...	...	...	1	...	...	...
Leg (upper third)	2	...	...	1	1	...	...	...	...
„ (middle third)	1	...	...	...	...	...	...	1	...
„ Symes'	1	1	...	...	...	1	1	...	...
Toes	2	...	...	...	1	...	...	1	...
Double—									
Forearm and opposite hand	1	...	...	...	...	1	...	...	...
Thigh and opposite leg	1	...	...	...	...	...	...	...	1
Leg and opposite wrist	1	...	...	...	...	...	1	...	...
Reduction of dislocation—									
Humerus	2	...	...	...	...	...	1	1	...
Ulna	1	...	...	...	...	...	...	...	1
Foot	4	...	...	...	1	...	2	1	...
Metatarsals	1	...	...	...	...	...	1	...	...
Removal of head of humerus	1	...	...	...	...	...	1	...	...
For ununited fracture of humerus	2	...	...	...	...	...	...	1	1
For fractured olecranon	2	...	...	...	...	2	...	...	...
„ patella	7	4	...	...	...	3	7	1	...
Reparative operations—									
Cheiloplasty	4	4	5	...	1	1	...	1	...
Plastic of foot	1	...	1	...	...	...	...	...	...
For cleft palate	3	7	2	3	4	1	...	...	...
Plastic of hand	...	4	2	1	...	1	...	...	...
„ face	...	2	...	...	...	2	...	...	...

continued.

Duration of residence.						Result.				Remarks.
s. 4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–6	Mts. 6–12	Mts. +12	C.	R.	U.	D.	
1	...	...	...	...	...	...	...	...	...	1	For tetanus after compound fracture.
.	...	...	3	...	...	...	3	...	...	...	2 for cellulitis; 1 tubercular disease of wrist.
1	...	...	...	...	...	...	...	...	...	1	
.	...	2	1	...	...	...	3	...	...	...	Gangrene 1; lupus 1; cellulitis 1.
1	...	...	...	...	...	...	...	..	...	1	Epithelioma of thigh.
.	...	1	5	2	...	...	6	1	...	1	Fatal case: phthisis. All for tubercular disease of knee.
.	...	...	1	...	...	...	1	...	...	...	For deformity.
.	...	...	1	...	...	...	1	...	...	...	Tubercular disease of ankle.
.	...	...	1	1	...	...	2	...	...	...	1 gangrene; 1 tubercular disease of tarsus.
.	...	...	1	...	...	...	1	...	...	...	
.	...	...	1	...	...	...	1	...	...	...	
.	4	3	2	...	...	...	9	...	...	...	
.	...	1	...	...	...	...	1	...	...	...	
.	...	...	...	2	...	...	2	...	...	...	
.	...	1	...	...	...	...	1	...	...	...	
.	...	...	2	...	...	...	2	...	...	...	
.	...	...	2	...	...	...	2	...	...	...	
.	...	1	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	1	
.	...	...	1	...	...	...	1	...	...	...	
1	1	...	...	...	...	...	2	...	...	...	1 two weeks' standing; 1 three weeks.
.	...	1	...	...	...	...	1	...	...	...	Compound.
.	...	3	1	...	...	...	4	...	...	...	3 subastragaloid; 1 compound at ankle-joint.
.	...	1	...	...	...	...	1	...	...	...	
.	...	...	...	1	...	...	1	...	...	...	Fracture of anatomical neck; fragment loose in axilla.
.	...	1	...	1	...	...	2	...	...	...	
.	...	2	...	...	...	...	2	...	...	...	Wire suture in both cases.
.	...	...	11	...	...	...	11	...	...	...	1 compound.
.	3	3	1	1	...	...	6	2	...	...	Harelip 5; for cicatricial deformity 3.
.	...	...	...	1	...	...	1	...	...	...	After burn.
.	1	9	...	...	...	...	2	6	2	...	
.	...	...	3	1	...	...	2	2	...	...	Cicatricial deformity 1; congenital webbed fingers 2.
.	...	1	1	...	...	...	1	1	...	...	Both cicatricial deformity.

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60
NERVOUS SYSTEM.									
Resection of inferior dental nerve	1	...	...	...	...	...	...	...	1
„ median nerve	1	...	...	...	...	1	...	...	...
Liberation of nerve from scar	...	2	...	...	...	1	...	1	...
Suture of nerve—ulnar	...	5	...	1	...	2	2	...	...
For traumatic paraplegia	1	...	...	...	...	1	...	...	...
Thyroid—excision of cyst	...	1	...	...	...	1	...	...	...
MISCELLANEOUS.									
Rupture of adhesions in knee-joint	...	1	...	...	...	...	1	...	...
Scraping lupus	7	4	...	...	4	7	...	...	...
Excision of anthrax pustule	1	...	...	...	...	1	...	...	...
„ of scar	1	...	...	...	...	1	...	...	...
For contracted palmar fascia	2	1	...	...	1	...	...	1	...
Ingrowing toe-nail	...	2	...	...	1	1	...	...	...
Wiring ununited fracture	1	1	...	...	1	...	...	1	...
For painful stump	3	...	...	...	...	...	1	2	...
Skin grafting	2	2	...	...	...	1	1	1	1
Excision of eye	6	...	...	...	1	3	1	1	...
Trephining skull	4	...	...	3	1	...	...	...	...
Elevation of fracture of skull	1	...	...	...	1	...	...	...	...
Examination of spine	1	...	...	...	...	...	1	...	...
Suture of tendons	5	3	1	1	...	1	2	3	...
Plastic for repair of tendon	1	...	...	...	...	...	1	...	...
Extraction of needle from knee	1	...	...	1	...	...	...	...	...
„ of slate pencil from palate	...	1	1	...	...	...	...	...	...
„ of needle from hand	...	1	...	...	1	...	...	...	...
Totals	487	304							
	791								

continued.

Duration of residence.							Result.				Remarks.
s. –4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts 2–6	Mts. 6–12	Mts +12	C.	R.	U.	D.	
..	...	1	...	...	...	...	1	...	...	...	
..	1	...	...	...	...	...	1	...	..	...	
.	...	2	...	...	...	...	1	1	...	...	
..	...	3	2	...	...	...	5	...	...	...	
.	...	...	1	...	...	...	...	...	1	...	Trephining spine.
..	...	1	..	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	1	...	...	...	
4	1	4	1	1	...	...	1	10	...	...	
..	...	1	...	...	...	...	1	...	...	...	
..	...	...	1	...	...	...	...	...	1	...	
..	3	...	...	...	...	...	2	1	...	...	
..	2	...	...	...	...	...	2	...	...	...	
.	..	...	2	...	...	...	2	...	...	...	Both of tibia and fibula.
..	1	1	1	...	...	...	3	...	...	...	Removal of spicule of bone 3.
.	...	2	2	...	...	...	3	1	...	...	
1	5	...	...	...	...	...	6	...	...	...	
1	...	...	2	1	...	...	3	...	...	1	
..	...	1	.	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	1	For fracture-dislocation, cervical region.
..	3	4	1	...	...	...	8	...	...	...	
..	1	...	...	...	...	...	...	1	...	...	Decalcified bone used.
1	...	...	...	...	...	...	1	...	...	...	
..	1	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	1	...	...	...	
							630	105	9	47	
							791				

SPECIAL SUMMARY.

GENERAL DISEASES.

ERYSIPELAS (cases admitted as such).

Males 29, females 26. C. 50, R. 2, D. 3.

Varieties.—Cellular 21; cellulo-cutaneous 6; cutaneous 28.

Situation.—Head and neck 26; upper extremity 6; lower extremity 19; trunk 4.

Causes.—Wound 19; abscess 8; ulcer 13; compound fracture 3; burns and scalds 4; vaccination pustule 1; bursitis (incision) 1; not ascertained 6 ("idiopathic").

History of frequent previous attacks in 2. Three cases had relapses while in ward.

Fatal cases.

1. Male, æt. 50. Symptoms 1 week; no known cause. On admission leg swollen and brawny from foot to knee; suppuration of cellular tissue. Incisions. Chlorinated soda poultices. Death 15th day from septicæmia, with retention of urine. P.M.—Renal calculi; pneumonia.

2. Male, æt. 3. Erysipelas of trunk after scald 5 days before admission. Sank 3rd day. P.M.—Peritonitis.

3. Male, æt. 61. Suffering from malignant disease of rectum, for which colotomy had been done before admission. Erysipelas around wound. Patient much emaciated. Death on 2nd day from exhaustion.

SYPHILIS.

Males 2, females 34. C. (?) 11, R. 19, U. 1, D. 3. Primary 3, 1 male chancre of lip; secondary 23; pharyngitis 2; condylomata 18; psoriasis 2; iritis 1; rupia 1; tertiary 7; ulcer of vulva 3; gummata of thigh 2, of face 1, scalp 1; congenital 3. In 1 "gummatous" nodes appeared in site of vaccination pustules.

TETANUS.

Admitted as such, 3 males. Arising in hospital 2, male 1, female 1. All fatal.

1. Male, æt. 51. Suffered from fistula in gluteal region 14 years, which has been frequently excised, the last occasion being about 10 days before admission. Two days before admission difficulty in swallowing noticed. Next day stiffness and pain in side of face and chest; did not sleep well, but went to work up till 5 p.m. on 2nd day of symptoms, when he was seized with sudden severe spasm of muscles of jaw, with dyspnœa. On examination muscles of neck and abdomen rigid; slight risus sardonicus; no affection of diaphragm or intercostals. Occasional attacks of paroxysmal sneezing. Temporary improvement under chloral and chloroform during spasms. Condition gradually became worse during next 4 days, spasms increasing in frequency, but varying much in severity; kept in check by administration of chloroform. Perspiration profuse. Fed by nutrient enemata. Became gradually weaker, and died in a very slight convulsion, apparently from syncope. P.M.—Slight broncho-pneumonia; no other gross disease.

2. Male, æt. 25. Minute punctured wound of left foot, due to a nail in boot just under great toe; not noticed till examined after admission. Symptoms 1 day. Stiffness and pain in back first noticed. On admission back and abdomen rigid; slight opisthotonos; no risus sardonicus; no difficulty in swallowing, but head retracted and all muscles of neck rigid; some rigidity of legs, especially left, in extended position. Scar of wound excised; spasms, chiefly opisthotonos; about 7 per hour, till death from exhaustion on 2nd day. Temperature 99° on admission, steadily rose, reaching 104·6° at death.

3. Male, æt. 45. Thumb crushed by cart 11 days before admission. No symptoms for 10 days. First symptom headache, pain in abdomen, and slight difficulty in speaking. Next day pain and stiffness in back and occasional spasms; neck and face only slightly affected. On admission tonic rigidity of back of abdomen, slight risus sardonicus, and slight fixity of head and neck; thumb severely crushed and suppurating; amputated through proximal phalanx. No actual spasms till 2nd day, from which day they continued increasing in frequency till death on the 6th day; occurring latterly every few minutes; never any difficulty in swallowing. Temperature normal on admission till 3rd day; it then rose steadily to 103·8° at death.

4. Male, æt. 20. Gunshot wound of forehead 9 days before admission; 8 days later some stiffness of jaw-muscles. On admission stiffness of jaw, but nowhere else. Wound thoroughly scraped under chloroform. First and second day only two spasms, not very severe. Third day no spasm; muscles of jaw relaxed; appeared better. Fourth day, 9 a.m., severe spasm, immediately relaxed by administration of chloroform. Two hours later another severe spasm, in which death occurred (in spite of chloroform), apparently from asphyxia.

5. Female, æt. 2. Compound fracture of radius and ulna (kick from horse). Wound sutured and dressed antiseptically, having been washed well with sublimate solution; posterior splint. Sutures removed 2nd and 3rd day; much

sloughing of soft parts. Sixth day slight twitching of arm when dressed; later rigidity of mouth, jaw, and abdomen. Seventh day spasms, affecting face, neck, and abdomen every few minutes. Amputation through shaft of humerus; child remained quiet for some hours after operation, but on recovering from effects of anæsthetic spasms recurred, and death took place early on the 9th day, the 3rd day of the disease.

LOCAL DISEASES.

Carcinoma—

Breast.—Males 3, females 39. C. 21, R. 13, U. 6, D. 2. Right breast 19; left 22; both 1. Upper and inner quarter of breast 8; upper and outer quarter of breast 14; outer side 9; centre 7; involving whole breast 4; history of cancer in family 7; doubtful ditto 1; history of phthisis in family 5; history of abscess in breast 4; ditto of sore nipples 4; 1 never suckled children owing to malformation of nipples in breast; subsequently affected with carcinoma; 4 "atrophic" scirrhus; 3 scirrhus with cysts; 1 "duct cancer;" 4 unfit for operation; 1 (sloughing) cauterised with chloride of zinc paste.

Fatal cases—

1. Female, æt. 43, married. Growth of 9 months' duration in lower part of right breast. On admission growth size of "cricket ball;" axillary glands enlarged. Operation: breast removed, also some glands, but operation not completed, as glandular infection found to extend to subclavian region beyond reach for removal. Progress of wound good, but gradually became weaker, became jaundiced, and died comatose 31 days after operation. P.M.—Secondary growths in liver.

2. Female, æt. 65, married. Growth noticed 12 months in left breast; gradual extension; ulceration 3 months. On admission indurated ulcer lower part of breast 3 inches by 2; hard cord from growth in breast into axilla, and glands enlarged. Operation: removal of growth and glands on 7th day; suppuration of wound. Death 11th day from exhaustion and œdema of lungs.

Selected cases.

"*Duct cancer.*"—Female, æt. 47. No family history of cancer or other tumours nor of phthisis. Married 23 years; 3 children; each suckled for 12 months; sore nipples occasionally while suckling. Ten years before admission discharge from nipples, recurring since at intervals. Small lump noticed just above right nipple 6 years; slow increase of size at first; rapid for 3 months before admission; then size of small orange; no enlarged glands adherent to skin and in the breast, but moveable over deeper parts; nipple retracted; blood-stained discharge occasionally; removed by operation on 2nd day; first intention healing. Discharged cured 16th day.

Carcinoma of male breast—

1. Male, æt. 60. No family history of cancer. "Sore nipple" 8 years, followed by gradual induration, and eventually ulceration. Some pain for about 4 months. On admission ulcer size of half crown; hard everted edges;

no surrounding induration; no enlarged glands. Operation: removal; first intention healing. Discharged cured 40th day (delay due to emphysema and bronchitis).

2. Male, æt. 30. No family history of cancer. Small growth in right breast near nipple noticed 6½ months; slow increase in size. On admission growth size of walnut adherent to skin; glands in axilla enlarged. Operation: removal of growth and glands; slight suppuration of wound. Discharged apparently cured 21 days after operation.

3. Same case as above (No. 2). Readmitted 4 months later with recurrence in scar, for which no operation was deemed advisable.

Carcinoma of lip and nose.—Male, æt. 14. No family history of cancer. Never been out of England. Admitted with indurated swelling in upper lip extending to nasal septum; commenced 6 years before as a "wart;" slow extension; 4½ years before admission growth removed at provincial hospital. Recurrence 12 months later; slow increase since. Appearances closely resembled rhinoscleroma, but growth removed showed typical carcinoma structure. Radical removal not attempted as growth was found to have extended too far into the nose.

Malignant disease of rectum. Obstruction—

Fatal cases.

1. Male, æt. 65. Moribund on admission; double inguinal hernia for many years, for which truss worn. Admitted with severe collapse; history of vomiting and constipation for 5 days; pains about umbilicus. Incision into hernial sac; contained omentum, not strangulated; hard mass felt in sigmoid region; wound enlarged, and colon, presenting in the wound, fixed by sutures and opened; some hard scybala removed. Death from shock and exhaustion in 5 hours. P.M.—Malignant disease in anterior sacral region involving rectum, with small intestine adherent and obstructed.

2. Male, æt. 69. Malignant disease in pelvis involving rectum, though possibly originating outside it; no ulceration. Left inguinal colotomy performed successfully with temporary relief; but death from exhaustion on 22nd day afterwards.

3. Female, æt. 46. Seven months symptoms of obstruction in rectum. Left inguinal colotomy 15th day, with relief of all symptoms. Twenty-one days later excision of rectum and growth around, the peritoneal cavity being opened up in the process without any ill results; a glass drainage-tube being subsequently introduced into the peritoneal cavity, and a Barne's bag placed in the colon through the colotomy wound, to prevent contamination from above. Progress favourable at first. Some contraction of rectum; fæces chiefly discharged through colotomy wound; symptoms of obstruction commenced 2 months later, and on exploratory laparotomy a loop of small intestine was found adherent to the growth in the pelvis; an artificial anus was therefore formed in the mid-line. Temporary relief to symptoms, but death followed in 8 days from exhaustion.

Epithelioma of tongue.—1. Male, æt. 55. Excessive smoker; 4 months history; ulcerated, raised epithelioma in right anterior part of tongue; a few enlarged glands in floor of mouth. Operation: excision of tongue down to near

base with scissors, after preliminary ligature of both lingual arteries. Discharged cured 19th day.

2. Male, æt. 56. Six months' history; excessive smoker till growth commenced. Ulcerating epithelioma of tongue and floor of mouth, with infection of submaxillary glands. Operation: cheek divided from angle of mouth to jaw; lower jaw divided opposite growth, which was then removed with scissors; progress favourable, except for some sloughing of tissues in mouth and slight exfoliation from divided jaw. Discharged cured 53 days after operation.

3. Male, æt. 48. Excessive smoker; 4 years' history of psoriasis linguæ. Excision of left half of tongue with scissors; no complication. Discharged cured 13 days after operation.

4. Male, æt. 56. Family history of cancer in throat. Excessive smoker; soreness of tongue 6 weeks; superficial epitheliomatous ulcer right side of tongue; some glands in neck involved. Operation: preliminary ligature of lingual artery, with removal of glands through wound. Subsequent removal with scissors of right side of tongue; very little bleeding at operation. Discharged cured 12th day after operation.

5. Male, æt. 46. Sharp carious tooth caused soreness of tongue 3 months before admission; tooth filed, but soreness of tongue remained. Admitted with ulcerating warty patch of epitheliomatous character on left border of tongue far back; one enlarged gland in neck. Operation: preliminary ligature of left lingual artery; removal of left half of tongue with scissors; very little bleeding at operation; after-progress good. Discharged cured 20 days after operation.

One case (recurrent) scraped; 1 too advanced for operation.

Epithelioma in cicatricial tissues—

1. "*Lupus epithelioma.*"—Male, æt. 65. Lupus of neck for 35 years, occasionally yielding to treatment, but never thoroughly cured; 5 months before admission noticed ulceration extending; went to Skin Hospital; no improvement. On admission thick infiltrated ulceration on right side of neck, almost covering up area affected by lupus, a few nodules only of lupus tissue remaining uninvolved. Growth too advanced for operation.

2. *Epithelioma of thigh* (supervening on scar of burn). Male, æt. 52. Severe burn in gluteal region of thigh when 7 years old; no trouble till 1 year before admission, when leg became affected with shooting pains, and skin of cicatrix red and tender. Ulceration commenced 6 months later, and extended slowly at first, more rapidly later, involving the whole circumference of the thigh on admission. Anti-syphilitic remedies failing, amputation at the hip-joint was performed, but the patient died from shock a few hours later.

Sarcoma—

Of pectoralis major; recurrent. Male, æt. 3 years and 8 months. No family history of tumours; patient was one of 10 children, all the rest dying in infancy from various causes. Tumour first noticed at age of 10 weeks, situated in right pectoralis major, size of filbert; it was removed, and did not recur for 3 years, when patient was brought to hospital with a tumour in the same position as before, rounded, size of a small walnut, encapsuled in the substance of the muscle, and not adherent to skin. This was freely excised, and the wound healed well. Shortly after patient's discharge from hospital, recurrence was

noticed in the same region, but patient was not brought to hospital for 6 months, by which time the growth had attained the size of an orange, infiltrating the skin and surrounding parts. Operative removal was attempted, but could not be completed, as the growth extended too far into the axilla. The wound was closed, and the patient appeared to be progressing well for the first day, when the temperature rose rapidly to 108°, and death occurred 30 hours after operation, the wound, however, appearing to be quite healthy. P.M.—No evidence of dissase except the unremoved portions of the growth. The growth on the first occasion was not examined microscopically; on the second removal it proved to be a spindle-celled sarcoma with a small cyst in the centre (myomatous degeneration); on the third removal it was mixed, round, and spindle-celled growth.

Sarcoma of jaw (recurrent).—Male, æt. 49. Two years previously (in 1888) the left superior maxilla was excised for a round-celled sarcoma in the antrum, which involved the ethmoid cells, and possibly had commenced in them; the patient remained free from symptoms for nearly 2 years. On his readmission, however, a recurrent growth was found to have involved the tissues of the face and base of skull to an extent that made operative treatment unadvisable.

Sarcoma of thigh.—Male, æt. 43. History of syphilis 10 years previously. Admitted with tumour among muscles of thigh of 3 months' duration. On removal at operation tumour found to be lying under the sartorus and rectus, in contact with parts of the adductors longus and magnus, the crureus. No connection with the periosteum. It consisted chiefly of spindle-cells, with a cavity containing curdy mucoid fluid. It had a distinct capsule, which was adherent to the sheaths of the surrounding muscles. A few enlarged inguinal glands were removed. No complications after operation. Patient discharged cured on 45th day after operation.

Sarcoma of breast.—Female, æt. 43. Admitted with oval tumour in lower part of right breast the size of a turkey's egg, tense, elastic, and not adherent to skin or surrounding parts. Tumour first noticed 8 months before admission, being then the size of a walnut. A few glands slightly enlarged in both axillæ. Operation: tumour with whole of breast removed. No complications. Patient discharged "cured" on 18th day after operation. Readmitted 6 months later with recurrence, which had been noticed for 2 months. Five rounded nodules of growth, each about size of small walnut, scattered over breast area. No evidence of glandular infection in axilla. The tumours were all removed, and the patient left hospital 12 days later apparently cured.

Simple Tumours.

Fibroma of spermatic cord.—Male, æt. 12. Growth noticed 19 days before admission. Tumour dissected out without division of constituents of cord; found to be connected with patent funicular process of peritoneum. No complications. Discharged cured 16 days later.

Central fibroma of jaw.—Male, æt. 16. Enlargement of jaw noticed 6 months in region of second molar tooth, which had been "stopped" by a dentist 2 months previously. Operation: incision inside mouth over centre of tumour; expanded portion of bone on outer side removed, and tumour enucleated. Second

bicuspid and first two molars extracted; buccal mucous membrane replaced and sutured. No complications in healing. Discharged apparently cured on 12th day.

Exostosis of auditory meatus.—Female, æt. 24. Swelling in præ- and supra-auricular regions for 12 years; very slow growth; occasional attacks of deafness; pain, with otorrhœa, since age of 14. Came to out-patient department with polypus in meatus, on removal of which exostosis was discovered. Patient admitted to ward; incision behind pinna, which was drawn well forward with its attachments to periosteum; large exostosis then seen expanding auditory canal, the "lumen" of which was reduced to a pinhole. By means of a dental drill, followed by the use of a gouge and mallet, the tumour was removed, leaving a cavity containing foul sanious pus. This cavity, probably representing an expanded tympanic cavity, was washed out, and it was then found that the dura mater was exposed at the upper and posterior part from destruction of the bony wall. The parts were cleansed as thoroughly as possible, and a silver wire drainage-tube being passed round from the mastoid region into the meatus, the pinna was sutured in position. Patient progressed favourably till discharged relieved on 13th day after operation, still wearing a tube through which the parts could be cleansed by syringing.

Fibro-myoma of uterus, cystic.—Female, æt. 24. Swelling of left leg noticed 2 weeks. On admission œdema of leg. Tumour (not noticed before) about size of small cocoanut attached to uterus, firm, elastic, and movable with uterus; sound passed two inches; œdema of leg subsided with rest in bed. Operation eventually decided upon. Abdominal section. Incision into growth, which shelled out of a kind of capsule fairly easily; attachments, however, extending downwards, and having little but mucous membrane between them and the uterine cavity, made it necessary to remove the uterus. A serre-nœud was applied, and the constricted pedicle, consisting of the lower part of the uterus, was fixed in the lower end of the abdominal wound. Occasional slight attacks of pain and slight febrility after operation, but no suppuration. Discharged cured with wound healed on 10th day after operation.

Cysts—

Synovial cyst of leg.—Male, æt. 46. Swelling in calf and leg noticed 7 months; slight pain, but not interfering with locomotion; freely movable; situated beneath gastrocnemius. On tapping with trocar some gelatinous fluid escaped, not sanious; 5 days later the cyst was excised, and was found to be of a synovial or bursal character. A prolongation was traced up under the solens of gastrocnemius towards the knee-joint, but it was only pervious for a short distance, not communicating with the joint. On the 5th day the patient was transferred to No. 8 block for erysipelas, from which he recovered; and he was discharged cured on the 28th day after operation.

Ovarian cystoma.—(1) Æt. 68. Large tumour of 12 months' duration; rapid growth 6 months. Largest circumferential measurement of abdomen just below umbilicus = 41 inches. Œdema of ankles and legs on getting about; abdomen very tense; dyspnœa on exertion. Abdominal section on 8th day. Large polycystic tumour, which did not collapse on tapping, owing to viscidity of cyst-contents; wound enlarged; tumour extracted with difficulty; many adhesions

separated, some requiring ligature. Thick pedicle springing from broad ligament near uterus ligatured with thick double silk. Tumour removed. Abdomen sponged out; glass drainage-tube inserted. Glass tube removed 2nd day. Rallied well from operation, but subsequently failed, and died on 6th day from exhaustion and chronic intestinal obstruction, due to adhesions among intestines due to old peritonitis. P.M.—Intestines much matted together; extensive chronic disease of kidneys.

2. Æt. 46. Tumours noticed 2 months, at first "size of an egg." History of several attacks of pain in abdomen. On admission tumour felt reaching nearly to umbilicus. Abdominal section; multilocular tumour, many adhesions, pedicle short; difficult to extract, even after several tappings, owing to number of cysts; little solid growth; pedicle ligatured with 3 ligatures of silk, and one vessel ligatured separately. Abdominal cavity slightly sponged out; some oozing from separation of adhesions; wound sutured; uninterrupted recovery. Discharged cured 23 days after operation.

3. Æt. 48. "Flooding" after over-exertion at age of 18; since then catamenia absent. Seven months' history of pain; swelling noticed 3 months. On admission tumour filling whole abdomen; girth at level of umbilicus 36 inches. Abdominal section, 4½ inch incision; polycystic tumour; contents thick, partly blood-clot; would not flow through Wells' canula; many adhesions. Opening in cyst enlarged, contents evacuated, and tumour removed with considerable difficulty. The patient never rallied from the operation, and died about 4 hours later.

4. Æt. 70. Symptoms 2 years; tapped three times before admission, first time 40 pints of coffee-coloured fluid withdrawn. The cyst soon refilled, about a quart of opalescent fluid being withdrawn on two subsequent tappings. On admission to medical ward, girth through umbilicus 50 inches; tapped; nearly 40 pints of yellowish viscid fluid withdrawn, after which several rounded masses felt; one aspirated; thick sanious fluid withdrawn. Eleven days later transferred to Surgical Ward, and 7 days later again abdominal section. Cyst ruptured, 4 or 5 pints escaping, some into abdominal cavity; tumour removed after separation of many firm adhesions; abdominal cavity sponged gently out; pedicle transfixed and ligatured. Other ovary showed commencing cystic disease (size of "turkey's egg"), removed. Wound sutured; no complication. Discharged cured on 36th day after operation. It is interesting to note that the patient had a considerable growth of hair over the chin and lower jaw generally, forming a distinct beard.

5. Æt. 37. No symptoms till sudden attack of pain 8 days before admission, and 6 days before bilious vomiting commenced, continuing at frequent intervals till admission, when a large tumour was felt in abdomen. Abdominal section; tumour found to be a large ovarian cyst, black in colour, apparently showing commencing strangulation from twisting of the pedicle; a few adhesions were separated, and the tumour removed after a double silk ligature had been applied to the pedicle, which was very broad and œdematous. All went well for about 4 hours, when symptoms of internal hæmorrhage came on. The wound was reopened, and it was found that the ligature had slipped over the end of the shrunken pedicle, the knots being intact. Attempts were made to arrest the hæmorrhage in time, but the patient died before the operation was completed. P.M.—The tissues of the broad ligament were very easily lacerable, and some

large veins were found patent; whether these had given way in separating the adhesions, and therefore not been ligatured at all, owing to their not having bled at the first operation, or whether the ligature had slowly cut through them, damaged as the tissues were by the twisting of the pedicle, could not be ascertained.

DIGESTIVE SYSTEM.

"*Ludwig's angina.*—Two cases, both males, æt. 25 and 36. Symptoms about 1 day in each; no previous illness. On admission, great swelling of neck and dyspnœa; patients partly cyanosed. Incisions into brawny tissues of neck gave vent to some very offensive grumous matter, not actual pus, and tracheotomy at once performed for dyspnœa. Both patients died, one being really moribund on admission, the other being relieved by the tracheotomy, but dying apparently from the septic poisoning within 24 hours. P.M.—Congestion of lungs and cellulitis of neck in both.

For Hernia Cases see Special Table III.

Intestinal obstruction.—Female, æt. 49. Admitted in a collapsed condition, with history of pain and vomiting for 3 weeks before admission. There had been a right inguinal hernia, reducible up to 3 weeks before admission, but irreducible after that until 4 days before, when it was replaced by taxis, without any remission of symptoms. On admission abdomen distended, elongated swelling above right Poupart's ligament, and indistinct resistance in crural ring. Ether was administered, and an incision in left inguinal region being negative, the abdomen was opened by prolonging the incision upwards. There was then found an obstruction in the small intestine caused by a stricture, apparently simple, with an acute bend at that point of the gut; above this the gut was distended by a large number of cherry and plum stones. Attempts were made to free the obstructed bowel, but were eventually abandoned, as the intestine gave way under manipulation; an artificial anus was then made, and the rest of the wound was closed. The patient never rallied, and died a few hours later.

Abdominal abscess.—Female, æt. 26. History of "abdominal tumour" for 3 years, varying in size and feeling larger at menstrual periods; occasional difficulty in micturition; 3 weeks before admission had acute pain and dysuria; a few days later passed a large quantity of offensive yellow matter from rectum. Seen by medical man, and owing to urgency of symptoms was tapped, 30 oz. of offensive sanious pus withdrawn, and urine drawn off from distended bladder by catheter. Temperature 100°—103°. Sent up for admission; tumour found occupying left iliac and hypochondriac regions, bulging in Douglas's pouch pressing on rectum and bladder; abdominal section showed retro-peritoneal tumour, obscured by adhesions of sigmoid flexure, which was displaced over to the right; left ovary and Fallopian tube normal; tumour aspirated; 3 oz. fœtid pus drawn off; a separate incision in left iliac region then made outside peritoneum; abscess opened with large trochar, canula left in; first incision closed up, abscess left to drain through lateral one. Convalescence tedious; a discharge from abscess cavity was occasionally interfered with by the depth at which it was situated; eventual complete recovery; discharged cured on 69th day after operation.

GENITO-URINARY SYSTEM.

Stricture of urethra.

Fatal cases.

1. Male, æt. 79. Suffering from acute bronchitis (supervening upon chronic), from which he died on 5th day. P.M.—Extensive emphysema, enlarged prostate, and hypertrophied bladder; stricture at orifice of urethra admitting probe (meatus closed by adhesion of lips).

2. Male, æt. 38. Admitted with urinary abscesses and fistulæ in perineum and elsewhere; some extravasation. Death on 2nd day from exhaustion. P.M.—Cystitis, ureters dilated and thickened; pelves and calices of kidneys much expanded; interstitial points of suppuration in cortex.

3. Male, æt. 55. Admitted with stricture, perineal fistula, and cystitis of about 10 months' duration; albuminuria and hæmaturia; catheters passed up to Nos. 8 and 10; bladder washed out, with much relief to symptoms at first; suffered from occasional formation of fresh abscesses in perineum, leaving fistulæ, which alternately closed and reopened. Finally, perinæal drainage was established by perinæal section, but the patient did not obtain more than temporary relief, and died from exhaustion 3 days later. P.M.—A large tumour was found in the bladder of a sarcomatous character; secondary growths in pleura and mediastinal glands; ureters and pelves thickened and dilated, with suppurative pyelitis.

4. Male, æt. 39. Admitted for stricture of long-standing. No instrument could be passed, but patient could urinate freely himself. A perinæal abscess was incised on 4th day of admission, and he appeared to be going on well, but on the 8th day suddenly extreme dyspnœa came on, and he died immediately. P.M.—Clot in pulmonary artery (ante-mortem), source not ascertained; no evidence of disease anywhere, except for stricture and cavity of urinary abscess, with slight hypertrophy of bladder.

Enlarged prostate and cystitis.—2 cases fatal. One, æt. 58, also had umbilical and double inguinal hernia, owing to presence of collapse and vomiting; one of the herniæ (irreducible) was examined at operation in view of possible strangulation; the contents were found to be quite healthy, and death was due to suppurative nephritis.

The other case, a feeble man, æt. 66, upon whom perineal puncture had been performed for retention 4 years previously, was admitted in an exhausted condition, almost moribund. He had been passing a catheter upon himself since last admission. On admission there was severe cystitis, the urine being highly putrid. Death occurred on the 2nd day from exhaustion, the P.M. showing extensive renal disease, acute and chronic.

Tubercular disease of bladder and kidneys.—Male, æt. 28. Dysuria 4 years; occasional stoppages; sounded for stone on several occasions; suffered from hip-disease with abscesses at age of 6 (cured). On admission, stricture of urethra, dysuria, and hæmaturia. Catheters passed up to No. 7 without anæsthetic. Several strictures along course of urethra on 10th day. Silver catheters from 6 to 12 passed; some slight hæmorrhage; suppression of urine then supervened, and proved fatal in spite of pilocarpine, dry cupping, &c. P.M.—Tubercular ulceration of bladder; large tubercular foci in each kidney; tubercular ulceration of both intestines.

VESICAL CALCULUS.—*Lateral lithotomy.*

No.	Occupation.	Sex.	Age.	Duration of symptoms.	Size of stone.	Nature of stone.	Days in hospital after operation.	Result.	Remarks.
1	—	M.	4	9 months	Cherry stone	? Uric acid	27	C.	Lithotrity failed owing to impaction of fragment in lithotrite.
2	At school	M.	9	2 years	1½ in. × 1 in.	? Uric acid and phosphate	38	C.	—
					Supra-pubic lithotomy.				
1	Gardener	M.	54	Many years	1½ in. × 1¼ in.	Oxalate and phosphate	33	C.	Peritoneum not seen at operation; drain-tube into bladder for 10 days.
2	—	M.	4	A few weeks	1 in. × ⅞ in.	Phosphate, oxalates, and urates	24	C.	Bladder sutured. Wound healed by first intention.
3	—	M.	11	? 1 week	1⅜ in. × 1½ in.	Phosphate externally	57	C.	Tube into bladder 20 days. Wound closed 30th day.
4	Watchmaker	M.	19	2 weeks	1¼ in. × 1¼ in.	Oxalate	22	C.	Bladder sutured; tube in external wound. No catheter in bladder for 2 days. No leakage of urine. Wound healed by 6th day.
5	Confectioner	M.	69	Several years	1⅝ in. diam.	Oxalate and phosphate	62	C.	Bladder sutured; tube in external wound. Leakage of urine through wound till 49th day.
					Lithotrity.				
1	Builder	M.	71	2 years	?	Phosphate	19	R.	Chronic cystitis on discharge.
2	Married	F.	59	3 years	?	Uric acid	12	C.	—
					Calculus passed spontaneously.				
1	—	F.	4	1 year	Size of pea	Uric acid	17 days residence in hospital	C.	—

Renal calculus.—Male, æt. 34. Symptoms 10 years; pain; vomiting; occasional passage of "gravel." No hæmaturia; lumbar nephrolithotomy; uric acid, irregular stone, size of filbert, removed by incision through cortex; some hæmorrhage, stopped by plugging; tube into kidney for 6 days; no complications. Discharged cured on 30th day after operation.

Pyonephrosis.—Male 1 (sinus after old pyonephrosis; no operation). Females 3. C. 1, R. 2.

1. Æt. 40. Lumbar swelling 3 months, gradually increasing; albumen and casts in urine. Lumbar incision; evacuation of about 15 oz. of pus; no further complications. Discharged cured; wound healed on 24th day.

2. Æt. 23. Symptoms several years; pain, occasional nausea, and discharge of thick matter in urine. On admission elastic tumour in left hypochondrium, tender. On examination urine acid, but containing pus and small quantity of albumen. Lumbar nephrotomy, about 6 oz. of non-offensive pus. No complications, but tumour did not fully subside; was advised to have nephrectomy, but refused. Discharged relieved 32nd day after operation.

3. Æt. 33. Confinement with hydrocephalic child (craniotomy) 4 months before admission; 14 days later vesico-vaginal fistula formed; since then incontinence and cystitis, and gradual formation of lumbar swelling, elastic, but not tender. Lumbar incision deepened into kidney, about 15 to 20 oz. of pus and blood evacuated; tube into drain cavity. Some febrility, but wound progressing well till 12th day, when smart secondary hæmorrhage occurred; wound plugged. No further complications; continued discharge of urinous pus from wound; still pus in urine passed by urethram. It was eventually decided to excise the kidney owing to the amount of discharge still flowing from the renal sinus. The incision was therefore enlarged, and the kidney removed with some difficulty from its adherence to the surrounding tissues. The pedicle could not be satisfactorily ligatured *en masse*, so it was cut through, and the constituent vessels picked up and ligatured separately by a ligature then applied round the whole. Progress slow but uneventful after operation. Discharged relieved on 208th day from admission, 100 days after nephrectomy; still a sinus with some purulent discharge. The kidney was affected with general interstitial fibrosis with localised fibromata; no evidence of tubercle; no calculi.

CIRCULATORY SYSTEM.

Aneurysm of right brachial artery (at bifurcation); ulcerative endocarditis — Male, æt. 52, a heavy drinker; influenza in January; 3 months later caught a chill; treated at his club for rheumatism in shoulders; had a "fit" in March, another in May, of epileptic character, unconscious for five minutes in each; no paralysis after fits. No further symptoms till July, when swelling noticed at bend of elbow, forming gradually; no injury; mistaken for abscess and poulticed at first; a few days later diagnosed as aneurysm. July 10th, became very ill and took to bed. July 18th, delirious. July 19th, admitted to hospital, delirious, almost in "typhoid" condition; aneurysms at bend of right elbow and in first part of axillary artery; brachial artery tortuous and dilated in parts; no other aneurysms; double aortic murmur; pneumonic signs at both

bases behind. Remained in same condition generally, with occasional lucid intervals, till death from exhaustion on 10th day. Temperature 100° first day, afterwards between 97° and 99°. P.M.—Aortic disease, ulcerative, "malignant;" infarcts in spleen and kidneys; aneurysm as above described in brachial artery, about 5 inches in diameter; thickened left pleura; remains of old empyema.

Aneurysm of popliteal artery.—Male, æt. 25. History of alcoholism and syphilis. A brother, similarly affected with aneurysm, undergoing treatment elsewhere at same time as patient. Fourteen days before admission slipped and strained his knee; pain severe same evening; next day pulsation in popliteal space. Admitted to hospital with aneurysm size of a small hen's egg; foot and leg œdematous; 8 days later ligature of superficial femoral at apex of Scarpa's triangle with strong silk; no complication; collateral circulation well established on 2nd day. Left hospital cured on 77th day after ligature.

Aneurysm of radial; traumatic.—Male, æt. 28. Nine days before admission punctured his wrist with a penknife; bleeding arrested by pressure; 3 days later wound healed by first intention, but pulsating swelling felt. On admission aneurysm of radial artery, size of large nut, 1½ inches above wrist-joint; 6 days after admission proximal and distal ligature of radial artery; aneurysmal sac excised. Discharged cured 11 days after operation.

LOCOMOTORY SYSTEM.

Acute periostitis.—Males 7, females 1. C. 5, D. 3; 6 suppurative "infective," 2 simple traumatic.

For fatal cases see "Pyæmia Table" (Special Table II).

Non-fatal suppurative cases.

1. Male, æt. 16. Left leg struck by packing-case 1 week before admission; acute abscess over shaft of tibia, another over patella; both incised; small quantity of sanious pus evacuated; no complications; temperature on admission 102°, falling to normal after incision.

2. Male, æt. 10. Kicked by boy 2 weeks before, just above ankle; abscess formed; opened by medical man; did not heal. On admission necrosis of shaft of tibia for about 7 inches in length; dressed antiseptically, with drainage of abscess cavity; after 3 months the sequestrum was removed by chiselling through the new bone formed round, the sequestrum being also divided and each piece drawn out separately from its bed, one being about 4 inches, the other 3 inches long; neither epiphysis appeared to have been involved. After slow but steady healing of wound, patient discharged cured 6 months from admission; able to walk well.

3. Male, æt. 8. Badly nourished child; "broken chilblain" on heel 3 weeks before admission; 2 weeks later pain in thigh, and suffered from swelling over lower jaw. Admitted with acute sub-periosteal abscess of right thigh, about half shaft appearing to be denuded; free incision for drainage; temperature fell from 103° to 100°—101° after incision, and to normal in course of next two weeks; an alveolar abscess having formed meanwhile and been incised. Subsequent pro-

gress good. Sequestrotomy 4 months later; sequestrum divided in middle and drawn out in two pieces from its involucrum; 2 weeks later another small sequestrum removed. Patient discharged cured 1 month after this.

Mastoid caries—

Selected cases.

1. Male, æt. 33. Severe cold 12 days before; deafness, noises in ears, and pain 1 day, followed by discharge from ear; previously quite healthy. On admission otorrhœa with great tenderness around meatus, especially over mastoid area. Next day incision; no pus; some relief to pain; discharge from ear still profuse and offensive, treated with syringing till 47th day; trephined over mastoid; communication established into auditory meatus by gouging away bone; great relief; after this only occasional pain, due to blocking of exit for pus. Six weeks later trephined again; silver wire coil passed from wound to meatus for drainage; this left in for 3 weeks till free drainage established. Patient discharged cured on 117th day from admission.

2. Male, æt. 52. Otorrhœa and pain for 6 months after influenza; 4 days before admission came home drowsy and shivering, with severe pain in head; getting worse since; vomiting occasionally. On admission otorrhœa; tenderness over mastoid; exostoses in meatus nearly blocking canal. Next day much worse; temperature 102°; mastoid trephined; some pus formed in antrum; lateral sinus exposed; no suppuration detected; no improvement; comatose; symptoms pointing to abscess. Trephining to explore temporo-sphenoidal lobe and cerebellum gave no result; no evidence of abscess; no relief to symptoms. Death same evening. P.M.—Suppuration in mastoid cells; no cerebral abscess; no metastatic abscesses; death from acute septicæmia.

3. Male, æt. 4½. Otorrhœa, pain, &c., several years; 2 years ago after measles had mastoid abscess. Admitted with another abscess; itself superficial, but communicating with mastoid cells by pinhole aperture in bone; drainage from mastoid cells into meatus established by scraping, and coiled wire drainage-tube inserted and left in 3 weeks. No complications. Discharged cured 62nd day.

4. Female, æt. 18. Chronic otorrhœa after scarlatina at age of 3; 14 days before adhesion severe pain in mastoid region radiating around over head. On admission, fulness over mastoid area; small perforation in tympanum; temperature 99°—101°; 4th day trephined; pus in mastoid cells; scraped; silver wire coil passed through into meatus for drainage; relief considerable, but still pain and attacks of giddiness at times. Discharged cured on 31st day.

5. Female, æt. 22. Chronic otorrhœa since whooping-cough at age of 5; history of recurrent abscesses behind ear. Taken ill with rigors and severe pain in head 19 days before admission; getting gradually worse; no treatment but poulticing; 3 days before admission became unconscious. On admission at once operated upon; mastoid trephined; caseous pus evacuated; trephining over temporo-sphenoidal lobe, and over cerebellum. Some pus under dura mater over cerebellum, but no cerebral abscess. Internal jugular vein ligatured in neck; silver wire drainage from mastoid process to meatus. Temperature fell for a few hours after operation to normal, but subsequently rose, and rigors, &c., recurred. Death on 6th day. P.M.—Pus in lateral sinus; arachnitis; no cerebral abscess.

Table of Cases of Excision of Hip for Tubercular Disease.

No.	Sex.	Age.	Duration of symptoms.	History of injury or possible exciting cause.	Interval between injury and onset of symptoms.	Stage of disease on admission.	Operation.	Residence after operation.	Result, condition on discharge.	Remarks.		
										Other tubercular lesions.	Family history of phthisis.	Etc.
1	M.	17	5 months	? Acute rheumatism	?	Contracted limbs, chronic adhesions, caries of head of femur	Carious head of bone excised and acetabulum scraped	190 days	R.; wounds healed	Caries of clavicle, scraped	No	—
2	M.	9	5 months	Fall; twist of leg	7 months	Abscesses over hip; limb flexed and adducted	Incision of abscesses; head of bone excised	181	R.; to convalescent home in splints	—	Father died of consumption	—
3	M.	21	1 month	Fall while skating	4 months	2nd stage; no abscess	Head of bone excised	214	D.	Phthisis; tubercular disease of intestines	Father died of consumption	—
4	F.	4	6 months	?	—	3rd stage; abscess	Head of bone removed	68	R.	—	—	Head of bone found loose at operation.
5	F.	6	2 weeks	Fall	2 weeks	Abscess; 2nd stage	Head excised; acetabulum scraped	51	C.	—	—	—

6	F.	8	1½ years	?	—	Abscess; 3rd stage	Fragments of head and sequestra from acetabulum removed	57	C.	—	—	—
7	F.	12	6 years	?	—	Sinuses; 3rd stage	Head excised; acetabulum scraped	73	R.	—	—	Symptoms aggravated by a fall on board ship 4 years before admission, followed by formation of abscesses.
8	F.	15	11 mos.	?	—	3rd stage; abscesses	Anterior incision; head excised	100	R.	—	—	—
9	F.	15	15 mos.	?	—	2nd stage	Head removed with several sequestra; acetabulum scraped	101	R.	Chronic cough; no evidence of lung disease	—	—
10	F.	8	1 year 9 months	Fall	6 months	2nd stage; abscesses	Head excised; acetabulum scraped	77	C.	—	—	—

By "2nd stage" is understood the stage of commencing shortening, with deformity, due to flexion or adduction of the limb.
By "3rd stage" is understood commencing destruction of the bones, with pathological dislocation.

SUMMARY OF INJURIES.

GENERAL INJURIES.

Burns.—Males 17, females 19. C. 10, R. 2, D. 18.

Situation.—Head and neck 10; trunk 22; upper extremity 3; lower extremity 1.

Causes.—Ignited clothing 19; lamp explosion 6; lamp overturned in bed 1; match-box in pocket 1; fall into fire (fit 2) 3; stoking fire 1; pouring paraffine on fire 1; gas explosion 4.

Fatal cases.—From shock 13; æt. 12, 5, 3½, 1¾, 46, 2, 75, 5½, 10, 4, 42, 17, 4. From exhaustion 5; æt. 4, 10, 20, 12, 33.

Complications.—Hæmatemesis and hæmaturia 1; measles 1; scarlatiniform rash 3.

Scalds.—Males 17, females 17. C. 29, R. 2, D. 3.

Situation.—Head and neck 12; pharynx 4; trunk 10; upper extremity 2; lower extremity 7.

Causes.—Boiling water 29; boiling fat 1; boiling soup 1; steam 4.

Fatal cases.—From shock 3; æt. 16 months, 5 years, 6½ years.

Complications.—Scarlatina 2; erysipelas 1; measles 1.

LOCAL INJURIES.

Scalp wounds.

Selected cases.

One case. Male, æt. 34. Admitted owing to profuse serous discharge from wound of parietal region, possible cerebro-spinal fluid, though no fracture of skull detected. No sugar found in fluid, but discharge could not be tested satisfactorily as it was mixed with pus from wound. Discharge ceased in 7 days, and patient was discharged on 21st day. Readmitted a week later with recurrence of discharge. This again lasted 2 days, after which wound healed. No cerebral symptoms. Temperature 99°—100° for 2 days, afterward normal.

Concussion.—Female, æt. 2. Fall 5 feet on to head. Admitted same day. Drowsy, but not unconscious. Two right-sided convulsions after admission. First severe, arm and face chiefly affected, trunk and leg slightly; no paralysis after fit. No further convulsions. Discharged cured on 5th day.

Fatal case.—Male, æt. 47. Fall 14 feet while drunk; bleeding from nose; unconscious 1 hour. Next day restless and tremulous; delirium tremens. Death on 3rd day. P.M.—No fracture; very slight meningitis; some hæmorrhage into lung; no fractured rib.

Compound depressed fracture of skull.—M. 5. C. 4, D. 1. Frontal region 3; temporo-parietal 1; temporal 1 (fatal). Trephining and elevation 4; 2 cases frontal region; fracture into frontal sinuses; cranial cavity probably not opened.

Fatal case.—Struck by railway engine behind right ear and thrown down embankment. On examination, fragments of temporal bone driven into skull, with rupture of lateral sinus. Fragments elevated. Profuse hæmorrhage stopped by plugging. Death 2nd day. P.M.—Laceration of dura mater; bruising of brain.

Fractured base of skull.—M. 10, F. 1. C. 5, R. 2, D. 4. Anterior fossa 3; middle fossa, 5; posterior fossa 1; doubtful 2. Fall down stairs 4; fall off table 2; fall from van 1; fall from omnibus 2; found insensible in street—no history of injury 2.

Contusion of chest, ? hernia of stomach or lung.—Male, æt. 11. Struck by shaft of cart. Admitted with resonant, elastic swelling over junction of 7th, 8th, and 9th costal cartilages, disappearing when patient lay down. Impulse on coughing—soft, elastic, tender. Breath-sounds audible over swelling; slightly crepitant feel. Swelling reduced and kept back by compress. No further symptoms. No sign of disease in heart, lungs, or abdominal viscera. Discharged cured 25th day.

Punctured wound of thorax.—Male, æt. 64. Stabbed with scissors in back. On admission surgical emphysema over whole of left side of trunk and left upper extremity. Tympanitic resonance over left lung, with absence of breath-sounds. Great dyspnœa. Wound healed by first intention. Emphysema subsided and breath-sounds normal by 3rd day. Discharged cured 9th day.

Fractured ribs.—M. 20, F. 4. C. 21, D. 3.

Complications.—Emphysema 4; emphysema and pneumothorax 2; pneumothorax 3; pyo-hæmothorax 2 (resection of rib, see 'Lancet,' 1890); traumatic pneumonia 2 (males, æt. 12 and 25), from contusion of chest; no fractured rib; both discharged cured on 11th and 20th days respectively.

Fracture-dislocation of cervical spine.

1. Male, æt. 38. Fall off van on to back of head; complete loss of motion and sensation, with total absence of deep reflexes in leg and trunk up to shoulders, except for action of diaphragm; left plantar reflex still present. Exploration of spine under anæsthetic; depressed fragments removed; no relief. Death 2nd day. P.M.—Complete division of cord at level of 6th cervical vertebra.

2. Male, æt. 18. Taking a running dive into shallow water, possibly striking his head against bottom. Immediately paralysed and anæsthetic up to level of 6th cervical nerve, with exception of both biceps, deltoid, and pectoral muscles, internal and external rotators of shoulder-joint, supinator longus and diaphragm. Deep reflexes all absent; plantar reflex present. Cervical canal at once laid open under anæsthetic. Fractured laminæ removed. Cord found completely crushed opposite 5th cervical vertebra, which projected backwards into canal. Lived 23 days.

Fracture of spine, dorso-lumbar region.—Female, æt. 17. Fall 20 feet from window, striking ground with her feet, back coming in contact with stone ledge. Paresis and paræsthesia of lower extremity; paralysis of bladder. Duct reflexes feeble at first, subsequently absent. Treated with galvanism; gradual increase of power in muscles and return of reflexes after about 2 months. Steady improvement. Discharged on 187th day, able to walk fairly well.

INJURIES TO UPPER EXTREMITIES.

Fractured olecranon; wire suture.—M. 3.

1. Fracture 3 months previous to admission; treated in Paris; put up in plaster-of-Paris splint for 3 weeks; splint then removed. Three weeks later swelling of elbow-joint, painful ever since; able to flex and extend arm, but without any power. On admission non-union. Wire suture. Discharged 22nd day cured.

2. Male, æt. 22. Fractured olecranon 5 weeks; no treatment for 3 weeks; then splint. On admission able to flex and extend arm, but without power. Slight separation of fragments. Wire suture. Discharged cured 40 days after operation.

2. Male, æt. 23. Fractured olecranon 1 month before at sea. Non-union. ½-inch separation between fragments. Wire suture. Discharged cured 34th day.

INJURIES TO LOWER EXTREMITIES.

Fractured femur. 3 fatal cases.

1. Male, æt. 66. Slipped on pavement, fracturing femur, centre of shaft. Put up in plaster-of-Paris and long outside splint. Progress satisfactory for 7 days, when symptoms of gastric ulcer. Third week broncho-pneumonia; parotid bubo. Death from exhaustion 37th day. P.M.—Chronic gastric ulcer; hæmorrhage; gangrenous cavity in lung.

2. Male, æt. 62. Comminuted fracture of femur. Progress favourable for 8 weeks, when bronchitis supervened, from which patient died on 69th day.

3. Female, æt. 52. Three weeks before admission took to her bed with "rheumatics." On day before admission right femur spontaneously fractured on getting out of bed. Admitted to hospital. Leg put up in splints. Progress good first fortnight, when patient became weaker, without any marked sign of organic disease; drowsy, and then comatose, and died on 29th day. P.M.—No organic disease to account for death. No attempt at repair in fracture.

4. Female, æt. 18 months. Fall off chair; fracture upper third of shaft of femur. Put up in splints same evening. Temperature on admission rose to 105°, and patient died 12 hours after admission without obvious cause being found at P.M. Patient was markedly rachitic, and the subject of congenital syphilis.

Transverse fracture of patella.—Treated by wire suture. M. 7, F. 4. All cured. One compound.

(A). *Subcutaneous suture.*

No.	Sex.	Age.	Separation of fragments.	Interval between accident and operation.	Date of removal of wire.	Duration of residence after operation.	Result.	Remarks.
1	M.	32	½ in.	1 day	22nd day	43 days	C.	Absolute union.
2	M.	39	¼ in.	3 days	16th ,,	32 ,,	C.	Absolute union.
3	M.	29	¼ in.	1 day	37th ,,	56 ,,	C.	¼ inch separation.
4	M.	29	1½ in.	1 ,,	35th ,,	42 ,,	C.	Absolute union.
5	M.	32	1¼ in.	16 days	27th ,,	46 ,,	C.	Injury 8 days before admission.
6	M.	39	½ in.	15 ,,	24th ,,	55 ,,	C.	Union.
7	F.	23	½ in.	1 day	18th ,,	52 ,,	C.	¼ inch separation; fibrous union.
8	F.	32	¼ in.	3 days	24th ,,	37 ,,	C.	Bony union.
9	F.	42	½ in.	2 ,,	22nd ,,	47 ,,	C.	Fibrous union; no separation.
10	F.	34	1 in.	2 ,,	25th ,,	57 ,,	C.	Absolute union.
				(B). *Compound fracture. Wiring fragments.*				
1	M.	38	½ in.	3 hours	Not removed	32nd day	C.	Punctured wound.
				(C). *Simple fracture, treated with harelip pins transversely above and below. Fragments drawn together by ligatures.*				
1	M.	50	—	1 day	18th day	37 days	C.	No separation.
2	F.	36	—	3 days	33rd day	35 ,,	C.	No separation.

All cases discharged with limb in plaster-of-Paris splint.

Special Table I.—*Erysipelas (arising in hospital).*

No.	Sex.	Age.	Disease for which admitted.	Ward in which it arose.	Duration of residence in hospital before attack.	Month.	Part where eruption occurred.	Duration of attack.	Result.	Remarks.
1	F.	41	Syphilitic ulcers	Magdalen	61 days	Jan.	Leg	8 days	Cured	
2	M.	46	Cyst of leg	Albert	13 „	Oct.	„	5 „	„	6 days after operation.
3	M.	32	Ischio-rectal abscess	Edward	12 „	Sept.	Buttock	5 „	„	
4	F.	22	Tubercular disease of wrist	Alexandra	95 „	Dec.	Arm	7 „	„	30 days after amputation.
5	F.	31	Tubercular disease of tarsus	„	26 „	Mar.	Tarsus	8 „	„	
6	F.	18	Necrosis of jaw	Elizabeth	28 „	May	Face	10 „	Relieved	
7	M.	4	Hip disease	Victoria	11 „	Aug.	Hip	10 „	Died	Sinuses after old excision; amyloid disease.
8	F.	52	Abscess of scalp	Alexandra	1 day	Jan.	Head	9 „	„	Death 2 months after attack; malignant disease of viscera.
9	M.	28	Lupus of arm	Albert	31 days	Aug.	Arm	8 „	Cured	
10	M.	18	Hammer-toe	„	13 „	Jan.	Foot	5 „	„	3 days after operation.
11	M.	33	Scald	Leopold	1 day	Oct.	Hand	4 „	„	
12	M.	11	Wound of face	Clayton	2 days	Aug.	Face	2 „	„	
13	F.	35	Wound of elbow	Elizabeth	3 „	Sept.	Arm	5 „	„	
14	M.	34	Fractured fingers (compound)	Leopold	4 „	Nov.	Hand	6 „	„	
15	M.	67	Wound of arm	Edward	29 „	July	Arm	4 „	„	
16	M.	43	Complicated fracture of tibia and fibula	„	161 „	Oct.	Leg	20 „	„	

SPECIAL TABLE II.—PYÆMIA.

All acute bone cases.

1. Male, æt. 14. Pain in knee 8 days before admission. No known injury; next day swelling; came to hospital. Incision, inner side over lower end of femur; serous pus; bone bare; temperature 101° to 104·8°; no improvement after incision. Death on 5th day. P.M.—Pyæmia; epiphysitis lower end of right femur; acute suppurative arthritis in right knee and supra-clavicular joints; double parotid bubo; pericarditis; 2 small abscesses in heart muscle; 4 infarcts in right lung; none in left.

2. Male, æt. 4 months. Swelling of knee 1 month; leg put into plaster-of-Paris splint; swelling increased. Admitted to hospital with sign of acute periostitis of lower end of femur; no suppuration detected; temperature normal for 14 days when it began to rise; swelling became more marked, and the child became very ill, and died on 15th day. P.M.—Suppuration around lower end of right femur, extending among muscles, and communicating with a sinus leading into the cancellous tissue at the epiphysial line.

3. Male, æt. 4. Two days before admission fell down and hurt his right thigh; was able to walk about slightly for rest of day, but next day was much worse, and came to hospital; temperature 102·4°; shivering and looking very ill. Incisions on outer and inner aspects of thigh down to bone, which was extensively bared of periosteum; no improvement. Death same night. P.M.—Whole shaft of femur bared of periosteum; epiphyses healthy; acute pericarditis and myocarditis with pyæmic foci; infarct in lung; acute pleurisy.

4. Male, æt. 12. Family history of phthisis; 7 days before admission pain in left hip; no injury; previously well, though always delicate. On admission swelling and acute tenderness over left hip; incision over great trochanter; about one drachm of pus oozing from top of acetabulum; joint not distended; wound plugged with perchloride gauze; no real improvement in condition; temperature 103° at operation, fell slightly afterwards, but soon rose again, and varied between 97° and 104° until death took place on the 12th day. P.M.—Acute arthritis in hip-joint; cartilages of joint macerated irregularly; infarcts in lung and kidneys.

5. Female, æt. 14. Mastoid abscess trephined; softening clot in lateral sinus; mastoid cells scraped out; internal jugular vein ligatured. Death on 6th day. Pyæmia; abscesses in larynx; infarcts in lungs and spleen; meningitis.

6. Female, æt. 2. Acute necrosis of tibia; pus under periosteum, which had burrowed up and formed perforation into knee-joint posteriorly (? along popliteus muscle and tendon); epiphyses apparently healthy; infarct abscesses in heart and lungs. Moribund on admission, and died 2 hours after.

SPECIAL TABLE III.—*Hernia, Inguinal.*

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
1	Pedlar	M.	46	L.	Congenital	1 day	?
2	Barman	M.	23	R.	1 day	„	?
3	Coachman	M.	50	R.	4 years	6 hours	?
4	Joiner	M.	45	L.	16 years	? 8 days	?
5	Labourer	M.	53	L.	36 years	2 days	?
6	—	M.	82	L.	20 years	1 day	?
7	"Blacklead-maker"	M.	18	L.	1 day	„	?
8	Engine driver	M.	62	R.	1 month	2 days	?
9	Gas-stoker	M.	49	R.	22 years	1 day	?
10	Carman	M.	24	R.	3 years	„	?
11	Decorator	M.	49	R.	12 years	2 days	?
12	„	M.	49	R.	„	1 day	?
13	Signalman	M.	27	L.	Many years	2 days	?
14	—	M.	75	R.	48 years	1 day	?
15	—	M.	72	L.	10 years	„	?
16	Porter	M.	37	R.	Many years	6 hours	?

Inguinal Hernia

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
1	Ostler	M.	23	L.	4 days	4 days	Epiplocele
2	Labourer	M.	55	L.	8 weeks	„	Enterocele
3	Carpenter	M.	71	R.	12 months	5 hours	„
4	—	M.	29	R.	Congenital	„	„
5	—	M.	10 months	R.	„	5 days	„
6	Clerk	M.	22	L.	„	1 day	„
7	Newsagent	M.	57	R.	Several years	4 days	„
8	Coachman	M.	20	R.	Many years	1 day	Entero-epiplocele
9	—	M.	22	R.	3 months	„	Enterocele
10	—	M.	75	R.	Many years	„	Entero-epiplocele
11	Labourer	M.	58	L.	2 years	2 days	Enterocele (large and small intestine; latter strangulate

"Congested." "Semi-strangulated."

Treatment.	No. of days in hospital.	Result.	Remarks.
Spontaneous reduction	4	C.	
Ice-bag, taxis	17	C.	
,, ,,	13	C.	
,, ,,	11	C.	Painful and tender for 8 days.
,, ,,	6	C.	
,, ,,	26	C.	
,, ,,	1	C.	Refused to stay after reduction of hernia.
,, ,,	3	C.	
Hot bath	2	C.	
Ice-bag	6	C.	
,,	11	C.	
,,	1	C.	Same case as No. 11. Refused operation for radical cure; refused to stay longer in hospital.
,,	5	C.	
Taxis under anæsthetic after hot bath	5	C.	
Taxis	3	C.	
,,	2	D.	Sudden death from syncope; aortic disease.

Strangulated.

Treatment.	Days in hospital after operatn.	Result.	Remarks.
Herniotomy; reduction	18	C.	Structures of cord spread over sac.
Herniotomy; excision of sac	28	C.	
,, ,,	17	C.	
Herniotomy; excision of sac; suture of ring	17	C.	
Herniotomy; sac excised	22	C.	Sac contained cæcum completely invested with peritoneum.
Herniotomy; excision of sac; suture of ring	22	C.	
Herniotomy; intestine sutured to wound	3	D.	Gut severely nipped; peritonitis.
Herniotomy; sac excised; ring sutured	38	C.	
Herniotomy; excision of sac; ring sutured	39	C.	Accidental wound of vas deferens; fine sutures; no after-effects.
Herniotomy; intestine left in ring	1	D.	Acute peritonitis found at operation.
Herniotomy; reduction	6	D.	Was progressing well till 3rd day, when he suddenly jumped out of bed; hernia came down, opening up wound; hernia easily replaced, but death occurred from shock.

No	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
12	Carpenter	M.	59	L.	20 years	3 days	Enterocele; large intestine
13	Clerk	M.	53	L.	Congenital	4 days	,,

Hernia.—Inguinal, not Strangul

No.	Occupation.	Sex.	Age.	Side	Duration of hernia.	Reducible or irreducible.	Nature of hernia.
1	—	M.	25	L.	12 months	Reducible	Enterocele
2	—	M.	25	L.	7 years	,,	?
3	Waiter	M.	14	R.	10 years	,,	Epiplocele
4	Watchmaker	M.	23	R. and L.	2½ years	,,	?
5	—	M.	2	L.	1 year	,,	?
6	—	M.	3	R.	6 months	,,	Enterocele
7	—	M.	7	R.	Congenital	,,	?
8	Seaman	M.	20	R.	8 years	,,	Entero-epiplocele
9	Painter	M.	20	R.	12 months	,,	,,
10	Waiter	M.	16	R.	6 months	,,	?
11	Labourer	M.	22	R.	6 weeks	Partially irreducible	Epiplocele
12	—	M.	8	R.	5 years	Reducible	?
13	Plasterer	M.	49	R.	14 years	Irreducible	Epiplocele
14	Boiler-maker	M.	38	R.	18 years	,,	,,
15	Servant	F.	24	L.	7 months	Reducible	?
16	—	F.	10	R.	2 months	,,	?

Treatment.	Days in hospital after operatn.	Result.	Remarks.
Herniotomy; suture of ring	56	D.	Progress good till 30th day, when, after getting up, developed thrombosis of left iliac vein and acute parotitis, which subsided without suppuration. Death from chronic renal disease.
Herniotomy; atrophied undescended testis removed; sac excised	43	C.	Knuckle of large intestine.

ted. Operations for Radical Cure.

Treatment.	Days in hospital after operatn.	Result.	Remarks.
Sac excised; ring sutured with catgut	28	C.	
Pillars of ring sutured	12	R.	Sac of hernia found to have been practically obliterated by truss worn; refused to stay longer in hospital.
Sac excised; pillars of ring sutured	23	C.	"Funicular."
Double operation; sac excised and ring sutured on both sides; undescended testis removed on left side	37	C.	
Sac excised; ring sutured	29	C.	"Congenital."
" "	29	C.	"
" "	32	C.	"
" "	25	C.	
Omentum ligatured and removed; sac excised and ring sutured	35	C.	
Sac sutured and drawn together and fixed in inguinal ring; pillars of ring sutured	49	C.	
Omentum ligatured and excised	29	C.	
Sac excised; ring sutured	39	C.	
Omentum ligatured; sac drawn together and fixed in inguinal ring by suture	7	D.	"Congenital;" peritonitis.
Omentum ligatured and removed with sac; ring sutured	17	C.	
Sac excised; ring sutured	22	C.	
" "	11	C.	

Hernia, Congested, Semi-

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
1	—	F.	17	R.	6 months	1 day	?
2	—	F.	37	L.	10 years	2 days	?
3	—	F.	44	R.	4 years	4 days	?
4	Cook	F.	22	R.	„	1 day	?

Hernia, Femoral.

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
1	Boiler-maker	M.	62	L.	Many years	3 days	Enterocele
2	—	F.	57	L.	1½ days	1½ days	Entero-epiplocele
3	—	F.	53	L.	20 years	2 days	„
4	—	F.	37	R.	4 years	4 or 5 days	„
5	—	F.	48	R.	1 year	2 days	„
6	—	F.	59	R.	5 years	13 hours	„
7	—	F.	55	R.	Many years	2½ days	Enterocele
8	—	F.	43	L.	1 day	1 day	„
9	—	F.	39	R.	10 years	„	Epiplocele
10	Married	F.	30	R.	5 years	6 days	„
11	—	F.	58	L.	3 years	2 days	Enterocele
12	Cook	F.	48	R.	10 years	4 days	Entero-epiplocele
13	—	F.	72	R.	Several years	„	Enterocele
14	—	F.	70	R.	1 day	1 day	Entero-epiplocele
15	—	F.	46	R.	3 years	4 days	„
16	—	F.	67	R.	30 years	5 days	„
17	—	F.	41	R.	18 months	1 day	Enterocele

strangulated. Femoral.

Treatment.	No. of days in hospital.	Result.	Remarks.
Hot bath; reduction	3	C.	
Taxis	5	C.	
Ice-bag	3	C.	
,,	12	C.	

Strangulated.

Treatment.	No. of days in hospital.	Result.	Remarks.
Herniotomy; intestine replaced	1	D.	Intestine perforated and sac full of feculent fluid at operation; perforation in intestine closed with fine suture; intestine left in wound.
Herniotomy; intestine replaced; omentum ligatured and removed	28	C.	
Herniotomy; intestine replaced; omentum and sac excised	9	D.	P.M.—Congestion of lungs; hernia wound healthy.
Herniotomy; intestine replaced; omentum ligatured and removed	29	C.	
Herniotomy; intestine replaced; omentum removed	42	C.	Transferred for erysipelas 3rd day after operation.
Herniotomy; intestine removed; sac excised	70	C.	
Herniotomy; intestine (gangrenous) left in wound	2	D.	Moribund on admission.
Herniotomy; intestine replaced; sac excised	20	C.	
Omentum and sac excised	49	C.	
Gangrenous omentum excised; neck of sac ligatured	42	C.	
Herniotomy; intestine (found to be perforated at seat of constriction) sutured with Czerny's suture; peritoneal cavity flushed with boracic lotion	1	D.	
Herniotomy; gangrenous bowel fixed in wound; omentum removed	157	R.	Fæcal fistula after operation, which had contracted into minute sinus on discharge from hospital.
Herniotomy; intestine replaced; sac excised	18	C.	
Herniotomy; omentum removed; intestine replaced	34	C.	
Herniotomy; intestine replaced; omentum removed	17	C.	
Herniotomy; intestine replaced; omentum ligatured and removed	—	—	
Herniotomy; intestine replaced; sac excised	19	C.	

Hernia, Non-strangulated. Femoral.

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Reducible or irreducible.	Structure of hernia.
1	Joiner	M.	63	R.	2 years	Irreducible	Epiplocele
2	—	F.	41	R.	1 year	,,	,,
3	—	F.	34	L.	2 years	,,	,,
4	—	F.	42	R.	6 years	,,	,,
5	—	F.	31	R.	13 years	,,	,,

Ventral

No.	Occupation.	Sex.	Age.	Duration of hernia.	Duration of acute symptoms.
1	Seedsman	M.	64	2 years	1 day

Umbilica

No.	Occupation.	Sex.	Age.	Duration of hernia.	Duration of symptoms.	Contents of hernia.
1	—	F.	49	4 years	1 day	?
2	—	F.	64	20 years	3 days	?
3	—	F.	63	6 years	2 days	Omentum in double sac

Operations for Radical Cure.

Treatment.	Days in hospital after operatn.	Result.	Remarks.
Omentum ligatured and removed with sac	28	C.	
Omentum and sac excised	24	C.	
Omentum and sac excised	15	C.	
Omentum excised; sac sutured	16	C.	
Omentum and sac excised; ring sutured	25	C.	

Hernia.

Treatment.	No. of days in hospital.	Result.	Remarks.
Ice-bag	17	C.	Situated half way between umbilicus and antero-superior spine.

Hernia.

Treatment.	No. of days in hospital.	Result.	Remarks.
Ice-bag	3	C.	
Taxis	10	C.	
Omentum ligatured and removed with parts of sac	17	C.	

SPECIAL TABLE IV.—*Fractures and Dislocations treated*

BONE.	Sex.		Age.								
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Not stated.
DISLOCATIONS.											
Clavicle	5	3	...	...	1	...	2	2	1	1	1
Humerus	15	1	...	...	...	3	1	4	2	5	1
Radius and ulna	11	1	...	4	6	...	1	...	1	...	...
Ulna	2	...	...	1	...	1	...	...	...	...	...
Radius	2	...	1	...	...	1	...	...	...	...	...
Thumb—											
First phalanx	2	...	...	...	...	2	...	...	...	...	...
Ungual phalanx	1	...	...	...	...	...	...	...	...	1	...
Compound	3	...	...	...	...	2	...	1	...	...	...
Fingers	5	1	...	...	...	2	3	...	1	...	...
„ compound	2	...	1	...	...	...	1	...	...	...	...
Jaw	2	3	...	...	...	3	2	...	...	...	...
Subluxation, head of radius	1	...	1	...	...	...	...	...	...	...	...
FRACTURES.											
Lachrymal bone	1	...	...	...	...	1	...	...	...	...	...
Maxilla	4	...	...	...	...	2	2	...	...	...	...
Nasal bones	1	...	...	...	...	...	1	...	...	...	...
Clavicle	43	20	26	10	4	8	4	5	1	3	2
Ribs	55	14	...	1	1	7	18	20	12	8	2
Scapula—											
Acromion	1	1	...	...	...	...	1	1	...	...	...
Humerus—											
Anatomical neck	3	2	...	1	2	...	...	1	1	...	2
Surgical neck	5	2	...	1	...	...	1	...	2	1	2
Shaft	1	...	...	...	1	...	...	...	...	...	...
Lower extremity	8	3	2	5	2	...	1	...	1	...	...
Separation of epiphysis	4	...	2	2	...	...	...	...	...	..	...
Not stated	9	3	5	2	2	1	..	2	...	...	...
Radius and ulna	17	9	9	5	9	...	..	1	1	1	...

in Casualty Department, not admitted to Wards.

Side of body.			Remarks.
R.	L.	Not stated.	
4	4	...	3 supra-acromial.
9	7	...	All subcoracoid; 1 direct violence.
4	8	...	Backwards and outwards 2; backwards 3 (1 direct violence, with fracture of internal condyle 2); backwards and forwards 3.
1	1	...	
1	1	...	At lower end 1; backwards, upper end, 1.
1	1	..	
...	1	...	
2	1	...	
3	3	...	
2	...	...	
4	2	...	Unilateral 1. (1 right and left counted as one case.)
...	1	...	Forwards.
...	1	...	
1	1	2	
1	1	...	1 right and left counted as one case,
28	34	1	1 and upper ribs; 1 between ligaments; 1 in two places.
21	42	6	1st 2; 2nd 1; 5th 2; 6th 1; 7th 1; 8th 3; 9th 3; 10th 1; 8th and 9th 2; 7th, 8th, and 9th 1 (direct violence); 7th and 8th 3; 9th and 10th 4; 11th and 12th 1. Rest not stated.
1	1	...	1 tip.
3	4	...	1 T-shaped.
2	5	...	
...	1	...	
6	5	...	Inner condyle 2; supra-condyloid 1; external condyle 2.
4	...	...	
7	5	...	
16	10	...	10 greenstick; 1 transverse middle of both bones; 1 impacted.

SPECIAL TABLE IV–

BONE.	Sex.		Age.								
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Not stated
FRACTURES—*continued.*											
Radius—											
Upper third	3	3	2	...	4	...	...	...	...	...	..
Middle third	6	1	3	2	1	1	...	...	...	...	..
Lower third	22	20	1	2	10	3	9	6	5	6	..
Not stated	7	...	3	1	2	1	...	...	...	...	..
Ulna—											
Olecranon	6	2	...	...	2	3	...	1	...	1	]
Upper third	...	1	...	...	...	...	1	...	...	...	..
Middle third	6	...	3	1	1	...	...	1	...	...	..
Not stated	3	5	1	1	1	...	2	2	...	1	..
Trapezium	1	...	...	...	...	...	1	...	...	...	..
Metacarpus	19	5	...	2	4	6	8	1	1	1	]
„ (Collie dog)	...	...	1	...	...	...	...	...	...	...	..
Phalanges	15	4	...	2	4	4	4	2	2	1	..
Coccyx	...	1	...	...	...	1	...	...	...	...	..
Patella	1	...	...	...	...	...	...	...	...	...	.
Fibula.—Potts'	1	...	...	...	...	...	1	...	...	...	..
Tibia	8	...	3	...	1	1	2	...	...	...	.
Fibula	8	4	...	...	1	4	4	1	1	...	.
Foot—											
Metatarsus	2	...	...	...	...	...	1	1	...	...	..
Phalanges	2	...	1	...	...	...	1	...	...	...	..

continued.

Side of body.			Remarks
R.	L.	Not stated.	
2	4	...	1 greenstick.
5	2	...	4 greenstick (1 also upper third).
13	29	...	36 Colles'; 1 impacted; 2 greenstick.
3	4	...	Direct violence 1.
2	6	...	Direct violence 1.
...	1	...	
5	1	...	4 greenstick.
3	5	...	Direct violence 1.
1	...	...	
15	9	...	2 direct violence. 1st metacarpal 9; 2nd do. 2; 2nd and 4th 3; 3rd 3 (2 direct violence); 4th 1; 4th and 5th 1; 5th 1; not stated 2.
1	...	...	Treatment, plaster-of-Paris splint under anæsthetic.
8	10	1	1st 4 (3 compound); 2nd 3; 3rd 3; 3rd and 4th 1; 5th 2 (1 compound); rest not stated.
...	...	...	
...	1	...	Patient refused to come in.
...	1	...	Patient refused to come in.
3	5	...	Upper third 1; lower third 5 (compound splintered 1); not stated 2.
7	5	...	Lower third 5; external malleolus 2; not stated 5.
2	...	...	1st 1 (oblique); 5th 1.
...	2	...	1st 2 (1 compound).

REPORT OF

THE MIDWIFERY DEPARTMENT

FOR 1890.

By ROBERT CORY, M.A., M.D., F.R.C.P.

The Resident Accoucheurs for the year were Messrs. G. E. Anson, A. U. Boycott, H. B. Osburn, and H. Gervis.

From the 1st of January, 1890, to the 31st of December, 1890 (both dates inclusive), 2247 women were attended. Of these, 2213 resulted in single births, and 34 in twin births. There were 16 cases of abortion among the single births.

In the following table the presentations of the children are classified:

	Among the single births.	Among the twin births.	Total.
Vertex	2145	52	2197
Breech	36	12	48
Superior extremities, including the shoulder	5	0	5
Head and hand	1	0	1
Inferior extremities	6	4	10
Face	4	0	4
Abortions	16	0	16
	2213	68	2281

Of the 2247 cases attended,

342	were	1st confinements.	57	were	10th confinements.
337	„	2nd „	46	„	11th „
316	„	3rd „	21	„	12th „
268	„	4th „	8	„	13th „
255	„	5th „	7	„	14th „
183	„	6th „	1	„	15th „
151	„	7th „	1	„	17th „
168	„	8th „	1	„	18th „
85	„	9th „	2247		

The following table gives the number of women confined at each successive year of life; the youngest mother was 17, and the oldest 46 years of age:

At the age of	No. of women confined.	At the age of	No. of women confined.
17	6	33	85
18	21	34	79
19	53	35	85
20	94	36	80
21	95	37	55
22	107	38	73
23	140	39	61
24	125	40	48
25	144	41	27
26	141	42	18
27	126	43	13
28	115	44	10
29	124	45	6
30	137	46	3
31	75		
32	101		2247

The FORCEPS were used in 52 cases. The reasons given for their use may be tabulated as follows:

Delay during 1st stage of labour	14	7 contracted pelves. 1 placenta prævia. 6 inertia.
Delay during 2nd stage of labour	38	28 tedious. 3 occipito-posterior. 1 eclampsia. 6 not stated.

There were 22 cases of primiparæ among the 52 forceps cases, and 4 cases of rupture of the perineum are reported, all of which happened among the primiparæ.

Placenta prævia.

Five cases of placenta prævia are reported as having occurred during the year.

No.	Age of mother.	Confinement.	Sex of child.	Treatment.	Result to mother.	Result to child.	Placental position.
3336	37	8th	M.	Forceps	Recovery	Living	Not stated
3983	30	5th	M.	Not stated	„	„	„
5214	35	5th	M.	Version	„	Stillborn	„
5593	36	3rd	F.	Cervix dilated and turning	„	„	Partial
5591	26	3rd	M.	Version	„	Living	Not stated

Cases of Version.

Pedalic version was resorted to in 13 cases: 5 for presentation of shoulder, 1 for contracted pelvis and prolapsed cord, 2 for the superior extremities, 1 for the head and hand, 3 for placenta prævia, and 1 for a case of abortion; 9 of the children were stillborn.

The breech presented in 36 cases among the single births, which gives a proportion of 1 in every 61·47. In 15 of these cases the children were stillborn, which is equivalent to a death-rate of 41·6 per cent.

Four maternal deaths are recorded during the year.

No.	Age.	Confinement.	Sex of child.	Result to child.	Interval between death of mother and birth of child.	Causes.
5178	27	3rd	F.	Stillborn	4 days	Peritonitis
5368	38	6th	M.	Living	1¾ hours	Hæmorrhage
5623	26	5th	—	Died undelivered	—	—
5692	35	3rd	M.	Stillborn	7 days	Peritonitis

This gives a death-rate of ·18 per cent.

Of the Children.—The number of children born among the 2247 women attended during the year was 2281; there being 34 cases of twin births. The sex of 2263 of them were 1185 males and 1078 females. The sex of 18 is not stated.

There were 98 stillbirths, or 1 in 22·9 labours, or 4·3 per cent.

The characters of the labours in which the stillbirths occurred are given below:

Natural labours, including cases of intra-uterine maceration	26
Abortions	16
Premature	13
Breech	15
Twins	9
Funis presentations	2
Forceps	5
Footlings	1
Placenta prævia	2
Versions	9
	98

The following table gives particulars of the cases of twin births:

No.	Age of mother.	No. of confinement.	Date of birth.	Sex.		Result to mother.	Result to children.		Presentations.	
				1st.	2nd.		1st.	2nd.	1st child.	2nd child.
3369	33	6	Jan. 23	M.	M.	R.	L.	L.	Vertex	Vertex
3452	35	10	Jan. 8	M.	M.	R.	L.	L.	,,	,,
3521	26	5	March 26	M.	M.	R.	L.	L.	,,	Feet
3707	30	2	March 2	M.	M.	R.	S.	L.	,,	Vertex
3805	37	8	Feb. 7	M.	F.	R.	L.	L.	,,	,,
3807	36	8	Feb. 19	M.	F.	R.	L.	L.	,,	,,
3869	42	9	Jan. 17	F.	F.	R.	L.	L.	,,	,,
3888	39	7	April 14	F.	F.	R.	S.	S.	Breech	Breech
3926	41	10	March 9	M.	F.	R.	L.	L.	Not stated	Not stated
3929	35	8	Feb. 3	M.	F.	R.	L.	L.	Breech	Breech
3984	39	8	May 6	M.	M.	R.	L.	L.	,,	,,
4017	40	9	May 10	M.	F.	R.	S.	S.	Vertex	Feet
4056	30	3	March 9	M.	M.	R.	L.	L.	,,	Vertex
5101	34	7	May 17	M.	M.	R.	L.	L.	,,	,,
5153	29	6	June 4	F.	F.	R.	L.	L.	,,	,,
5191	32	1	April 14	F.	F.	R.	S.	L.	,,	,,
5391	38	8	June 25	M.	M.	R.	L.	S.	Not stated	Not stated
5578	28	3	Aug. 5	F.	F.	R.	L.	L.	Vertex	Vertex
5617	30	7	June 3	M.	F.	R.	L.	L.	,,	,,
5702	34	8	June 18	F.	F.	R.	L.	L.	,,	,,
5748	43	12	Aug. 2	F.	F.	R.	L.	L.	,,	Breech
5759	38	8	July 13	M.	F.	R.	L.	L.	,,	,,
5770	44	13	Oct. 3	M.	M.	R.	L.	L.	Feet	Vertex
5863	31	9	Oct. 29	F.	F.	R.	L.	L.	Vertex	,,
5867	23	3	Sept. 7	M.	M.	R.	L.	L.	,,	,,
5883	37	5	Aug. 9	F.	M.	R.	L.	L.	,,	Breech
5914	22	2	Aug. 9	F.	F.	R.	L.	L.	,,	Knee
5974	36	5	June 28	M.	M.	R.	L.	L.	,,	Vertex
6113	29	5	Oct. 28	M.	M.	R.	L.	L.	,,	,,
6139	33	4	Oct. 22	M.	M.	R.	L.	L.	Breech	,,
6263	34	5	Aug. 15	M.	F.	R.	L.	L.	Vertex	Breech
6268	43	7	Aug. 13	?	?	R.	S.	S.	?	?
6572	40	11	Sept. 12	F.	F.	R.	L.	L.	Breech	Breech
6579	30	5	Oct. 18	F.	F.	R.	L.	L.	Vertex	Vertex

REPORT

OF THE

IN-PATIENT DEPARTMENT FOR DISEASES OF WOMEN

FOR THE YEAR 1890.

By CHARLES J. CULLINGWORTH, M.D., F.R.C.P.

The plan laid down in the two previous reports has again been followed in the present one. I am indebted to Mr. Herbert C. Low for the preparation of Tables I and II (General Statement of Patients and General Table of Diseases), while for the remaining tables (general and special) I am myself responsible.

I cannot allow this opportunity to pass without alluding to the retirement of the ward sister in the month of November, 1890, after thirty-two years of faithful service to the hospital. She was first appointed a nurse on the 5th of May, 1858, when the hospital was in the Borough, and when the duties of a nurse included the scrubbing of floors, &c. On the removal of the hospital to its temporary home in the Surrey Gardens, Nurse Anne (as she was generally called, though her real name is Clara Holloway) became a staff

nurse, and when the present hospital was opened (in September, 1871) she was attached in that capacity to Adelaide Ward, being promoted to the rank of sister on the 25th of March, 1876. At the time of her retirement she was not only the oldest nurse in the hospital, but the sole remaining link between the nursing systems of the present and the past. It gives me much pleasure to bear witness to the praiseworthy spirit in which she accepted the additional and unaccustomed duties thrown upon her when, in 1888, the surgical work of the department became suddenly increased. She struggled bravely to meet the new demands made upon her strength and energy for two years and a half, when she felt compelled to resign, and was succeeded by the present sister, Miss Christie. The good wishes of many generations of officers, students, and nurses follow our late sister in her well-earned retirement.

Table I.

General Statement of Patients in Adelaide Ward (female).

Number of Beds in Ward (including small Ward)	...	...	21
Number of Patients in Ward, Jan. 1st, 1890 ...	...	...	10
„ „ „ Dec. 31st, 1890...	...	...	12
„ „ discharged or died during 1890:			
		Rate per cent.	
Cured	120	...	47·0
Relieved	98	...	38·2
Unrelieved	32	...	12·5
Died	6	...	2·3
Total	256	...	100·0

Average number of days of each patient's stay in hospital—22.

Table II.—*General Table of Diseases.*

Disease.	Number of cases.	Age.						Duration of residence.						Result.		REMARKS.
		10–20	–30	–40	–50	–60	Above 60	Under 1 wk.	1–2 weeks	2–4 weeks	1–2 months	Above 2 mos.	Cured.	Relieved.	Unrelieved.	Died.	
I. Diseases of Ovaries.																	
A. *Cyst.*																	
a. Simple and multiple	13	...	1	4	2	2	3	1	1	3	6	2	11	...	1	1	All operated upon (see Special Table).
b. Malignant	3	...	...	...	2	1	.	1	...	...	2	...	...	2	...	1	
c. Dermoid	2	...	...	2	...	...	...	...	...	...	2	...	2	...	...	...	
B. *Growths*																	
a. Fibroid	1	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	Operated upon (see Special Table).
b. Sarcoma	1	...	...	...	1	...	...	...	...	1	...	...	...	1	...	...	
C. *Displacement*																	
Prolapse	1	...	...	1	...	...	...	...	...	1	...	...	...	1	...	...	Left ovary prolapsed and adherent; pelvic peritonitis.
II. Diseases of Fallopian Tubes.																	
Salpingitis, simple	20	4	13	2	1	...	...	4	7	2	6	1	4	14	2	...	The two unrelieved left at their own request. Three were treated by abdominal section, the remainder by rest, &c.
Pyosalpinx	4	...	2	2	...	...	...	...	...	...	3	1	3	1	...	...	Abdominal section performed on all four.
Hæmato-and hydrosalpinx	1	...	1	.	...	...	...	...	...	...	1	.	1	...	...	...	Abdominal section.
Tubercular salpingitis and peritonitis	3	1	2	...	...	...	...	...	...	...	1	2	...	2	...	1	In 1 case the disease was limited to the Fallopian tubes. Abdominal section was performed, and the appendages were removed. In the second case, only an exploratory incision was made as there was general tubercular peritonitis. In the fatal case abdominal section was performed, and the patient died over 2 months afterwards from perforation of the intestine.

TABLE II—*continued.*

DISEASE.	Number of cases.	Age.						Duration of residence.					Cured.	Relieved.	Unrelieved.	Died.	REMARKS.
		10–20	–30	–40	–50	–60	Above 60	Under 1 wk.	1–2 weeks	2–4 weeks	1–2 months	Above 2 mos.					
III. DISEASES OF UTERINE LIGAMENTS AND OF THE ADJACENT PERITONEUM AND CELLULAR TISSUE.																	
A. Hæmatocele.																	
a. Intra-peritoneal	4	...	3	...	1	...	...	...	...	2	2	...	3	1	...	...	In 2 abdominal section was performed. The other 2 were treated by rest.
b. Extra-peritoneal	1	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	Diagnosis confirmed by exploratory incision.
B. Inflammation.																	
a. Pelvic peritonitis	13	...	9	4	...	...	...	3	3	5	2	...	4	9	...	...	
b. Pelvic cellulitis	12	3	3	3	2	1	...	1	2	6	1	2	4	7	1	...	
c. Abscess	5	...	...	3	2	...	...	...	...	1	1	3	...	5	...	...	All treated by incision.
C. Cysts of broad ligament																	
a. Parovarian	2	...	1	1	...	...	...	...	...	2	...	...	2	...	...	...	See Special Table, No. 1.
b. Subperitoneal	1	...	...	...	...	1	...	...	...	1	...	...	...	...	...	1	See Abstract.
IV. DISEASES OF UTERUS AND CERVIX.																	
Endometritis	15	...	6	4	4	1	...	...	7	7	1	...	7	7	1	...	
Chronic metritis	1	...	...	...	1	...	...	...	...	1	...	...	1	...	...	...	
Chronic cervical catarrh	1	...	...	1	...	...	...	...	...	1	...	...	...	1	...	...	
Fibroma	15	...	...	7	6	1	1	3	4	3	5	...	1	8	5	1	Oöphorectomy was performed in three cases. In the fatal case the patient died of pyæmia.
Polypus, fibrous	5	...	1	1	2	1	...	...	2	3	...	...	5	...	...	...	
„ mucous	3	...	...	...	2	1	...	2	1	...	...	...	3	...	...	...	
Carcinoma of cervix	12	...	1	2	7	2	...	4	4	2	1	1	2	3	7	...	Hysterectomy performed in two. No operative measures taken in any of the others either on account of an operation being declined or the disease being too advanced.

																		listhesis), causing incarceration of the uterus. In another abdominal section was performed.
Inversion	1	...	...	...	1	...	...	...	...	...	...	1	1	...	...	...		Complete inversion with sloughing fibroid (see Lancet, June 21st, 1890).
Prolapse	2	...	...	...	...	1	1	...	1	...	1	...	...	2	...	...		
Stenosis of os internum	1	...	...	...	1	...	...	...	...	...	1	...	1	...	...	...		Patient, æt. 41, para 9. Retention of menstrual fluid; menorrhagia and metrorrhagia.
Laceration of cervix	2	1	1	...	...	...	...	1	1	...	...	...	...	2	...	...		
Hypertrophic elongation	1	...	1	...	...	...	...	...	...	1	...	...	1	...	...	...		
Primary syphilitic sore on cervix	1	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...		
V. Diseases of Vulva, Vagina, &c.																		
Septum of vagina	1	...	1	...	...	...	...	...	...	...	1	...	...	1	...	...		Congenital.
Vesico-vaginal fistula	3	...	2	1	...	...	...	1	...	1	1	...	...	...	3	...		2 operated upon; in the other, operation was deferred on account of suppurative disease of kidney, the patient being transferred to have nephrectomy performed.
Contraction of upper part of vagina from sloughing	1	...	...	...	...	1	...	...	...	1	...	...	...	1	...	...		Probably due to old ulceration.
Rectocele	1	...	...	...	...	1	...	...	...	...	1	...	1	...	...	...		
Prolapse of anterior vaginal wall	1	...	...	1	...	...	...	...	...	1	...	...	...	1	...	...		
Prolapse of mucous membrane of urethra	1	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...		
Abscess of Bartholin's gland	1	...	1	...	...	...	...	...	...	1	...	...	1	...	...	...		
Cyst of anterior vaginal wall	1	...	1	...	...	...	...	...	...	1	...	..	1	...	...	...		
Urethral caruncle	2	...	2	...	...	...	...	1	1	..	.	...	2	...	...	...		Removed.
Rupture of perinæum	10	1	7	1	1	...	...	1	...	7	1	1	8	1	1	...		Operation performed in 9. In one of these the operation was not completely successful. In the case tabulated as unrelieved an operation was considered unnecessary.

TABLE II—*continued.*

DISEASE.	Number of cases	Age.						Duration of residence.					Cured.	Relieved.	Unrelieved.	Died.	REMARKS.
		16–20	–30	–40	–50	–60	Above 60	Under 1 wk.	1–2 weeks	2–4 weeks	1–2 months	Above 2 mos.					
PREGNANCY AND ITS ACCIDENTS.																	
Pregnancy	4	...	2	1	1	...	...	4	...	...	...	...	1	1	2	...	1 case admitted for diagnosis; 1 had had a fall, which was followed by vomiting and pain; patient did not abort; 1 case had contracted pelvis; labour to be induced later on at 8th month; 1 case suffered from obstinate constipation.
Induction of premature labour	1	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	Contracted pelvis; labour induced at 8th month.
Retroverted gravid uterus	1	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	Retention; uterus replaced; labour not interrupted; febrile attacks.
Accidental hæmorrhage	2	...	1	1	...	...	...	...	1	...	1	...	2	...	...	...	Both cases aborted.
Hæmorrhage from retained fœtal products	29	2	12	15	...	...	...	...	13	15	1	...	27	...	2	...	The 2 cases unrelieved declined operative treatment; all the others cured by the removal of the fœtal products.
Eclampsia	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	Induction of labour under chloroform. Death 5 days afterwards from double pneumonia; nephritis.
Extra-uterine fœtation	3	...	2	1	...	...	...	...	...	...	3	...	3	...	...	...	Abdominal section performed in all 3.
Cæsarian section	1	..	1	...	...	...	...	...	...	...	1	..	1	...	...	...	See Lancet, May 17th, 1890.
Rupture of uterus	1	...	...	1	...	...	...	...	...	...	1	...	1	...	...	...	Shoulder presentation; version; rupture at junction of cervix with body. Treatment, rest and antiseptic douches.
Hydatidiform degeneration of chorion	1	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	
Subinvolution	1	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	
Vomiting of pregnancy	1	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	
Varicose veins	1	...	1	...	...	...	...	...	...	1	..	...	...	1	...	...	
VARIOUS.																	
Dysmenorrhœa	6	...	3	3	...	...	...	2	4	...	...	...	...	6	...	...	

Hysteria	7	...	3	2	1	1	...	4	2	1	...	...	1	5	1	...	1 case complained of an abdominal tumour (phantom).
Pelvic neuralgia	5	...	3	2	...	...	...	1	1	3	...	...	...	4	1	...	
Vaginismus	1	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	
Abdominal abscess	1	...	1	...	...	...	...	...	...	1	...	...	1	...	...	...	Incision and drainage; cause not made out.
Chronic cystitis	2	...	1	1	...	...	...	...	...	...	2	...	...	2	...	...	
Pneumonia	1	...	1	...	...	...	...	1	...	...	...	...	1	...	...	...	Clearing up; secondary to influenza; old abdominal section.
Carcinoma of rectum	1	...	...	1	...	...	...	1	...	...	...	...	...	...	1	...	Transferred to Alexandra Ward.
Tubercular kidney	1	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	Transferred to Charity Ward.
Hernia through scar of abdominal section	1	...	...	1	...	...	...	...	...	1	...	...	1	...	...	...	Operated upon.
Periproctitis	1	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	? Malignant.
Suppuration in wound after abdominal section	1	...	...	...	1	...	...	...	...	1	...	...	1	...	...	...	Incision and drainage.
Ventral hernia	1	...	...	...	1	...	...	...	1	...	...	...	...	...	1	...	
Renal cyst	1	...	...	1	...	...	...	...	...	1	...	...	...	1	...	...	Aspirated.
Ulcerative endocarditis	1	...	...	1	...	...	...	...	1	...	...	...	...	...	1	...	Transferred to Christian Ward.

Table III.—*Operations performed during the Year.*

Abdominal section:		
Cystic adenoma of ovary		8[1]
Cystic adenoma of ovary (suppurating)		1
Cystic fibroma of ovary		1
Malignant disease of ovary—4 cancer (2 colloid), 1 fibro-sarcoma		5
Subperitoneal cysts of broad ligament		1
Dermoid cyst of ovary		2
Parovarian cyst		2
Salpingitis and pelvic peritonitis		2
Purulent salpingitis and pelvic peritonitis		5
Hæmato-salpinx		1
Hæmatocele		2
Porro-Cæsarian section		1
Ectopic gestation		3
Removal of normal tubes and ovaries for fibroids		4
Exploratory incision for—		
Tubercular peritonitis	2	
Hæmatoma of broad ligament	1	
Sinus after abdominal section	1	
Retroflexion of uterus	1	
Abdominal abscess	1	= 6
		44
Posterior colporrhaphy	1	
Polypus uteri (fibroid)	5	
Removal of cervix uteri (infra-vaginal)	1	
Vesico-vaginal fistula	1	
Recto-vaginal fistula	1	
Lacerated perinæum	8	
Vaginal hysterectomy	2	
Cyst of anterior vaginal wall	1	
Inversion of the uterus with fibroid polypus	1	= 21
Total number of operations		65

Table IV.—*Causes of Death in Fatal Cases.*

Continuous vomiting (without peritonitis or symptoms of septicæmia) after abdominal section: (1) for colloid cancer of right ovary; (2) for cystic adenoma of the right ovary	2
Septic peritonitis after abdominal section for large, adherent, sub-serous cyst of broad ligament	1
Tuberculosis; intestinal perforations with fæcal fistulæ two months after an exploratory operation and removal of encysted ascitic fluid	1
Puerperal eclampsia and pneumonia	1
Total	5

[1] One with colloid cancer of cæcum.

Abdominal section.

The cases of abdominal section have been arranged in two tables : No. I including all cases generally classed under the heading of ovariotomy, viz. those in which the operation was performed for ovarian or broad ligament tumours ; and No. II, including all other cases.

Table No. I consists of twenty cases, of which three died. One of these, No. 2, was a case of colloid cancer of the ovary. Death took place seventy-six hours after the operation, vomiting having set in twenty-four hours previously and continued up to death. An autopsy was not permitted, but a partial examination was made through the wound. There was no peritonitis or stomach disease, but, on tracing the intestine from the duodenum downwards, there was found to be colloid cancer of the last three inches of the ileum and of the ileo-cæcal valve. No other lesion was discovered. The second case that proved fatal, No. 7, was that of a very stout, flabby woman of sixty, with marked capillary injection of the face, and an unhealthy livid colour of the skin generally. There was a layer of pale, subcutaneous fat, an inch and a half thick, on the abdominal wall. The omentum was pale and œdematous, and of great thickness. In short, without there being any definite lesion, the patient was obviously in an exceedingly unfavorable condition for bearing a serious operation. Vomiting, which occurred once in twenty-four hours during the first two days, became, after that, much more frequent, increasing in frequency up to the time of death, nearly six days after the operation. On the third day the temperature rose to 101·4°, and the pulse to 140, but after that the highest recorded temperature until a few hours before death was 100°, and the highest pulse record 120. No *post-mortem* examination was permitted, so that the cause of death can only be guessed at. The third of the fatal cases, No. 18, is reported more fully, the cause of death (septic peritonitis) having been placed beyond doubt by an autopsy.

In looking over the entire series, it is impossible not to be struck with the large proportion of cases in which there was malignant disease. Thus, out of the twenty cases, five were

certainly of a malignant character, and in another (No. 12), though the ovarian disease was to all appearance ordinary cystic adenoma, there was colloid cancer of the cæcum. The difficulties that sometimes attend the determination of the nature of a morbid growth by examination under the microcope find a striking illustration in the case of A. D— (No. 13). On July 17th, 1890, this patient had a solid tumour of the right ovary removed, the healthy left ovary being also removed as a matter of precaution. There was no ascites, and there were no adhesions. Mr. Shattock examined a section of the tumour under the microscope, and pronounced it a simple fibroma. But within six months the patient's health broke down, and after an illness of several months, during which she became emaciated almost beyond recognition, vomiting of uncontrollable character set in, and she died from fibro-sarcoma of the stomach. There can, of course, be no reasonable doubt that the original disease was of the same nature, especially as the autopsy showed that the uterus and adjacent intestines had become markedly affected.

The series includes two cases of parovarian cyst, and two of dermoid cyst of the ovary. The two latter are preserved in the hospital museum. One of them (Case 20) was remarkable in that the tumour was (except for adhesions, the result of inflammation) lying free in the peritoneal cavity, all trace of pedicle having disappeared. The phenomenon is not a very uncommon one in the case of pedunculated sub-serous fibroids of the uterus; but in the case of ovarian tumours it is very rare, and, so far as I know, confined to dermoids.

The cases in Table No. II are twenty-four in number. They include nine cases of removal of diseased uterine appendages; four cases of removal of the normal tubes and ovaries for uterine fibroids; three cases of extra-uterine gestation (two in an early stage, after rupture of the Fallopian tube, and one at a later stage, four weeks after the death of the fœtus, which had never attained maturity); three cases of hæmatocele, probably all due to tubal gestation; one case of Porro's operation for deformity of the pelvis, and four exploratory operations. Of these last, two proved to be cases of tubercular disease of the peritoneum and other parts; one was a case of effusion, most probably of blood

(hæmatoma), in the broad ligament, while the fourth, thought to be disease of the uterine appendages, turned out to be a retroflexed uterus, enlarged from fibroids and incarcerated in the hollow of the sacrum.

Only one death occurred amongst the patients in this series. The case was one of extensive tubercular disease in which an exploratory incision was made, and a large quantity of ascitic fluid removed, death occurring two months afterwards from the advance of the disease.

Full reports of the nine cases of removal of diseased uterine appendages, of the three cases of hæmatocele, and of the four exploratory operations have been communicated to the Obstetrical Society of London in a paper on "Abdominal Section in Certain Cases of Pelvic Peritonitis." The case of Porro's operation was published in the 'Lancet.' The two cases of ruptured tubal gestation form the subject of a separate paper in the present volume.

As the operation for removal of diseased uterine appendages is still the subject of controversy, it may be well to summarise briefly the various conditions actually found in the nine cases included in Table II. In six, *i. e.* in two-thirds of the cases, the disease was of a suppurative character. In four of these, the seat of suppuration was one or both Fallopian tubes, in another case, in addition to the purulent salpingitis, there was a suppurating ovarian cyst; while, in the sixth case, the ovary alone was the seat of suppuration, the accompanying disease of the Fallopian tubes being non-purulent in character. In the remaining third of the cases, three in number, the Fallopian tubes were one or both the seat of chronic inflammation; and in two out of the three one of the ovaries had undergone cystic change of a marked character. All the patients recovered from the operation; in only one case did the abdominal wound fail to heal without suppuration. With regard to the results of the operation, all the nine left the hospital well and free from pain. Seven of them were seen some months afterwards; of these, six remained well and free from pain, and the seventh, although she complained of pelvic pain, looked exceedingly well, had a normal temperature, and had, on physical examination, no sign of inflammatory exudation or other

morbid condition in the pelvis. Her pain was probably either neuralgic in its character or the result of an omental adhesion. The patient, in whom suppuration was found to exist both in tubes and ovary, made an excellent recovery, and, so far as her pelvic organs were concerned, remained well. But a few months later she was operated upon for cancer of the breast and died, within twelve months, from cancer of the stomach.

With regard to the technique of the operation there has been no change of importance in my practice since the last report.

SPECIAL TABLE I.—*Abdominal Section for Ovarian or Broad-ligament Tumours.*

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Nature, &c., of tumour.	Adhesions.	Condition and treatment of other ovary.	Glass drainage tube.	Peritoneum flushed.	Result of operation.	Remarks.
					1890							
1	L. A.	Islington	27	M.	Jan. 16	Cystic adenoma of left ovary	Abdominal parietes above umbilicus	Normal	None	No	R.	Highest temp. 100·6°.
2	M. S.	Clapham	47	M.	Feb. 13	Colloid cancer of right ovary; weight of tumour 9 lbs. 6 oz.	Above and behind, also in pelvis to posterior pelvic wall and to uterus; and to small intestine, the last very vascular	Shrivelled and hard, but not diseased	55 hours	Yes	D.	Vomiting set in on 3rd day, and continued to death the day following, 76 hours after operation. No P.M. permitted. Abdominal incision reopened; no peritonitis; colloid cancer of last 3 inches of ileum; no disease of stomach. Cause of death not discovered.
3	C. G.	Kensington	71	W.	April 3	Cystic adenoma of left ovary	Recent; chiefly parietal	Senile	44 hours	No	R.	Highest temp. 99·2°, Discharged well on 24th day.
4	S. McN.	Clapton Park	42	S.	April 24	Columnar-celled carcinoma of both ovaries; weight 2 lbs. 5½ oz.	Universal in pelvis; none in abdomen	See "Nature of tumour"	44 hours	Yes	R.	Pneumonia 6th to 11th day after operation. Remained fairly well to end of May, after which disease recurred, and patient died Sept. 24th, 1890.
5	M. C. S.	Streatham	56	S.	April 24	Cystic adenoma of right ovary; a multitude of small cysts, nearly all filled with blood-clot; weight 13 lbs. 6 oz.	Firm to abdominal wall, high up in front; recent posteriorly; none in pelvis	Normal	44 hours, india-rubber substituted	No	R.	Recovery uninterrupted. Three months later presented herself in perfect health.

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Nature, &c., of tumour.	Adhesions.	Condition and treatment of other ovary.	Glass drainage tube.	Peritoneum flushed.	Result of operation.	Remarks.
					1890							
6	F. W.	Lewes	71	M.	May 1	Cystic adenoma of right ovary, and large hydrosalpinx of left Fallopian tube; weight of ovarian tumour 24 lbs. 5 oz.	Parietal and omental	Senile; removed with adjacent hydrosalpinx, to which it was adherent	50 hours	No	R.	Highest temp. 100°; after 5th day normal.
7	J. M.	Lambeth	60	M.	May 8	Cystic adenoma of right ovary; weight 7 lbs. 2 oz.	Parietal and omental	Senile	50 hours	Yes	D.	Vomiting set in 58 hours after operation, and continued, with increasing frequency, up to death at 1·30 p.m., May 14th. No P.M.
8	E. D.	Edmonton	35	M.	May 22	Cystic adenoma of both ovaries	None	See "Nature of tumour"	None	No	R.	Recovery uninterrupted. Highest temp. 100·8°. Left hospital well June 18th.
9	A. T.	Kensington	34	W.	June 5	Cystic adenoma of left ovary; weight 9 lbs.	Parietal; slight	Normal	44 hours	Yes	R.	Recovery uninterrupted. Highest temp. 100°. Left hospital well June 25th.
10	A. McD.	Walworth	69	M.	June 12	Cystic fibroma of right ovary; two cysts, one containing 64 fl. oz. dark brown fluid, the other 10 fl. oz. straw-coloured serum; between cysts and pedicle a hard fibroma size of pigeon's egg; nature verified by microscope	None	Normal	20 hours	No	R.	Recovery uninterrupted. Highest temp. 100·2°. Left hospital well July 10th.
11	C. MacD.	Rochester	53	W.	June 26	Carcinoma of right ovary, size of hen's egg; with large hæmato-salpinx of right tube	Universal, pelvic	Normal	72 hrs., replaced by rubber	Yes	R.	Recovery interrupted by suppuration. Highest temp. 100·2°. On Sept. 20th disease had recurred, forming a tumour filling the abdo-

12	M. A. M.	Hook, near Surbiton	47	M.	July 7	Cystic adenoma of right ovary, with colloid cancer of cæcum	None	Normal	24 hours	No	R.	Transferred to surgical wards July 14th, having had no bad symptoms since operation. Was allowed to go home, and failed to return for the excision of cæcum.
13	A. D.	Plumstead	26	S.	July 17	Fibro-sarcoma of right ovary, 5½ in. × 3½ in. × 3 in.; weight 12¾ oz.	None	Normal; removed as a precautionary measure	21 hours	No	R.	Highest temp. 100·2°. Re-admitted April 9th, 1891, with obstinate vomiting, emaciation, abdominal distension. Died May 17th of fibro-sarcoma of stomach.
14	F. M.	Kensington	25	S.	July 21	Parovarian cyst of right side	None	Both ovaries normal	48 hours	No	R.	Alarming symptoms supervened an hour after operation; abdomen reopened; blood in peritoneal cavity from slipping of pedicle. Pedicle secured. Suppression of urine 22 hours. Pyrexia for a week, then quick recovery.
15	E. H.	Bournemouth	36	S.	July 26	Dermoid cyst left ovary, 3½ in. × 2½ in., situated in retro-uterine pouch. Two cysts, one containing liquid fat, the other a ball of hair	None	Normal	None	No	R.	Highest temp. 99·8°.
16	M. R.	Cavenham, Suffolk	44	M., nulli-para	Aug. 4	Cystic tumour of right ovary with colloid contents; weight 13¼ lbs. Appendix vermiformis distended with colloid material, which was escaping into peritoneal cavity through a perforation in wall of appendix; also sub-peritoneal fibroids; one removed	None	Normal; removed	48 hours, then rubber tube	Yes	R.	Much colloid material escaped through wound during first few days, followed later by suppuration; slow recovery. No recurrence twelve months later.

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Nature, &c., of tumour.	Adhesions.	Condition and and treatment other ovary.	Glass drainage tube.	Peritoneum flushed.	Result of operation.	Remarks.
17	M. B.	Putney	39	S.	1890 Aug. 5	Parovarian cyst; left broad ligament removed with stretched tube and normal ovary. Contents 360 fl. oz. clear, colourless fluid. Sp. gr. 1000	None	Both ovaries normal	None	No	R.	Highest temp. 100°.
18	M. N.	Battersea	51	M.	Nov. 10	Large mass of subperitoneal serous cysts of right broad ligament	Old, dense, and universal	Both ovaries and tubes normal, adherent; not removed	48 hours	Yes	D.	See Abstract.
19	S. R.	Battersea	33	S.	Nov. 12	Small suppurating cyst of right ovary containing 3½ fl. oz. of fetid pus, and measuring 2½ in. × 1½ in., situated behind uterus. Right tube inflamed, but pervious, incorporated in cyst wall	Dense and universal	Normal, adherent; not removed	48 hours, replaced by rubber tube	Yes	R.	Suppuration for a month. Highest temp. 100°. Oct. 17th, 1891.—Quite well, and in full work as an ironer.
20	M. L.	Kensington	39	M.	Dec. 11	Dermoid cyst of left ovary, 2¼ in. × 2 in. × 1¼ in., containing a compact ball of hair and some solid fat; no trace of pedicle	Universal	Normal	18 hours	No	R.	Recovery uninterrupted. Highest temp. 99·8°.

In only one of the three fatal cases in the preceding table was a complete autopsy permitted; the following is an abstract of the case.

Case 18. *Severe pain in back and before and during defæcation, dating from an "inflammation" after birth of only child thirty years ago, worse recently; uterus retroverted and adherent; soft swelling in front and to right of uterus, inseparable from it; abdominal section; right side of pelvis filled with a number of thin-walled, densely adherent, subperitoneal cysts of the broad ligament; cysts separated and removed; death on eleventh day; autopsy; septic peritonitis* (from notes by A. How).—M. N—, æt. 51, married, residing at Battersea, admitted November 3rd, 1890. The catamenia commenced at 14, and were regular. Married in 1860. First and only child born about a year afterwards; labour protracted and followed by an illness which the doctor said was inflammation, and for which she had to keep her bed for six weeks. The illness was accompanied by an unpleasant discharge. Since that time the periods have been profuse and irregular, easily brought on by a chill, exertion, or excitement, and the pain accompanying them has been severe. From August, 1889, to January, 1890, menstruation ceased; then a profuse flow came on and lasted a month. Between January and April she was constantly losing a little blood, and had incessant pain in the back and lower part of abdomen. Patient states that she has had "a lifetime of suffering."

On admission. — A fairly well-nourished, sallow-complexioned woman, of somewhat sad countenance. Complains of pain in lower part of back, increased by movement or stooping; also of great pain before and during defæcation.

On vaginal examination, uterus found retroverted and fixed; canal three inches long; a soft swelling, equal in size to a man's fist, felt lying in front and to the right of the uterus. *Per rectum,* the body of the uterus can be traced up to the fundus, over which the forefinger can be hooked. From each side of the uterus a tense band runs upwards and outwards, presumably the upper border of the broad ligament, displaced owing to the displacement of the uterus.

Abdominal section was performed 9.30 a.m. November

10th, 1890. Occupying the whole of the right side of the pelvis were a number of thin-walled cysts of the broad ligament, mostly containing clear serum, but a few containing serum of a dark-brown colour from the admixture of blood. One cyst was equal in size to a large orange; the others were smaller. The cysts were in the right broad ligament, and were united by old and dense adhesions to all the parts around, except those lying immediately in front. With considerable difficulty the cysts were separated and brought into view. They were then removed by transfixing and tying the broad ligament at their base.

The body of the retroverted uterus was adherent to the posterior pelvic wall by a number of firm bands, which were torn through by the fingers. The uterus was then straightened, and a Hodge's pessary introduced *per vaginam*. The tubes and ovaries were bound down by old adhesions, and prevented the displacement of the uterus from being completely reduced, even after the posterior adhesions had been separated. The tubes and ovaries were not disturbed. A good deal of bleeding took place from the separated adhesions. The intestines were with difficulty kept from protrusion throughout the operation. There were no intestinal adhesions. The peritoneum was douched with hot solution of boric acid, a glass drainage-tube was inserted, and the edges of the abdominal wound were brought together by sutures of silk-worm gut.

The patient was sick at intervals on the day of operation, and the following day the abdomen was distended, and the expression anxious. A simple enema was administered without effect. At 4 p.m., and again at midnight, morphia was given subcutaneously. The patient rejected everything given by the mouth.

November 12th.—A little flatus had passed through the rectal tube, but the abdomen remained much distended and the vomiting continued. At 3 p.m. the glass drainage-tube was removed. At 6 p.m. an enema was again administered, and returned immediately, with much flatus and some small lumps of fæcal matter. The temperature up to this time had been almost uniformly normal; the highest record had been 99·4°. The pulse had varied between 80 and 120. At

7 p.m., and again at 11 p.m., a drachm of magnesium sulphate was given in solution and retained. At midnight a soap and water enema was tried once more. It brought away some flatus but very little fæcal matter.

13th.—The vomiting continued, and the abdomen was still much distended. A seidlitz powder was given, but returned immediately. Morphia was injected at intervals.

14th.—The vomiting and distension continuing, two punctures of the distended bowel were made with the hypodermic needle through the abdominal wall, but with no result. The temperature was normal and subnormal, and the pulse 94 to 120.

16th.—The symptoms remaining unrelieved, an ounce of castor-oil was given at 3.30 p.m. on the 16th, followed in an hour and a half by a copious enema of soap and water, mixed with glycerine. In ten minutes the enema returned, with a good deal of liquid fæcal matter. After this, liquid motions were passed frequently.

18th.—No vomiting since noon on the 17th. A fair amount of liquid nourishment taken. General aspect of patient improved. Sutures removed; no suppuration; pad stained with sero-sanguinolent fluid without odour.

20th.—Moved into the large ward. At 11.30 p.m. patient complained of some abdominal pain, and morphia was administered subcutaneously. Edges of wound gaping.

At 4 a.m. on the 21st she became seriously collapsed; stercoraceous vomiting occurred, and she died at 8.30 a.m., eleven days after the operation.

There had been no rise of temperature except at 4 p.m. on the afternoon of the 20th, when it reached 101·6°.

Autopsy.—Body of a fairly-nourished woman. Linear incision in mid-line between umbilicus and pubes. Edges gaping, unhealthy looking. On further examination it was found that there was general peritonitis. The coils of intestine were glued together by exudation, and there was a considerable quantity of badly-smelling semi-purulent fluid in the cavity. These signs were most intense in the pelvis, but were quite marked everywhere. In the right side of the pelvic fossa was the stump of the uterine appendages (?) with ligature around. The uterus was adherent to the back

of the pelvis by some old fibrous bands. In structure it was normal, except for the presence of two or three small fibromata in walls.

The left Fallopian tube was blocked at its extremity and formed a cyst containing about an egg-cupful of clear fluid. Ovary normal.

The other abdominal organs presented no abnormality except such as was due to the peritoneal inflammation.

No remarkable change in the organs of the thorax. Bases of lungs congested.

G. Gulliver.

SPECIAL TABLE II.—*Cases of Abdominal Section for other than Ovarian or Broad-ligament Tumours.*

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Object of operation.	Condition found.	Nature of operation.	Result.	Remarks.
					1889					
1	H. M.	Putney	41	S.	Dec. 12	Exploratory; solid and recently very painful tumour behind, and either attached to or springing from uterus	Large pedunculated, and several small sessile fibroids of uterus	Pedunculated fibroid, and normal uterine appendages removed	R.	Recovery uninterrupted; a year afterwards patient very well; tumours smaller; menstruation at intervals of 3 months.
					1890					
2	L. T.	Battersea	27	M.	Jan. 17	Exploratory; pelvic abscess suspected from severe pain and high temperature	Exudation in left broad ligament, with even surface and soft but firm consistence, displacing uterus to right. Probably a hæmatoma	Exploratory; nothing removed or disturbed	R.	On Feb. 7th mass smaller in all dimensions; temperature normal.
3	K. A.	Kentish Town	28	M.	Jan. 21	Exploratory; oval swelling behind uterus, with history of continuous hæmorrhage for 3½ months, commencing with pain and vomiting after missing two menstrual periods	Old intra-peritoneal blood effusion; no organised structure discovered. Tubes and ovaries adherent, but presenting no other marked lesion	Hæmatocele cleared out; nothing else removed	R.	Recovery uninterrupted; highest temp. 100°. Feb. 13th. — Uterus in normal position; no remains of swelling or peritoneal thickening detectable. Probably a so-called tubal abortion.

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Object of operation.	Condition found.	Nature of operation.	Result of operation.	Remarks.
					1890					
4	M. C.	Blackfriars	25	M.	Mar. 13	Cæsarian section for contracted pelvis	Pregnant uterus; full term	Removal of uterus (Porro's operation)	R.	See 'Lancet,' May 17th, 1890.
5	E. G.	Chelmsford	25	M.	April 1	Extra-uterine gestation four weeks after cessation of fœtal movements, which took place in the 33rd week after last menstruation	Fully-developed fœtus 19 in. long; skin peeling; enclosed in a sac consisting of right broad ligament distended. No bleeding on separation and removal of placenta, which was 9 in. in diameter and 1 lb. 8½ oz. in weight	Fœtus and placenta removed; mouth of sac stitched to lower half of abdominal incision	R.	Satisfactory recovery. Temperature before operation 98·6° to 101·2°; after, 98° to 100°. Wound quite healed in 4 weeks. Left hospital well on May 3rd.
6	E. B.	King's Cross	18	S.	April 10	Removal of inflamed left Fallopian tube	Both tubes thickened from old inflammation and firmly adherent; ovaries healthy, adherent	Tubes and ovaries removed	R.	Much vomiting and pain up to April 27th, with alarming emaciation, after which recovery rapid and permanent.
7	J. R.	Clapham	31	S.	May 8	Removal of normal ovaries and tubes for uterine fibroids	Uterus enlarged by fibroid tumour reaching 2 in. above level of umbilicus; tubes and ovaries healthy	Tubes and ovaries removed	R.	Recovery uninterrupted.
8	M. J. H.	Tooting	25	M.	May 22	Removal of tubes for chronic inflammation and of small ovarian cyst on left side	Both tubes enlarged, occluded, and very firmly adherent; left ovary cystic, size of hen's egg, one cyst suppurating; right ovary healthy	Both tubes and left ovary removed	R.	Some suppuration at lower angle of wound after removal of stitches. After 12th day recovery rapid. Sept. 2nd. — Stout and well.
9	E. G.	Lambeth	23	W.	June 6	Removal of inflamed uterine	Right tube thickened; right ovary enlarged and cystic; left tube [illegible]	Tubes and ovaries removed	R.	Left hospital well in a month.

						gestation	tube distended about middle with a rent 1¼ in. long on peritoneal surface. Fœtus 2¾ in. long in abdominal cavity, attached by cord to placenta, which was hanging out of the rent. Right tube occluded, and distended with mucus and altered blood	removed with products of conception and effused blood		ing operation; persistent vomiting first five days; stercoraceous 4th and 5th; suppuration from wound; small sinus on leaving hospital, Aug. 5th (8th week after operation).
11	E. L.	Streatham	34	M.	July 3	Removal of diseased uterine appendages	Right tube thickened, with purulent contents; matting of pelvic viscera; intra-peritoneal abscess on right side of uterus. Left appendages not found	Right tube and ovary removed	R.	Highest temp. 100·4°. Left the hospital well in a month.
12	A. T.	Peckham	24	M.	July 21	Removal of diseased tubes	Both tubes full of pus, ulcerated, perforated, thick-walled, and occluded; ovaries normal, adherent	Tubes and ovaries removed	R.	No pain on leaving hospital; has gained flesh and is in good spirits. No microscopic evidence of tubercle in the tubes.
13	M. M.	Scarborough	23	M.	Aug. 4	Exploratory for persistence of pain and disablement after absorption of a hæmatocele	Appendages on both sides matted by adhesions; otherwise apparently normal. Remnants of blood effusion in retro-uterine pouch	Right tube and ovary separated; latter removed; left appendages not disturbed	R.	Oct., 1891 (14 mos. after).—Better than for years past. Is able to do her work; has no pain, and menstruates regularly and painlessly.
14	L. M.	Lambeth	17	S.	Aug. 5	Exploratory for fluid swelling in the abdomen, with temp. 104°. Patient thought by her friends to be pregnant	Tuberculer peritonitis with encysted ascites	Portion of tuberculous right Fallopian tube removed. Ascitic fluid removed	D. 2 mos. after	Died of tuberculosis, Oct. 9th, 1890. Abdominal wound had been kept open by fæcal discharge due to perforation of tubercular intestinal ulcers

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Object of operation.	Condition found.	Nature of operation.	Result.	Remarks.
15	E. B.	Kent Road	40	M.	Aug. 5	Separation of adhesions or removal of adherent uterine appendages	Retroflexed uterus, enlarged by fibroids, and incarcerated in hollow of sacrum. No disease of appendages or evidence of past peritonitis	Uterus set free; vaginal pessary inserted to prevent recurrence of displacement	R.	Went home well; uterus in good position.
16	E. B.	Bermondsey	24	M.	Sept. 2	Ruptured tubal gestation	Blood in peritoneal cavity; rupture of dilated right Fallopian tube, in which lay a placenta, membranes, and a fœtus ¾ in. long (minus its head, missing)	Right tube and ovary removed, with products of conception and effused blood	R.	Severe attack of broncho-pneumonia during convalescence. Left the hospital well Oct. 10th.
17	E. B.	Lambeth	29	M.	Sept. 4	Removal of hæmato-salpinx and hæmatocele the probable result of a ruptured tubal gestation-sac	Left tube distended with blood-clot; ruptured blood-cyst of right broad ligament; intra-peritoneal hæmatocele; no trace of fœtus discovered	Left tube removed; right broad ligament removed with right uterine appendages	R.	Left hospital in a month looking and feeling well; very slight discharge from sinus at lower angle of wound.
18	L. B.	Walworth Road	51	M.	Sept. 9	Removal of diseased uterine appendages	Small ovarian cyst on left. Left tube normal, adherent. Right tube enlarged, prolapsed, and adherent; right ovary normal	Tubes and ovaries removed	R.	Left hospital well in a month. Feb. 28th, 1891.—Has little or no pelvic pain since operation; is well and in good condition; has not menstruated.
19	L. W.	Littlehampton	34	S.	Sept. 25	Removal of normal ovaries and tubes for uterine fibroids attended with excessive menorrhagia	Uterus enlarged to size of seventh month's gestation. Ovaries and tubes normal	Ovaries and tubes removed	R.	Recovery uninterrupted. Jan. 1st, 1892. — Patient stout and well. Has not lost an hour's work since operation; slight metrostaxis.

20	E. B.	Chelsea	34	S.	Oct. 16	Removal of diseased uterine appendages	Pelvic viscera matted by old peritonitis. Both tubes had mucopurulent contents and thickened walls. Outer covering of both ovaries thickened	Tubes and ovaries removed	R.	Improved rapidly. 12 months afterwards remained free from pain, able to work, and in good general health.
21	J. A. H.	Streatham	46	S.	Oct. 23	Removal of diseased uterine appendages	Both tubes thickened and enlarged, with thick purulent mucus in their canal. Right ovary cystic; contents of cyst fœtid pus	Both tubes and right ovary removed	R.	Left hospital stout and well and free from pain. Died 12 months afterwards from cancer of stomach.
22	A. B.	Brixton	22	S. 1-para	Nov. 19	Removal of diseased left tube	Left pyosalpinx	Left tube and ovary removed	R.	Severe attack of bronchitis after operation. Readmitted Jan. 13th, 1891, complaining of pelvic pain; no obvious lesion; patient in excellent health; probably neuralgia.
23	A. H.	Brixton	20	S.	Nov. 22	Exploratory for obscure swelling in right posterior quarter of pelvis	Miliary tubercle of peritoneum; tubercular abscess in abdominal wall; masses of soft consistence beneath peritoneum on both sides of pelvis, probably glandular	Abscess in wall emptied and scraped	R.	Recovery slow. Nov. 22nd, 1891.—Looking very well; no physical sign of disease either in chest or abdomen.
24	H. H.	Bungay, Suffolk	37	M.	Dec. 1	Removal of normal ovaries and tubes for uterine fibroids with excessive hæmorrhage and pressure symptoms	Uterine fibroid filling pelvic cavity; ovaries and tubes normal	Ovaries and tubes removed	R.	Left hospital well in a month.

STATISTICAL REPORT

OF

THE OPHTHALMIC DEPARTMENT

FOR THE YEAR 1890.

By W. G. LAWS, F.R.C.S.Eng.,
LATE OPHTHALMIC HOUSE SURGEON.

During the year there were 4132 new out-patients (exclusive of renewed letters). 265 in-patients were admitted, and 252 major operations were performed.

Table of In-patients.

Cataract, senile	38	Kerato-iritis	2
„ lamellar	10	Leucoma with adherent iris	4
„ traumatic	5	Pterygium	1
„ congenital	3	Corneal ulcers:	
Membrane after extraction	11	Hypopyon, traumatic, suppurating, and serpiginous	19
Glaucoma, acute	5	Chronic, relapsing, &c.	19
„ subacute	1	Staphyloma of cornea	1
„ chronic	6	Conical cornea	1
„ absolute	2	Papillitis	2
Wound of eyeball	18	Post-papillitic atrophy	4
Lost eyes	6	Primary atrophy	3
Conjunctivitis	6	Tobacco amblyopia	1
Granular lids and pannus	4	Glioma of retina	1
Sympathetic inflammation	2	Detachment of retina	5
Iritis, syphilitic (acquired)	2	Retinitis, syphilitic	4
„ relapsing	3	Hæmorrhage into vitreous	1
„ gouty (hereditary)	1	Hypermetropia	2
Occluded pupil	2	Strabismus, convergent	6
Irido-cyclitis	1	„ divergent	5
Choroiditis (syphilitic)	3	Lacrimal abscess and mucocele	10
Syphilitic keratitis (hereditary)	6		

Trichiasis, ectropion, entropion	11
Symblepharon	3
Cellulitis of orbit	5
Hæmorrhage in orbit	1
Sarcoma of orbit	1
Dermoid of orbit	1
Lupus of eyelid	3
Rodent ulcer	4
Burn of conjunctiva	2
Suppurative panophthalmitis	2
Buphthalmos	1
Proptosis	1
Ptosis (hysterical)	1
„ (congenital)	1
	265

The following is a list of the chief operations performed:

(The figures refer to the number of eyes.)

Removal of cataract		56
Extraction	42	
Curette evacuation	11	
Needling for congenital	3	
Discission of membrane after extraction		27
Extraction of membrane with forceps		1
Iridectomy		39
For glaucoma, acute	5	
„ „ chronic	9	
Preliminary to cataract extraction	4	
For prolapse of iris	7	
„ relapsing iritis	1	
„ artificial pupil	13	
Sclerotomy for glaucoma		1
For conical cornea		2
Saemisch's section		4
Cautery to conjunctiva		1
„ to lid		1
„ to cornea		8
„ to lacrimal sac		1
Tenotomy of internal rectus		14
Graefe's	2	
Liebreich's	3	
Critchett's	7	
With conjunctival suture	2	
Tenotomy of external rectus		2
Advancement of internal rectus		5
„ external rectus		5
For entropion		11
Van Millingen's	3	
Arlt's	4	
Green's	4	
For ptosis (Everbusch's)		1
Peritomy		2
Scalping of lids		1
For spasmodic entropion (removal of skin and muscle)		4
For mucocele		8
For trachoma (squeezing)		1
For lupus of lid and conjunctiva		4
For symblepharon		1
For pterygium		1
For chip of metal in eye		1
Blepharorrhaphy		2
Removal of rodent ulcer		5
„ of sarcoma of orbit		1
„ of dermoid cyst of orbit		2
For nævus of orbit		2
For abscess of orbit		2
Electrolysis of lashes		2
Excision of eyeball		34
		252

Analysis of Cataract Operations.

I. Extraction of hard cataract—42.

The section was made upwards in every case.

In eighteen cases the lens was extracted without iridectomy; in eighteen iridectomy was done in the usual course, in one it was done owing to difficulty experienced in extrusion of the lens, and in two for obstinate prolapse of the iris after extraction.

In two cases a preliminary iridectomy had been done.

In one case prolapse of iris was found on the fourth day after operation, and was removed.

In two cases a sharp hook was used in extraction of the lens.

In all cases in which an iridectomy was done atropine was begun on the third day after operation; where no iridectomy was done, eserine (a half per cent. solution) was used as a rule both before and after operation, in a few cases after operation only, atropine being substituted for it at a varying period afterwards.

A 2 per cent. hydrochlorate of cocain solution was used as anæsthetic in every case; in No. 3 ether and chloroform were also given.

II. Operations for removal of soft cataract—11.

Nine of the cataracts were lamellar, and after preliminary needling were removed by keratome incision and curette; one was traumatic, also removed by curette; and one a complete congenital cataract, for the removal of which the sharp hook was employed.

Table I.—*Extractions of Hard Cataract*—42.

Mr. Nettleship's Cases (25).

Page in B. 90.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
11	1	D. M. Jan. 17th	M.	61	Cocain	Right; extraction up with iridectomy; lens came away cleanly; very little cortical matter left in a. c. Traumatic cataract; lens examined for foreign body, but nothing discovered	Favorable; some capsule in pupil	Jan. 22nd, 1892—Needled	Mar. 13th, 1891—+11 D. = $\frac{6}{18}$. +14 D. = 1 J. at 11 in.
12	2	G. S. Jan. 31st	M.	75	„	Right; extraction up with iridectomy; some cortical matter left in a. c., and during manipulation to get rid of this a small bead of vitreous escaped; eye immediately bandaged	An attack of delirium after operation; eye did well; no iritis	None	Sept. 2nd—+11 D. = $\frac{6}{24}$. +15 D. = 1 J.
20	3	W. P. Feb. 14th	M.	33	Ether and chloroform	Left; concussion cataract; iris tremulous; needled Feb. 11th; lens very moveable. Feb. 14th.—Incision with keratome and iridectomy upwards; when a. c. was opened sclerotic above wound collapsed, and iris sank back; speculum removed; iris seized with some difficulty owing to its backward inclination; sharp hook afterwards introduced, but lens broke up under it	Favorable	None	Mar. 20th—+9 D. = $\frac{6}{18}$.
23	4	J. B. Jan. 17th	M.	65	Cocain	Left; section upwards; speculum then removed with intention of doing iridectomy as patient was restless; free escape of thin but healthy vitreous, followed by lens	Commencing suppuration on 2nd day; subsequently minus tension and pain. Patient died	Jan. 23rd—Chloroform; cautery applied to wound. Feb. 20th—	—

						in its capsule; no attempt at iridectomy	on Mar. 3rd, probably of chronic renal disease	Chloroform; eye excised	
32	5	C. S. Feb. 21st	F.	47	„	Right; extraction up without iridectomy; lens semi-soft; came out well; iris showed no inclination to return spontaneously, but was well replaced with spatula, the pupil being left central. Eserine used immediately after but not before operation	Feb. 25th—Prolapse of iris; after removal of this eye became quiet	Feb. 27th—Ether; prolapse of iris snipped off; piece removed not very satisfactory	No note of vision.
45	6	H. F. Mar. 25th	M.	75	„	Right; extraction up without iridectomy; came away easily; very little lens matter left behind; cornea collapsed, and edges of wound were not in very good apposition. Eserine used before and after operation	Favorable	—	+15 D. = 19 J.
63	7	H. F. April 29th	M.	35	„	Right; extraction up without iridectomy; cataract of Morgagnian type; would not present; sharp hook introduced, and after slight difficulty (lens turning round and round as it was drawn on by hook) it was pulled forward into a. c. and expressed. Eserine before and after operation	Favorable	April 14th, 1891—Needled	Nov. 27th, 1891— +12 D. = $\frac{6}{36}$. +20 D. = 1 J. at 8 in.
73	8	E. C. May 9th	F.	63	„	Right; extraction up without iridectomy; summit of section more corneal than usual; cortex soft and milky, nucleus firm; a quantity of soft cortex expressed by manipulation; pupil left round and central. Eserine before and after operation	May 11th—Commencing suppuration. May 12th—Prolapse of iris; slow suppuration went on	May 11th—Cautery to wound. May 13th—Ether; prolapse of iris removed; wound freely cauterised again. May 19th—Excision	—

Page in B. 90.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
75	9	M. H. May 2nd	F.	62	Cocain	Right; extraction up; section semi-corneal; iridectomy performed after expression of lens as iris prolapsed through wound and would not go back; lens small and hard. Eserine before and after operation	May 14th—A good deal of pain and iritis; gradually became quiet	None	Sept. 18th— $\frac{+9\text{ Ds.}}{+1\text{ Dc.}} = \frac{6}{9}$. $\frac{+16\text{ Ds.}}{+1\text{ Dc.}} = 8$ J. at 10 in.
80	10	C. B. May 23rd	M.	69	„	Left; extraction up without iridectomy; summit of incision well in corneal substance; lens came away cleanly; iris smoothed back from wound by spatula; pupil central at close of operation. Eserine before and after operation	Favorable; no iritis; no atropine used till June 3rd	None	Nov. 20th, 1891— $+12$ D. $= \frac{6}{24}$. $+16$ D. $= 1$ J. at 9 in.
81	11	J. C. Feb. 5th	M.	76	„	Right; extraction up with iridectomy; section not quite even; iris wounded by knife; lens came away very cleanly	Favorable	None	June 10th— $\frac{+11\text{ Ds.}}{+2\text{ Dc.}} = \frac{6}{18}$. $\frac{+15\text{ Ds.}}{+2\text{ Dc.}} = 2$ J. at 6 in.
82	12	W. W. Mar. 28th	M.	65	„	Right; extraction up without iridectomy; soft cortex, some left behind; pupil round and central. Eserine before and after operation	Favorable; some adhesions; atropine substituted for eserine on April 1st	June 3rd—Needling	June 9th— $\frac{+10\text{ Ds.}}{+2\text{ Dc.}} = \frac{6}{12}$. $\frac{+15\text{ Ds.}}{+2\text{ Dc.}} = 1$ J.
106	13	J. T. June 27th	M.	62	„	Right; extraction up with iridectomy; incision rather short; lens nearly black; came out slowly, but quite clean; a good deal of bleeding into a. c. at the time	Recurrence of bleeding into a. c. and behind iris	None	No note of vision.
110	14	H. McN. May 16th	M.	68	„	Right; extraction up without iridectomy; lens came away pretty cleanly, though soft and barely ripe; pupil left central. Eserine	Favorable	July 18th—Needled; membrane gaped well	July 21st— $+10$ D $= \frac{6}{24}$. $+16$ D. $= 6$ J. at 6 in.

			July 11th			chloroform	cataract; owing to patient's deafness no speculum was used; incision rather more corneal than usual for iridectomy cases; hardly any conjunctival flap. As soon as section was completed the iris was bulged through wound by the lens, which then slowly and steadily escaped, and was followed by a large quantity of thin but clear vitreous, which in its turn was followed by a large mass of good firm vitreous. A minute or two later bright red blood appeared from the wound in considerable quantity, and patient began to retch. It being evident that intra-ocular hæmorrhage was taking place in considerable quantity chloroform was given, and the eye at once excised			
	126	16	A. V. May 23rd	F.	55	Cocain	Left; extraction up with iridectomy; lens hard and dry, came away almost entire	June 5th— Some iritis; thick membrane in pupil	July 25th— Capsule extracted with cannula forceps, after being tried with needle; no vitreous lost	Aug. 12th— $\frac{+6\text{ Ds.}}{+1{\cdot}5\text{ Dc.}} = \frac{6}{18}$. $\frac{+12\text{ Ds.}}{+1{\cdot}5\text{ Dc.}} = 1$ J. at 6 in.
	127	17	C. W. June 6th	F.	32	,,	Left; extraction up without iridectomy; capsule tough and not freely opened; lens squeezed out slowly; some of it left behind upper part of iris; pupil left central. Eserine before and after operation	Favorable	Aug. 8th— Needled; gaped well	Aug. 19th— $\frac{+10\text{ Ds.}}{+1\text{ Dc.}} = \frac{6}{12}$. $\frac{+15\text{ Ds.}}{+1\text{ Dc.}} = 1$ J. at 10 in.
31	149	18	E. L. Oct. 3rd	F.	41	,,	Right; extraction up without iridectomy; wound rather too near scleral margin; at first iris did not contract well; went back well afterwards. Eserine after operation	Oct. 7th— Some congestion of iris; atropine substituted for eserine	None	Nov. 18th— $\frac{+15\text{ Ds.}}{+2\text{ Dc.}} = \frac{6}{12}$. $\frac{+18\text{ Ds.}}{+2\text{ Dc.}} = 1$ J.

Page in B. 90.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
153	19	M. R. Oct. 10th	F.	69	Cocain	Left; extraction up with iridectomy; lens soft and over-ripe, some small pieces left behind	Favorable	None	Oct. 28th— $+12$ D. $=\frac{6}{60}$. $+18$ D. $=10$ J. at 8 in.
155	20	C. B. Oct. 10th	M.	23	„	Left; extraction up without iridectomy; lens very soft, came away in semi-fluid mass; iris contracted well. Probably concussion cataract	Favorable	None	No note of vision.
156	21	A. G. Oct. 17th	M.	39	„	Right; extraction up; section at corneal margin; hook introduced, but lens too friable to hold; iris could not be replaced after extrusion of lens, being apparently wanting in elasticity though pupil was fully contracted; iris was therefore cut off; lens chippy, some pieces left behind; wound gaped; much bleeding. Concussion cataract	Favorable	None	No note of vision.
170	22	T. M. Oct. 10th	M.	52	„	Left; extraction up with iridectomy; a large quantity of aqueous fluid came away, so as almost to simulate vitreous	Oct. 18th—Patient pushed finger into eye; considerable bleeding into a. c. followed. Feb., 1891—Eye has become glaucomatous	Mar. 18th, '91—Excised	—
175	23	S. B. July 4th	F.	73	„	Right; extraction up with iridectomy; lens did not present easily, removed with sharp hook; pupil left black	Favorable	Oct. 10th and Nov. 21st—Needled	Dec. 11th— $+14$ D. $=\frac{6}{24}$. $+18$ D. $=16$ J. at 10 in.
176	24	J. L. Feb. 7th	M.	66	„	Right; extraction up without iridectomy; cortex very soft and semi-fluid, nucleus firm; iris stroked back with spatula. Eserine before and after operation	Much plastic iritis. July 25th—Quiet; but after iridectomy again chronic iritis	July 25th—Downward iridectomy with Tyrrell's hook. Dec. 2nd—Chloroform; excision	—

		Oct. 31st				tomy (pupil being dilated); incision corneal, but lens fairly got away; a large part of the capsule drawn out through wound, but perhaps a tag left in. Lamellar cataract	Suppuration of wound	Nov. 4th— Cautery to wound. Dec. 10th— Excision	—

Mr. Lawford's Cases (17).

3	26	T. H. Jan. 3rd	M.	62	„	Right; extraction up; very little lens matter left behind; a preliminary iridectomy had been done in September, 1889	Favorable	None	March 26th— +11 D. = $\frac{6}{24}$. +15 D. = 10 J. Requires needling.
5	27	E. C. Feb. 7th	F.	61	„	Right; extraction up without iridectomy; lens sticky and did not present easily, considerable manipulation needed to express it; a quantity of cortical matter afterwards coaxed out of a. c.; iris smoothed back with spatula; pupil left approximately circular. Eserine after operation	Favorable; atropine begun on third day; central moveable pupil	None	April 9th— +15 D. = $\frac{6}{18}$. +20 D. = 4 J.
6	28	G. H. Feb. 11th	M.	67	„	Right; extraction upwards; incision at sclero-corneal junction; lens capsule opened; attempted removal without iridectomy; iris subsequently removed; lens came out fairly clean; some soft cortex extruded by pressure afterwards	Favorable; no iritis	None, but needling would be beneficial	April 30th— +9 D. = $\frac{6}{18}$.
8	29	M. M. Feb. 18th	F.	58	„	Left; extraction up with iridectomy; cortex soft, pupil fairly clear after operation; patient nervous, and persisted in moving her eyes about during operation, or no iridectomy would have been done	Favorable	None	June 9th— +11 D., counts letters of $\frac{6}{9}$. +15 D., counts letters of 1 J. (Illiterate.)

Page in B. 90.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
10	30	A. R. March 14th	M.	68	Cocain	Left; extraction up with iridectomy; section close to edge of cornea at centre, in sclero-corneal junction at puncture and counter-puncture; lens nucleus came away easily, leaving much opaque cortex, most of which was subsequently coaxed out	Favorable	None	June 23rd— $+13$ D. $=\frac{6}{12}$. $+16$ D. $=1$ J.
12	31	A. Y. March 14th	F.	78	,,	Right; attempted extraction of cataract; patient restless; incision accomplished, but on attempting the iridectomy patient squeezed out the lens and a large quantity of clear vitreous; not much hæmorrhage; nothing further done; iris was not prolapsed when the eye was tied up	Wound healed and blood in a. c. gradually disappeared; but T. remained minus, with ciliary congestion and occasional pain	None	May 19th— "Can see a little." Cannot count fingers.
14	32	E. M. March 7th	F.	69	,,	Left; extraction up (W. G. L.); a preliminary iridectomy had been done in July, 1889; lens rather sticky, some soft cortex removed afterwards; a little clot left between lips of wound	Favorable	None	June 11th— $+9$ D. $=\frac{6}{6}$ partly. $+13$ D. $=1$ J.
16	33	J. B. April 3rd	F.	58	,,	Right; extraction up without iridectomy; lens came away well and fairly clean; some soft matter left could not be coaxed out in consequence of obstruction offered by the iris; pupil left central. Eserine after operation, not before	Favorable	March 17th, 1891— Membrane needled	April 7th, 1891— $\frac{+12 \text{ Ds.}}{+1 \text{ Dc.}} = \frac{6}{12}$. $\frac{+16 \text{ Ds.}}{+1 \text{ Dc.}} = 1$ J.

23	34	A. G. May 9th	F.	47	„	Left; extraction up with iridectomy; incision rather peripheral at summit; puncture and counter-puncture at junction, just in cornea; nucleus extruded by pressure; much soft cortex, of which a good deal was left	Favorable; no iritis	May 11th, '91—Membrane needled	July 6th, 1891— +11 D. = $\frac{6}{24}$. +14 D. = 10 J.
38	35	E. H. June 27th	F.	—	„	Left; extraction up without iridectomy; incision at sclero-corneal junction; lens extruded easily and fairly clean; iris refused to return, an attempt about to be made to remove it, large escape of vitreous; iris left in wound; pupil fully contracted by eserine before operation; patient became maniacal the day after operation	July 7th—Some iritis; prolapse of iris remained in wound; eye became quiet	None	No note of vision.
41	36	H. T. July 8th	M.	76	„	Right; extraction up with iridectomy; incision nearly accurately at sclero-corneal junction; lens came out fairly clean; very little soft matter removed afterwards	Favorable	None	Sept. 4th— $\frac{+10 \text{ Ds.}}{+\cdot5 \text{ Dc.}} = \frac{6}{18}$. +15 D. = 6 J.
50	37	M. B. Aug. 29th	F.	70	„	Left; extraction up with iridectomy; incision almost exactly at sclero-corneal junction, but rather short; iridectomy small and made in two snips, as shears did not cut at first; lens nucleus easily extruded, a good deal of soft cortex removed, but a little left at upper part	Favorable	None	Sept 22nd— +12 Ds. = $\frac{6}{18}$ +1·5 Dc. $\frac{+20 \text{ Ds.}}{+1\cdot5 \text{ Dc.}}$ = 1 J. at 6 in.
63	38	R. C. Sept. 26th	F.	68	„	Right; extraction up with iridectomy; incision rather short; lens came out nearly complete, brown in colour; very little bleeding; iris retracted from wound well	Favorable	None	Oct. 14th— $\frac{+11 \text{ Ds.}}{+1 \text{ Dc.}} = \frac{6}{60}$.

Page in B. 90.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation	Result.
65	39	P. W. Oct. 3rd	F.	65	Cocain	Right; extraction up; section corneal except at puncture and counter-puncture; an operation without iridectomy was intended, iris fell over knife and was cut, hence this portion was removed; lens came out fairly clean, a little soft cortex left in pupil at upper part; rather free bleeding from iris	Favorable; no iritis	None	Nov. 13th— +11 D. = $\frac{6}{18}$. +16 D. = 1 J.
76	40	J. S. Oct. 25th	M.	69	„	Left; extraction upwards; incision more corneal than was intended; conjunctiva at inner side folded over edge of cornea, and was cut through by knife; lens hard, brownish, very sticky and difficult to extrude; some cortical matter removed first, then an iridectomy done; nucleus at last coaxed out, and a little cortex subsequently	Favorable; wound healed slowly	None	No note of vision; good result.
80	41	S. H. Nov. 20th	M.	56	„	Left; extraction up with iridectomy; lens came away almost complete, very little cortical matter left in a. c.; cornea soft and crinkly	Favorable	None	Dec. 4th— +12 D. = $\frac{6}{24}$. +20 D. = 4 J.
83	42	W. B. Nov. 28th	M.	51	„	Left; extraction up with iridectomy; incision nearly at corneo-scleral junction, rather long conjunctival flap; lens nucleus came out readily, but left much soft cortex which could not be coaxed out; a good deal of grey opacity left in upper part of pupil	Favorable	April 20th, 1891— Membrane in pupil torn with needle	May 4th, 1891— +11 D. = $\frac{6}{9}$. +16 D. = 1 J.

Table II.—*Soft Cataracts*—11.

Mr. Nettleship's Cases (9).

44	43	E. P. Mar. 27th	F. 11	Cocain	Left curette extraction; keratome incision up and in; most of lens came away; had been needled March 25th. Lamellar	Favorable; no iritis	Apr. 1st, 1892—Needled	May 17th, 1892—+10 D. = $\frac{6}{15}$. +15 D. = 1 J. at 8 in.
87	44	R. S. Mar. 6th	M. 19	„	Right; keratome incision at outer side; lens matter evacuated by curette; came out well; had been needled March 4th. Lamellar	Favorable	Mar. 28th—Needled; good rent in capsule made. Oct. 23rd, 1891—Needled	Oct. 30th, 1891—+9 D. = $\frac{6}{9}$. +13 D. = 1 J. at 9 in.
87	45	R. S. May 16th	M. 19	„	Left; curette extraction inwards; incision with keratome; most of the lens matter came away; a little opaque matter left; had been needled May 12th. Lamellar	Favorable	Oct. 23rd, '91—Needled	Oct. 30th, 1891—+9 D. = $\frac{6}{6}$. +13 D. = 1 J. at 9 in.
89	46	E. L. May 6th	F. 8	„	Right; curette extraction; incision with keratome down and in; removal of lens imperfect; chippy matter left behind; had been needled May 2nd. Lamellar	Favorable	June 6th—Needled	May 27th, 1891—+7 D. = $\frac{6}{60}$. +9 D. = 14 J.
92	47	G. W. June 27th	F. 6	„	Right; curette extraction; most of lens removed; traumatic cataract from wound with scissors in May, 1887	Favorable	None	No note of vision.
121	48	A. O. Apr. 18th	F. 5	Ether	Right; curette extraction; incision with keratome; all the opaque lens matter came away easily; had been needled April 15th. Lamellar	Favorable	Mar. 18th, 1892—Needled; central clear space left	April 22nd, 1892—+12 D. = $\frac{6}{24}$.
121	49	A. O. July 22nd	F. 5	„	Left; curette extraction; lens matter seemed to be completely removed; had been needled July 18th. Lamellar	Favorable	Mar. 25th, 1892—Needled	April 22nd, 1892—+10 D. = $\frac{6}{24}$.

Page in B. 90.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
135	50	A. J. Apr. 18th	M.	7	Ether	Left; curette extraction; incision with keratome outwards; pupil left almost black; had been needled April 15th. Lamellar	Favorable; small anterior synechia	None	March 11th, 1892—Vacuolated capsule in each pupil, which obscures details; to come for needling.
135	51	A. J. Aug. 19th	M.	7	„	Right; curette extraction; incision up and out with keratome; lens came away well; had been needled Aug. 15th. Lamellar	Favorable; anterior synechia	None	
Mr. Lawford's Cases (2).									
42	52	A. B. Aug. 15th	F.	2	Chloroform	Right; incision with keratome at upper part of cornea; iridectomy; attempted extraction of shrunken lens with hook; only a small piece removed; the remainder of lens soft, but not easily moveable by curette pressure. Hereditary congenital cataract; child probably idiotic	Favorable	None	Vision not ascertained.
74	53	E. P. May 9th	F.	6	Cocain	Left; curette extraction; keratome incision at inner border of cornea; only a small amount of lens matter removed; had been needled May 6th. June 10th.—Operation repeated; incision upwards; a good deal of opaque lens matter removed; lamellar	Favorable	Oct. 31st—Needled Nov. 6th—Needled	Nov. 14th— $\frac{+13\ \text{Ds.}}{+2{\cdot}5\ \text{Dc.}} = 4\ \text{J.}$

REPORT

OF THE

DEPARTMENT FOR DISEASES OF THE SKIN, 1890.

By L. SCUDAMORE,
CLINICAL ASSISTANT.

The total number of patients admitted during the year was 740 of which, 395 were males, 345 females.

Among the more interesting cases that have been under observation during the year are the following—

1. *Albinismus.*—Thomas E—, æt. 31. The change of pigment was chiefly confined to the extensor surface of the arms, the back, and the buttocks. It was approximately symmetrical, was attended with considerable itching, and was of three years' duration. The patient, a musician, had suffered from pain in the smaller joints of his hands during this period, and was treated accordingly. He ceased to attend after a fortnight, during which time no change was observed in his condition.

2. *Perifolliculitis of Leloir.*—Una P—, æt. 23. The eruption was confined to the radial side of the extensor

surface of the left forearm ; it consisted in numerous small pustules seated upon a raised sharply circumscribed hour-glass-shaped area of hyperæmia ; five days' duration.

There were no constitutional symptoms and no indication was obtainable as to the origin of the affection. The arm improved rapidly under soothing lotions and was quite well within a month.

3. *Dermatitis herpetiformis.*—H. N—, æt. 17. Eruption on the face and body ; fourteen days. The eruption consists of flat patches with a red inflamed margin and the centre covered by a scab ; one patch has a crescentic shape. Each patch commenced as a small "bladder" which burst, the surface then scabbing over. The patches itch considerably. There were no general symptoms ; and no history of a previous similar affection. Perhaps for purposes of comparison I may quote two cases of herpes iris.

Emma D—, æt. 4. Eruption on the lower part of the back of the neck. Does not itch. The eruption began three weeks ago as a red patch about the size of a threepenny piece ; it gradually extended so as to produce the present appearance. There is a patch the size of a two-shilling piece, the edge is regular and consists in a line of small vesicles ; within this is a second similar ring and in the centre of the latter a group of three small papules ; the skin of the intervening parts is quite natural.

The child is very anæmic. Tongue clean ; bowels regular. There is no history of rheumatism.

4. *Erythema annulare.*—John H—, æt. 25. Erythematous and vesicular spots in the form of concentric rings, appearing on the backs of the hands, wrists, and elbows. The eruption is symmetrical ; smarts and itches ; nine days' duration. There is a personal and family history of rheumatism. The father of the patient has had gout and has also suffered from a similar eruption.

There were two cases of herpes gestationis observed, both occurring from a fortnight to three weeks after confinement. One of these was noticed for the first time, and presented no special features. The other had recovered in

three out of four confinements and assumed in the intervals the type of urticaria.

The cases in which purpura was a prominent symptom were five in number. They exhibit some variety in nomenclature. But as their differences are thus well marked and some of their resemblances are interesting, I have ventured to group them here together.

5. *Purpura.*—James P—, æt. 10. Eruption appeared suddenly two days ago; severe vomiting came on yesterday. Tongue furred. Thickly set over the legs are spots and patches of various sizes and shapes, of a dull red colour not raised and not disappearing on pressure. No pains anywhere. Patient has been taking fresh vegetables in abundance. Very anæmic.

6. *Purpura rheumatica.*—Emily H—, æt. 30. Patient has had a sore throat for two days. The eruption came on suddenly one day ago; it consists of small purpuric spots on the legs and thighs, not fading on pressure. Pains in the knees and elbows; heat and perspirations; temperature normal; no fluid in the joints; tongue dry and furred. She had had rheumatism five years before.

7. *Purpura.*—H. H—, æt. 15. Patient has suffered from thirst, constipation, and malaise for a week. The eruption came out three days ago; it consists of rounded spots of various sizes, the colour varying from a bright scarlet to a purplish red; they are largest over the body and upper extremities, smaller and more copious on the legs. Purplish bruises on the arch of the nose and about the right forearm. There is some blood in the saliva. No sponginess of gums. No history of hæmorrhage from any other mucous membrane; urine normal. No pains in joints. There was no history of rheumatism, and there had been nothing abnormal about patient's diet. But he had one brother "a bleeder."

8. *Erythema maculatum with purpuric extravasations.*—John B—, æt. 32. The eruption had appeared and dis-

appeared in crops on the legs and arms for the last five months. Two months ago he had pain and swelling of joints. The gums are slightly red and have been very tender; they bleed. The spots are purpuric and some are around hair-follicles. There has been no deficiency in his diet.

9. *Erythema nodosum.*—Alfred T—, æt. 12. Rounded or oval elevated patches with bright red surfaces and margins that sink gradually to the level of the surrounding skin. Two weeks' duration. Here and there are more dusky and has raised patches. Tongue furred; bowels constipated. Temp. 100·4°. Tonsils enlarged; has suffered from "sore-throat" for three or four years. There is the partly-healed scar of an old abscess above the sternum. No history of rheumatism. Patient was treated with iron internally, and thymol to the eruption which was quite well in a fortnight.

Table I.—*Statistical Table*, 1890.

Disease.	Jan.		Feb.		March		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Totals.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Erythematous Group:																											
Erythema simplex	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	1	1		1	3	4
„ papulatum	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	1
„ circinatum	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	2	0	2
Herpes iris	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	0	2
Erythema marginatum	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	1
„ multiforme	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	3	0	3
„ maculatum	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
„ nodosum	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
Urticaria	2	1	1	...	2	3	...	...	2	1	...	1	1	2	1	4	1	1	3	2	1	...	2	1	16	16	32
Herpetic Group:																											
Herpes zoster	...	1	...	...	...	...	...	...	...	...	2	2	...	...	...	...	2	...	...	1	...	2	...	...	4	6	10
„ gestationis	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	0	2	2
Dermatitis herpetiformis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	0	1
Pemphigus	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	0	1	1
Eczematous Group:																											
Eczema	16	14	9	9	13	12	6	8	12	10	8	11	7	16	9	5	6	9	11	14	10	4	4	1	111	113	224
Impetigo	...	...	1	...	...	...	...	...	...	...	3	...	...	...	1	...	...	...	3	1	...	...	...	...	8	1	9
„ contagiosa	1	...	...	...	1	2	1	1	1	1	1	...	3	1	4	1	...	2	2	...	...	1	1	...	15	9	24
Ecthyma	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	0	2
Dermatitis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	0	1

Disease.	Jan.		Feb.		March		April		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Totals.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Lichenous Group:																											
Lichen planus	...	1	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	0	4	4
„ ruber acuminatus	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	1
„ urticatus	...	...	...	...	...	..	...	...	1	1	...	1	...	2	1	...	...	...	1	...	...	...	...	...	3	4	7
Psoriasis Group:																											
Psoriasis	3	6	6	2	1	4	1	6	6	6	1	2	1	2	1	3	1	4	4	2	...	2	2	1	27	40	67
Pityriasis rubra	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
Acne Group:																											
Milium	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
Acne vulgaris	...	1	2	1	...	2	...	..	1	2	1	1	1	...	...	1	2	...	...	1	3	1	...	2	10	13	23
Sycosis	1	...	...	...	...	...	1	...	1	...	1	...	1	...	1	...	2	...	...	...	...	...	...	...	8	0	8
Acne rosacea	...	...	1	...	...	...	...	...	...	3	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	5	6
Hypertrophies:																											
Verrucæ	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
Ichthyosis	1	...	1	...	...	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	3	2	5
Morphœa	...	...	...	...	...	...	1	..	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	1	2
Atrophies:																											
Alopecia areata	1	1	1	3	2	1	1	1	1	...	1	4	4	1	3	3	...	2	2	1	2	...	...	1	18	18	36
New Growths:																											
Papilloma	...	...	1	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
Rodent ulcer	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	1
Lupus vulgaris	...	...	...	...	1	1	1	...	...	...	...	1	...	...	1	...	...	...	...	...	...	2	...	...	3	4	7
Scrophuloderma	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	..	1	0	3	3
Lupus erythematous	...	...	...	...	...	...	...	...	...	..	...	...	...	...	2	...	...	...	...	...	...	...	...	...	2	0	2
Infective Inflammations:																											
Folliculitis	...	...	...	...	1	...	...	...	...	..	...	...	...	...	...	...	...	...	1	1	...	...	...	...	2	1	3

Cellulitis	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	2
Abscesses	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
General Diseases:																											
Purpura	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	1	2	3
Rubeola	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	0	1	1
Varicella	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
Syphilis—*a.* Congenital	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	1	2
„ *b.* Acquired	1	4	...	2	...	3	...	...	2	4	3	...	1	3	1	3	1	1	...	...	3	...	1	...	13	20	33
Neuroses:																											
Pruritus	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	2	2	4
Medicinal Rashes:																											
Copaiba rash	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
Artificial Eruption:																											
Dermatitis artificialis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	0	1	1
Parasites:																											
Animal:																											
Scabies	7	6	9	10	7	2	1	1	1	...	...	1	4	...	5	3	3	...	2	1	4	3	...	...	37	21	70
Pediculi capitis	1	2	...	1	2	...	...	2	...	...	...	...	...	1	...	...	...	1	1	1	...	1	...	...	4	9	13
„ vestimentis	1	...	1	...	1	...	1	...	2	...	...	...	3	...	1	1	1	...	...	...	1	...	1	...	13	1	14
Vegetable:																											
Tinea tonsurans	2	1	7	3	4	1	4	1	4	4	1	3	5	1	3	3	5	2	1	2	4	...	...	2	40	23	63
„ circinata	...	...	...	...	...	...	1	...	1	1	2	1	2	...	2	...	...	...	...	...	...	...	...	1	8	3	11
„ favus	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	0	1	1
Pityriasis versicolor	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	1
Erythrasma	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
Seborrhœa corporis	1	...	...	...	...	...	...	...	1	...	...	1	1	...	...	...	...	...	...	...	1	...	...	...	4	1	5
„ sicca	...	1	...	...	...	1	...	...	...	2	...	...	1	1	...	1	...	...	...	...	...	...	...	...	1	6	7
„ capitis	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	3	0	3
																										Total	740

TABLE II.—*Ages in certain Groups.*

	-1.	-5.	-10.	-20.	-30.	-40.	-50.	-60.	-70.	-80.	Totals.
Eczema . .	M 13	M 15	M 12	M 34	M 12	M 10	M 4	M 4	M 3	M 3	
	F 10	F 19	F 16	F 18	F 13	F 9	F 9	F 11	F 5	F 2	
Total .	23	34	28	52	25	19	13	15	8	5	+2=224
Eczemat. Group	24	45	38	59	29	19	13	16	8	5	+2=258
Psoriasis . .	M 0	M 1	M 3	M 11	M 6	M 2	M 3	M 1	M 0	M 0	
	F 0	F 1	F 4	F 15	F 8	F 4	F 5	F 1	F 2	F 0	
Total .	0	2	7	26	14	6	8	2	2	0	67
Urticaria . .	M 2	M 6	M 0	M 4	M 3	M 0	M 1	M 0	M 0	M 0	
	F 0	F 6	F 3	F 0	F 1	F 3	F 3	F 0	F 0	F 0	
Total .	2	12	3	4	4	3	4	0	0	0	32
Erythem. Group	2	14	3	7	8	7	4	0	0	0	45
T. tonsurans .	M 1	M 20	M 14	M 5	M 0	M 0	M 0	M 0	M 0	M 0	
	F 0	F 9	F 11	F 1	F 0	F 0	F 0	F 0	F 0	F 0	
Total .	1	29	25	6	0	0	0	0	0	0	+2=63
Alopecia . .	M 0	M 1	M 3	M 12	M 0	M 0	M 2	M 0	M 0	M 0	
	F 0	F 1	F 6	F 4	F 2	F 4	F 1	F 0	F 0	F 0	
Total .	0	2	9	16	2	4	3	0	0	0	36

Among the cases of eczema was one of the acute disseminated form. The patient lived at Chelsea ; in his own case there was no history of contagion, but his child caught the disease from him.

No history of contagion was obtainable in any of the cases of Alopecia, nor was any instance met with of family predisposition to the disease. Out of thirty cases while sixteen discovered no nervous symptoms, five complained of neuralgia, seven of headache, and two of vertigo. In one notable case the headache, of an intense character, was referred to the opposite side to that affected ; it preceded the outward manifestation and disappeared entirely from the time of falling out of the hair.

The difference in the ages of those affected by Alopecia and *T. tonsurans* is sufficiently marked in the above table.

REPORT

OF THE

AURAL DEPARTMENT

FOR THE YEAR 1890.

By RICHARD LAKE, F.R.C.S.

During the year there were 607 new out-patients, exclusive of renewed letters. No patient has been counted more than once, though he may have attended with a new letter on separate occasions. The cases of in-patients with mastoid and intra-cranial inflammation secondary to ear disease are not included in this report, as they appear in the general medical and surgical reports of in-patients.

The following is a list of the chief operations performed :—

	Males.	Females.	Total.
Operations on adenoid growths	20	17	37
Removal of aural polypi	6	5	11
Incision of meatal abscesses	7	2	9
Removal of tonsils [1]	1	5	6
Incision of membrana tympani	4	1	5
Removal of nasal polypi	7	3	10
Curetting tympanum	3	0	3
Opening mastoid antrum	1	1	2
Total	49	34	83

[1] Does not include tonsils removed at same time as adenoid growths.

Also one removal of necrosed septum nasi and one foreign body from nose.

N.B.—The galvano-cautery was in use during the year in the treatment of nose and throat affections.

Of the 607 cases, 15 were affected with nasal polypi, ozæna, and other diseases of the nose uncomplicated with ear disease. Of the 592 ear cases, the external ear was the seat of disease in 17·9 per cent., the middle ear in 76·2 per cent., the internal ear in 5·9 per cent.

Of the middle ear cases there was suppurative disease in 52·2 per cent., and non-suppurative disease in 24 per cent. The cases of adenoid growths in naso-pharynx were complicated with suppurative ear catarrh in 39 per cent., and the operation on the throat was as a rule curative of the ear disease.

The following analysis of 249 cases of chronic suppurative catarrh of the middle ear shows the relative frequency at various ages.

1 to 5	56	102	
6 to 10	46		
11 to 20		85	
			187
21 to 40			49
41 and over			13
Total			249

	Males.	Females.	Remarks.
I. Diseases of External Ear.			
Cerumen	33	25	
Eczema	10	7	
Inflammation of meatus	2	2	
Abscess of meatus	11	4	
Aural exostosis	4	1	
Foreign bodies	2	4	Only include those without middle ear disease. 2 flies, 1 piece of paper, 1 fragments of celluloid hair-pin, 1 *Aspergillus niger*.
II. Diseases of Middle Ear.			
Chronic myringitis.	1	—	
Rupture of membrana tympani	2	—	

	Males.	Females.	Remarks.
II. Diseases of Middle Ear—*continued.*			
Acute otitis media:			
a. Without perforation	3	2	Includes cases following acute rhinitis.
b. With perforation	16	7	
Chronic otitis media:			
a. With suppuration	101	108	
b. Mucous catarrh	19	14	
Chronic dry catarrh	25	39	
Cicatricial membranes	10	7	
Adenoid vegetations	31	28	
Caries of mastoid	2	3	
Aural polypi	5	4	
Eustachian obstruction	8	10	These are cases where this was the chief trouble.
Senile degeneration of membrane, &c.	—	2	
Otalgia	—	4	
III. Diseases of Labyrinth.			
Eighth nerve and conducting apparatus:			
Syphilis (chiefly congenital)	—	6	
Degeneration of 8th nerve.	5	3	
Sequel of acute rheumatism	—	2	
Nerve tinnitus	6	2	
Aural vertigo	7	3	
Labyrinthine concussion	1	—	

DESCRIPTION OF PLATE,

Illustrating Mr. Richard Lake's Report of the Aural Department.

No. 1.—Acute myringitis, secondary to acute middle ear catarrh of two days' duration. From a case in Charity Ward.

No. 2.—Acute myringitis, A. W—, æt. 21, of eleven days' duration, shows early striation of membrane (*vide* Aural Report, 1889, fig. xix).

No. 3.—Chronic myringitis, with granulation on membrane posterior to handle; due to irritation of ceruminous plug; patient æt. 28.

No. 4.—Acute otitis media, with large perforation in posterior segment, and retention of pus in anterior part of tympanum, complicated with facial paralysis.

No. 5.—Chronic dry catarrh in man æt. 29; enlarged vessels round handle, which is displaced forwards; incus and stapes visible through membrane.

No. 6.—Early stage of cicatricial membrane in a man æt. 21, with a history of otitis media suppurativa for five years.

No. 7.—Small polypus growing through perforation in Shrapnell's membrane.

No. 8.—Concavity or retraction of membrane, with prominence of posterior fold and retraction of handle, which is rather red.

No. 9.—Abscess of membrane occupying lower part; in a sailor.

No. 10.—Ditto one week after evacuation of contents; small granulations at place of perforation.

No. 11.—Perforatio obsoleta in a man æt. 60; sequel to acute otitis media one year ago.

No. 12.—Chronic dry catarrh in a schoolmaster æt. 40, with adhesion to promentory.

No. 13.—Chronic dry catarrh, with large adhesion below the handle.

No. 14.—Hyperostosis in bony canal of a man æt. 60.

No. 15.—Perforation, due to violence, in an ear previously affected with commencing dry catarrh; in a soldier æt. 27, from Chatham.

From drawings by Mr. R. Lake.

PRINTED BY ADLARD AND SON, BARTHOLOMEW CLOSE, E.C.

R. Lake del.

Mintern Bros. Chromo lith.

St. Thomas's Hospital
MEDICAL SCHOOL.

CALENDAR
AND
PROSPECTUS
FOR THE
YEAR COMMENCING OCTOBER 1ST 1891.

1891 & 1892.

LONDON:
PRINTED BY WILLIAM CLOWES AND SONS, LIMITED,
STAMFORD STREET AND CHARING CROSS.

CONTENTS.

MEDICAL SCHOOL.

For information on all matters relating to the Medical School, Prizes, Scholarships, &c., application should be made to the Medical Secretary, Mr. G. RENDLE, at the Hospital, Albert Embankment, S.E., personally (10 to 4, Saturday 10 to 1) or by letter.

A Register of LODGINGS suitable for Students has been recently revised, and is kept in the Secretary's Office. Information as to terms, accommodation, &c., can be obtained on application. This Register has been especially prepared with a view to the convenience of new Students for whose accommodation in lodgings or otherwise no definite arrangements have been made.

Medical Practitioners, Clergymen, and Private Families residing in the neighbourhood receive Students for residence and supervision.

THE STUDENTS' CLUB (SOCIAL AND ATHLETIC).

This Club has been established, at considerable expense, for the convenience of Students, and is maintained jointly by a yearly grant from the Medical Staff, and the Entrance Fees of Members.

All Students are strongly advised to join the Club when they enter the Medical School.

By payment of the Entrance Fee a Student becomes a permanent member of the Club. There is no Annual Subscription.

The Entrance Fee for a Student joining in his first year is 3 Guineas, in his second 2½ Guineas, and in other years 1½ Guineas.

A Student can, if he prefer it, join one Section only of the Club. The Entrance Fee for either the Social or Athletic Section alone is, for First year Students, 2 Guineas; Second year Students, 1½ Guineas; and for those of other years, 1 Guinea.

The Club premises are situated in the Medical School Building, and consist of a Dining Room, where between 9 a.m. and 6 p.m. refreshments can be obtained; a Smoking and Reading Room, supplied with most of the Daily and Illustrated Weekly Papers. A Cloak Room, with Lavatory and Bath Rooms, is attached.

The Athletic section comprises the Athletic, the Cricket, the Cross Country, the Football (Rugby and Association), the Rifle, the Rowing, the Swimming and the Tennis Clubs.

The Entrance Fees may be paid to the Medical Secretary, Mr. G. RENDLE, or the Librarian, Mr. G. S. SAUNDERS.

Students who join the Athletic section only are not entitled to make use of the Club premises.

St. Thomas's Hospital

MEDICAL SCHOOL.

The WINTER SESSION 1891 – 92 will commence on THURSDAY, OCTOBER 1st, and terminate on MARCH 31st.

The SUMMER SESSION will begin on MAY 1st, and terminate on JULY 31st.

The Prizes will be distributed by Sir G. M. HUMPHRY, M.D., LL.D., F.R.S., F.R.C.S., Professor of Surgery, University of Cambridge, in the Governors' Hall on THURSDAY, October 1st, at 3 P.M. During the afternoon the various Departments of the Hospital and School will be open for the inspection of Visitors.

Refreshments will be provided in the Library.

The Annual Dinner, in which all former and present Students are invited to join, will take place the same evening at the Savoy Hotel, at 6 for 6.30 o'clock, DR. GERVIS in the Chair.

THE first hospital of St. Thomas, within the precinct of the Priory of St. Mary Overie, being destroyed by fire in the year 1207, the prior and convent erected in the same year near the site of their house a temporary hospital. This building was in the emergency used for religious purposes; mass was said there until the priory was rebuilt. In 1228 Peter de Rupibus, Bishop of Winchester, built the Hospital of St. Mary or St. Thomas, Overie, on the opposite or eastern side of the highway, on land provided by Amicius, Archdeacon of Surrey, and dedicated it to St. Thomas the Martyr.

The following is a translation of the "charter" of 1228:—

"The Lord Peter's charter of indulgence for twenty days granted by him for this hospital.

"Peter, by the grace of God Bishop of Winchester, to all the faithful in Christ in the diocese of Winchester, greeting. In Him who is the salvation of the faithful. As saith the Apostle, bodily discipline which consists in

fasts, vigils, and other mortifications of the flesh, profiteth little, while piety availeth for all things, having the promise of the life which now is, and of that which is to come.

"Our Lord Jesus Christ among the works of piety enumerates, commends, and teaches us to fulfil six, as though more praiseworthy and more meritorious than the rest, saying, 'I was an hungred, and ye gave Me to eat; I was thirsty, and ye gave Me to drink; I was a stranger, and ye took Me in; I was naked, and ye clothed Me; I was sick, and ye visited Me; in prison, and ye came to Me.' To them that perform these works of piety He shall grant His blessing and the glory of His heavenly kingdom, saying, 'Come, ye blessed of My Father, receive the kingdom which has been prepared for you from the beginning of the world.' But to them that neglect and do not perform works of compassion He threatens His curse and the penalty of eternal fire, saying, 'Go, ye cursed, into eternal fire, which has been prepared for the devil and his angels.' It is therefore to be borne in mind, my dearest sons, and more deeply laid to heart, how needful and how conducive to the salvation of our souls it is to exercise more readily those works of piety whereby blessing is promised to us, and the felicity of eternal life is gained.

"Behold at Southwark an ancient hospital, built of old to entertain the poor, has been entirely reduced to cinders and ashes by a lamentable fire. Moreover, the place wherein the old hospital had been founded was less suitable, less appropriate for entertainment and habitation, both by reason of the straitness of the place, and by reason of the lack of water and of many other conveniences: according to the advice of us, and of wise men, it is transferred and transplanted to another more commodious site, where the air is more pure and calm, and the supply of waters more plentiful. But whereas this building of the new hospital calls for many and manifold outlays, and cannot be crowned with its due consummation without the aid of the faithful, we request, advise, and earnestly exhort you all, and with a view to the remission of your sins enjoin you, according to your abilities, from the goods bestowed on you by God, to stretch forth the hand of pity to the building of this new hospital, and out of your feelings of charity to receive the messengers of the same hospital coming to you for the needs of the poor to be therein entertained, that for these and other works of piety you shall do, you may, after the course of this life, reap the reward of eternal felicity from Him

who is the Recompenser of all good deeds, and the loving and compassionate God. Now we, by the mercy of God, and trusting in the merits of the glorious Virgin Mary, and the Apostles Peter and Paul, and St. Thomas the Martyr, and St. Swithin, to all the believers in Christ, who shall look with the eye of piety on the gifts of their alms—that is to say, having confessed, contrite in heart and truly penitent, we remit to such twenty days of the penance enjoined on them, and grant it to them to share in the prayers and benefactions made in the church of Winchester, and other churches erected by the grace of the Lord in the diocese of Winchester. Ever in the Lord; Farewell."

The Bishop of Winchester or the Archbishop seems to have granted, in 1277, to the Brethren power to elect their own Master; in a visitation, 1323, they are ordered to follow the rule of St. Augustine—the rule of the parent house—in obedience, chastity, renunciation of individual property, and the Master to eat with the Brethren.

In 1417 the Master and Brethren formed a Court of themselves, and exercised authority within the precincts of the Hospital over persons regular or secular, and in cases civil or even criminal.

The Hospital, built in 1228, had by 1507 become dilapidated and insufficient; great efforts were then made to rebuild and enlarge it.

In the Duchy of Lancaster records there is "the Rentall of Thomas Becketts hospitall in Southwarke, of all the lands and tenements belonging to the hospitall." It contains the names of the tenants and the rents paid; it is without date, but from internal evidence must be early in the sixteenth century.

Within the precincts of the hospital was the renowned printing press of James Nycolson, who, in 1527, signed the contract for the painted windows of King's College, Cambridge, as "James Nycolson, of St. Thomas's Spyttell in Southwark." The most remarkable issue from this press was the first English Bible printed in England, inscribed thus—"Imprynted in Southwarke in St. Thomas Hospitale by James Nycolson. Dedicated by M. Coverdale to the King 1537."

About this time there were a Master, Brethren, and three Lay Sisters; forty beds were made up for poor, infirm, and impotent people, who were supplied with victuals and firing.

In the year 1535, Henry VIII. was excommunicated by Pope Paul III., and, declaring himself head of the church, proceeded to dissolve the Catholic houses, whose large

revenues went to the Crown. There seem to have been 645 monasteries and abbeys thus treated, twenty-eight of which had abbots with seats in Parliament, ninety colleges and free chapels, and 110 hospitals of various descriptions. It is certainly in favour of the sweeping change that so able and honest a man as Sir Richard Gresham, the Lord Mayor of London, should have put his hand to the following petition to the King:

"Most redowted, puysant, and noble Prince * * * *—here and within the cytie of London be iij hospitalls or spytells commonly called Seynt Georges Spytell, Seynt Barthilmews Spytell, and Seynt Thomas Spytell, and the new Abbey of Tower Hill, founded of good devotion by auncient fathers, and endowed with great possessions and rents only for the reliefe, comforte, and helping of the poore and impotent people lying in every street, offending every clene persone passing by the way with theyre fylthy and nasty savors. Wherefore may it please your merciful goodness, enclyned to pytie and compassion, for the reliffe of Xts very images, created to his own similitude, to order by your high authoritie, as supreme head of this Church of England, or otherwise by your sage discretion, that your mayer of your cytie of London, and his brethren the aldermen for the time being, shall and may from henceforth have the order, disposition, rule and governaunce both of all the lands, tenements, and revenues apperteynyng and belongyn to the said Hospitals, governors of them, and of the ministers which be or shall be withyn any of them, and then your grace shall facilie perceyve that where now a small number of Chanons, Priests, and Monkes be founde for theyr own profitt only, and not for the common utilitie of the realme, a great number of poore, needy, syke and indugent persones shall be refreshed, maynteyned, and comforted; and also healed and cured of their infermities frankly and freely by physicions, surgeons and potycaries, which shall have stipende and salarie only for that purpose; so that all impotent persones not able to labour shall be releved, and all sturdy beggars not willing to labour shall be punished."

St. Thomas's Hospital being claimed by the King as Church property, was surrendered to him by Thomas Thirleby, the then master, on the 15th July, 1538. It was called St. Thomas à Becket's Spittil. Its yearly revenue was estimated at £266 17*s.* 6*d.*, and an annual pension of 5*s.* 8*d.* was payable by the master, and another of 2*s.* 1*d.* by the curate, to the Archdeacon of Surrey. Soon after the seizure, we find that the Citizens of London purchased of the Crown some of its landed estates, producing about £160 yearly. The want

of the hospital thus destroyed was felt immediately. Wounded soldiers from the army in France, and the sick poor in general were without provision or help, and Henry proposed granting to the City the Mansion house of St. Bartholomew's, the dissolved house of Grey Friars adjoining, and the unoccupied fabric of St. Thomas's Hospital. The latter was intended by Henry to receive the name of the Hospital of the Holy Trinity, and to be allotted exclusively to lame, wounded, and diseased soldiers. The monastery of Grey Friars was to be for the education and maintenance of fatherless children and those of poor parents. The intentions of Henry were overtaken by death, but not before he had conferred upon the Citizens of London the Hospital of St Bartholomew's and also that of Bethlem for lunatics.

It is from the death of Henry that the connection of St. Thomas's Hospital with the city of London appears to begin. To meet the needs of the sick and destitute who had before depended on the charity of the religious houses, a Committee or Board of Inquiry was instituted by the Citizens, with the sanction of King Edward. About 2,100 souls were reported as fit recipients of relief, as fatherless children and invalids, or as "Idle rogues of both sexes who were levying contributions on public sympathy by feigned tales of sorrow." It was proposed to establish receptacles for each class in the unoccupied monastic buildings, and a pecuniary contribution was set on foot to complete the work. They bought the dissolved house of the Franciscans or Grey Friars near St. Bartholomew's Hospital, and also by charter from the King received a grant as follows: "That the said mayor, commonalty, and citizens, and their successors, may have and enjoy all the franchises, immunities, and privileges whatever, which any Archbishop of Canterbury, and which the said Charles late Duke of Suffolk, or any master, brethren, or sisters of the late Hospital of St. Thomas in Southwark aforesaid; or any Abbot of the said monastery of St. Saviour, Saint Mary Bermondsey, next Southwark aforesaid, or any prior and convent of the priory of St. Mary Overie, ever had or enjoyed, or which we hold or enjoy, or our most dear father Henry the VIIIth, late King of England, or had enjoyed, or ought to have, hold, and enjoy the same: and that none of our heirs or successors may intermeddle with this our grant."

The Greyfriars became Christ's Hospital, and the Southwark site the Hospital of the Holy Trinity or St. Thomas's. The Lord Mayor and certain citizens then met on the 6th of October, 1552, and constituted themselves by royal per-

mission governors of the hospitals, and almoners of the money collected. The Hospital of the Holy Trinity they named, in compliment to Edward, the "King's Hospital," and ordained it to receive 260 "wounded soldiers, blind, maimed, sick, and helpless objects."

They also directed that 380 children should be received into Christ's Hospital.

To complete the scheme, the old palace of Bridewell, in Blackfriars, where the Emperor Charles V. had lodged in 1522, when on a visit to Henry VIII., and where subsequently Wolsey had lived, was granted to the City by Edward as a house of correction for dissolute persons and idle apprentices, and for the temporary maintenance of distressed vagrants.

Lastly, the lands lately belonging to the Palace of the Savoy were conferred jointly on the three foundations; and a month only before the end of Edward's short reign, he incorporated by a second charter bearing date the 6th of June, 1553, the Lord Mayor and commonalty of the City of London in succession as perpetual governors of Saint Bartholomew's, Christ's, Bridewell, and the king's Hospital (which last received the name of ST. THOMAS THE APOSTLE), and secured to them the possession of all the estates and revenues appertaining to them by previous deeds of gift. So were the royal hospitals founded.

In 1557 the laws were framed and printed under the name of "The Order of the Hospitalls of K. Henry the VIII. and K. Edward the VI., viz. St. Bartholomew's, Christ's, Bridewell, St. Thomas's. By the Maior, Cominaltie, and Citizens of London," &c.

Successive bequests and donations continued to augment the property of the charities, but during the reigns of Elizabeth, James I., Charles I., and the Protectorate, there appear few facts to note. In the abstract of the charter of confirmation granted to the City in 1663 by Charles II. on his restoration, we find the charter of Edward acknowledged and confirmed. The Great Fire of London in 1666 injured St. Thomas's in its revenues only; and a fire in Southwark anno 1676, ceased, "as if by divine interposition," at the Hospital, probably a strong and isolated block of building. Shortly after this, however, it was found necessary to rebuild the fabric, and in 1693 subscriptions were opened for this purpose. A long list of benefactions in this and the succeeding year, amounting in all to £37,769 3*s.*, is given by Golding, who especially singles out Sir Robert Clayton for eulogium. The statue then erected to him, and still extant,

was originally dated 1701, but this was altered on his death to 1714. He was the founder of the old square in which it stood, replacing what Golding terms "a low swampy structure of the monastic order." In 1707, Mr. Guy, founder of the neighbouring hospital, erected three wards at his own charge. In 1717, the back block of buildings adjoining Guy's Hospital was added. With the exception of the two large blocks forming the Borough frontage, the north wing erected in 1833, and the south wing in 1839, the fabric seems to have remained unchanged until its purchase by the railway. In the centre of the front quadrangle stood the brass statue of King Edward, by Scheemakers, erected first in 1737, in pursuance of the will of Charles Joye, some time treasurer of the Hospital. It now stands in the grounds of the New Hospital.

It is a matter of more difficulty to trace the early history of the medical school in connection with the hospital. For the facts which follow we are indebted to the late R. G. Whitfield, Esq., who, from the long period during which his family had been associated with this foundation, was perhaps more qualified to speak than any other person.

The earliest mention in the hospital books of an apprentice is on December 31st, 1561. It is not until 1702 that a law is met with precluding pupils or surgeons from dissecting the dead body without permission from the treasurer.

In 1703 the grand committee resolved that no surgeon should have more than three "Cubbs," a term altered in 1758 to that of "Dressers." Besides these there were also apprentices to the surgeons of the hospital, and ordinary pupils. The first mention of lectures occurs soon after the appointment of Wm. Cheselden, in 1718. These he at first gave at his own house, but afterwards by permission in the hospital. They were on anatomy and surgery. In 1723 a regular registry was ordered to be kept by the apothecary, of pupils entering to surgical practice. In 1725, Guy's Hospital was opened for the reception of patients. In 1751 the assistant-physician was allowed to take two pupils for his own benefit. In 1768, an additional surgeon, Mr. Joseph Else, was elected to read lectures to the pupils.

The students of Guy's Hospital had by courtesy been allowed to attend the operations, and a similar favour admitted the St. Thomas's men to those at Guy's. But on the 8th November, 1768, it was formally resolved that the pupils of each hospital have the liberty of attending not only the operations, but surgical practice, and the money to be divided between the six surgeons and two apothecaries.

Hence the appellation of the "United Hospital"; an amalgamation never extended beyond the surgical practice.

To Mr. Else is due the foundation of a regular anatomical school. Mr. Cline, who in 1781 was appointed to read lectures conjointly with Mr. Else, was mainly instrumental in bringing it to its greatest celebrity. At Mr. Else's death, Mr. Cline purchased the collection of preparations made by him and Mr. Girle, a former surgeon, which are now in the hospital museum, and became sole lecturer on anatomy. In 1788 he also became surgeon to the hospital. Mr., afterwards Sir Astley, Cooper was apprenticed to Mr. Cline in 1784, and before his election, as one of the surgeons to Guy's Hospital in 1800, was joint lecturer with his teacher on anatomy and surgery. They both added materially to the pathological museum.

In 1812 Mr. Henry Cline was elected surgeon to St. Thomas's Hospital on his father's resignation, and carried on the anatomical lectures conjointly with Astley Cooper. In 1813 a new anatomical theatre and museum were built, the hospital giving £3000 for the purpose, and the two lecturers £1000 each. In 1815 Mr. Benj. Travers, an apprentice of Astley Cooper's at Guy's, was elected surgeon, according to the established rule which gave the vacancy to the senior apprentice of either institution. Mr. Travers joined in the lectures, devoting his attention specially to ophthalmic surgery. In 1820 Mr. Joseph Henry Green was elected surgeon on the death of his cousin Mr. Hy. Cline, having been apprenticed to his uncle Mr. Cline in the year 1809. From 1820 to 1825 he lectured with Astley Cooper. At this period all the branches of medical study,—viz., medicine, chemistry, materia medica, midwifery, botany, and physiology —were lectured on at Guy's Hospital, and no physician of St. Thomas's was allowed to share them.

In 1824 Sir A. Cooper resigned the surgical chair, and Mr. C. Aston Key, his apprentice and nephew by marriage, joined Mr. Green in the office. Mr. Frederick Tyrrell, standing in exactly the same relation to Cooper, received permission to lecture on diseases of the eye. In the following year Cooper showed signs of cerebral disturbance, and the family desired that his nephew, Mr. Bransby Cooper, should be his successor. But the claims of Mr. John Flint South were considered superior, and he was appointed. From this cause the "United Hospitals" were severed, and a complete school set up in both. The majority of the students clung to Guy's, where the prestige of the great Sir Astley was still strong;

and St. Thomas's school began to sink. The establishment of the Aldersgate Street private school under Tyrrell and Lawrence materially aided in this declension, as did also the secession of Dr. Elliotson to the newly-established University College, and the foundation of a fresh school at King's College, where for a time the surgical lectures were given by Mr. Joseph Henry Green, although a surgeon of St. Thomas's.

Owing to the unprosperous state of affairs in 1842, the Governors came forward to reorganize the school, and the aid of Mr. R. D. Grainger, whose popularity had been established in the Webb Street private school, was obtained. Mr. Joseph H. Green also rejoined the school; and Dr. Marshall Hall, Dr. Hodgkin, Dr. Martin Barry, Dr. Gregory, and Mr. Benjamin Travers contributed to its efficiency. In 1847 the Governors added to the School a lectureship on general pathology in connection with the hospital practice, and appointed to that lectureship and the associated clinical duties Mr. John Simon, whom afterwards (1853) they made one of the Surgeons. In 1855, they added a lectureship on public health, and appointed to it Dr. Headlam Greenhow, who afterwards became Physician to the Middlesex Hospital. This state of affairs continued until 1858, when the Governors gave back the management, and its attendant risks, into the hands of the lecturers.

For some years it was maintained with difficulty, and much self-sacrifice on the part of the staff, during what may be termed a transitional period, in the hope, now realized, of its once more developing into an institution worthy of its old traditionary glories.

From its foundation down to the year 1862, the Hospital occupied the original site near London Bridge, but in that year the property was sold for the extension of the railway accommodation, and the establishment temporarily removed to the Surrey Gardens, where it was carried on till the Summer of 1871. In 1868 the first stone of the new Hospital at Westminster Bridge was laid by the Queen, and the completed building was opened by Her Majesty in 1871. In September the patients were first admitted into the new Hospital, and the Medical School was opened on October the 2nd.

THE HOSPITAL.

The original Hospital latterly contained 500 beds. The present building contains in all 572 beds. It consists of six blocks appropriated to the reception of patients; with one for the administrative and other offices, and one for the Medical School. The Ward blocks, though connected by corridors, stand apart, so as to afford free exposure in all directions. The Wards, with the exception of four which are placed on the ground floor, occupy the first, second, and third floors. Generally, each Ward affords accommodation for 28 beds, which are placed against the piers between the windows, so as to secure thorough ventilation. In a small Ward annexed to each larger Ward, there are two beds for cases requiring special care or treatment.

Of the whole accommodation of the Hospital, about 180 beds are appropriated to ordinary Medical cases, and 230 to ordinary Surgical cases. There are also special Wards for the reception of diseases peculiar to women; for diseases of the eye; for venereal affections; and for children under six years of age. In one of the blocks, separated from the rest of the establishment, there are Wards for infectious diseases.

The space provided for each bed in the ordinary Wards is upwards of 1,800 cubic feet, and in the block appropriated to infectious diseases, about 2,500 cubic feet.

The Out-patients' Department is extensive and well arranged, and every facility is afforded for the treatment of different forms of Medical and Surgical casualties and diseases.

During the twelve months ending December 31st, 1890, the number of patients admitted into the Hospital amounted to 4,862. In the same period, 25,542 Out-patients have been treated, and in the Maternity department 2,247 women have been attended at their own homes. Casualties, to the number of 67,389 attendances, were treated during the same period.

THE MEDICAL SCHOOL.

The School buildings stand at the southern extremity of the Hospital, from which they are isolated by a large open quadrangle with terrace overlooking the river. They contain ample accommodation for large classes of students.

The Museum is one of the most important in London. There is a large Reading Room and Library for the use of the pupils.

In addition to these are the various Lecture Rooms, the Dissecting Rooms, the Laboratories for Practical Physiology, for Practical Chemistry and Bacteriology, and the Post-mortem Rooms.

NIGHTINGALE NURSING SCHOOL.

The Committee of the "NIGHTINGALE FUND" have arrangements with the authorities of St. Thomas's for educating Women as Hospital Nurses. On the satisfactory completion of one year's training, they will be required to enter into service as Nurses in the Metropolitan or Provincial Hospitals or Infirmaries. A limited number of gentlewomen can be admitted under special agreements to this course of training, with a view to qualify themselves for superior appointments.

The Regulations as to the admission of Candidates may be obtained by writing to Henry Bonham-Carter, Esq., the Secretary of the Nightingale Fund, 5, Hyde Park Square, London, W.

Institutions requiring trained Superintendents or Nurses are requested to apply to the Secretary of the Nightingale Fund, or to Miss L. M. Gordon, the Matron of the Hospital, giving as long previous notice as possible of their requirements.

Women wishing to be trained should, whenever it is possible, make personal application to Miss Gordon, to be entered on the list of Candidates, for admission as vacancies occur.

CONSULTING STAFF OF THE HOSPITAL.

Physicians.

T. A. Barker, M.D., Cantab. et Edin.
Sir J. Risdon Bennett, M.D. Edin., F.R.S.

Surgeons.

F. Le Gros Clark, F.R.S.
Sir John Simon, K.C.B., Hon. M.D. Dub., F.R.S., D.C.L.
Sydney Jones, M.B. Lond.

Obstetric Physician.

H. Gervis, M.D. Lond.

Ophthalmic Surgeon.

R. Liebreich.

VISITING STAFF.

Physicians.

J. S. Bristowe, M.D. Lond., LL.D., F.R.S.
W. M. Ord, M.D. Lond.
John Harley, M.D. Lond.
J. F. Payne, M.D. Oxon.
Seymour J. Sharkey, M.A., M.D. Oxon.

Surgeons.

John Croft (retiring in 1891).
Sir William Mac Cormac, M.A. D.Sc., M.Ch. Hon. Causâ.
A. O. Mac Kellar, M.Ch.
H. H. Clutton, M.A. Cantab.

Assistant Physicians.

W. B. Hadden, M.D. Lond.
T. D. Acland, M.A., M.D. Oxon.
H. P. Hawkins, M.A., M.B. Oxon.

Assistant Surgeons.

William Anderson.
B. Pitts, M.A., M.C. Cantab.
G. H. Makins.

Obstetric Department.

Physician.—C. J. Cullingworth, M.D.
Assistant Physician.—R. Cory, M.A., M.D. Cantab.

Eye Department.

Surgeon.—E. Nettleship.
Assistant Surgeon.—J. B. Lawford.

Throat Department.

Physician.—F. Semon, M.D. Berlin.

Skin Department.

Surgeon.—William Anderson.

Ear Department.

Surgeon.—C. A. Ballance, M.S. Lond.

Dental Department.

Surgeon.—C. E. Truman, M.A. Cantab.

Resident Assistant Physician.

H. G. Turney, M.A., M.B. Oxon.

Resident Assistant Surgeon.

E. C. Stabb, F.R.C.S.

Anæsthetists.

Walter Tyrrell and E. F. White, F.R.C.S.
Anæsthetist to the Dental Department.

Electrician.

W. J. Kilner, B.A., M.B. Cantab.

Pharmaceutist.

Edmund White.

Demonstrators of Morbid Anatomy.

W. B. Hadden, M.D. Lond.
H. P. Hawkins, M.A., M.B. Oxon.

Analytical Chemist.

Albert J. Bernays, Ph.D., F.C.S., F.I.C.

LECTURERS.

A. W. Bennett, M.A., B.Sc. Lond., F.L.S.
T. Cranstoun Charles, M.D.
H. Rayner, M.D.
Edward Seaton, M.D.
S. G. Shattock, F.R.C.S.
C. S. Sherrington, M.A., M.B. Cantab.
W. H. Stone, M.A., M.B. Oxon.

Medical Registrar.

H. W. G. Mackenzie, M.A., M.D. Cantab.

Surgical Registrar.

E. C. Stabb, F.R.C.S.

Curator of the Museum.

S. G. Shattock, F.R.C.S.

Librarian.

G. S. Saunders.

Dean of the School.

G. H. Makins, F.R.C.S.

Secretary to the School.

George Rendle, M.R.C.S.

LECTURES AND DEMONSTRATIONS.

LECTURERS.

Chemistry and Practical Chemistry ..	Dr. BERNAYS.
Materia Medica	Dr. HADDEN.
Descriptive Anatomy	Mr. ANDERSON and Mr. MAKINS.
General Anatomy and Physiology ..	Dr. SHERRINGTON.
Practical Physiology	Dr. T. CRANSTOUN CHARLES.
Midwifery, and Diseases of Women ..	Dr. CULLINGWORTH.
Practical and Manipulative Surgery	Mr. MAC KELLAR, Mr. PITTS, and Mr. BALLANCE.
Medicine	Dr. BRISTOWE and Dr. ORD.
Surgery	Sir WILLIAM MAC CORMAC and Mr. CLUTTON.
Pathological Anatomy	Dr. PAYNE, Dr. HADDEN and Mr. SHATTOCK.
Forensic Medicine and Toxicology ..	Dr. CORY and Mr. MAC KELLAR.
Therapeutics	Dr. HADDEN.
Diseases of the Eye	Mr. NETTLESHIP and Mr. LAWFORD.
Mental Disease	Dr. RAYNER.
Public Health and Sanitary Science ..	Dr. SEATON.
Clinical Medicine	The PHYSICIANS.
,, ,, *Obstetric*	Dr. CULLINGWORTH.
,, *Surgery*	The SURGEONS.

Botany	Mr. A. W. BENNETT.
Physics and Natural Philosophy	Dr. S. W. WHEATON.
Comparative Anatomy and Zoology ..	Mr. F. G. PARSONS.

TEACHERS AND DEMONSTRATORS.

Practical Chemistry	Dr. BERNAYS.
Anatomy	The LECTURERS, with Mr. PARSONS Mr. ABBOTT and Mr. ROBINSON.
Physiology and Practical Physiology ..	
Elementary Clinical Medicine	Dr. ACLAND and Dr. HAWKINS.
Practical and Manipulative Surgery	Mr. MAC KELLAR, Mr. PITTS and Mr. BALLANCE.
Morbid Anatomy	Dr. HADDEN and Dr. HAWKINS.
Morbid Histology	Dr. HAWKINS.
Diseases of the Throat	Dr. SEMON.
,, ,, *Skin*	Mr. ANDERSON.
,, ,, *Ear*	Mr. BALLANCE.
,, ,, *Teeth*	Mr. TRUMAN.

SUGGESTIONS TO STUDENTS ABOUT TO ENTER THE MEDICAL PROFESSION.

Registration. The commencement of Medical Study cannot be registered at the Office of the General Medical Council until the Student has passed a Preliminary Examination in the subjects of General Education as specified in the following list, which, however, will be modified after January 1st, 1892:

(1) English Language; (2) Latin; (3) Arithmetic, Algebra, and Euclid; (4) Elementary Mechanics; (5) either Greek, French, German, Italian, Logic, Botany, Zoology, or Chemistry.

Preliminary Examinations. A Student who has not passed such an examination is recommended to pass either the Matriculation of the University of London, the Examination in Arts of the Apothecaries' Society of London, or the Professional Preliminary Examination of the College of Preceptors. The regulations respecting these may be obtained from the Registrar, University of London, Burlington Gardens, W., the Secretary, Apothecaries' Hall, Blackfriars, E.C., and the Secretary, College of Preceptors, Bloomsbury Square, W.C.

Certificates of Graduation, Matriculation, and the Local Examinations of British and Colonial Universities are accepted by the General Medical Council provided that the above-mentioned subjects be shown to have been included.

Students who propose to obtain Medical Degrees in the University of London must pass both the Matriculation and the Preliminary Scientific Examinations before commencing their regular Medical Studies.

For the Preliminary Scientific Examination and the Intermediate Examination in Medicine special classes are held during the Winter and Summer Sessions (see p. 35).

For a Student who enters in October, intending to obtain the double qualification of the "Conjoint Board" (L.R.C.P. Lond. and M.R.C.S. Eng.) the following course of study is recommended. (For days and hours of Lectures, &c., see Time Table, p. 22.)

First Winter Session.*

Lectures, &c. Anatomy, Physiology, Chemistry, and Physics. Anatomical and Physiological Demonstrations. Dissections.

Examinations. "Sessional" at Medical School in December and in March. Part III. (Elementary Anatomy and Physiology) of First Examination of the "Conjoint Board" in March.

First Summer Session.*

Lectures, &c. Materia Medica, Practical Chemistry and Practical Physiology; Instruction in Practical Pharmacy may be obtained from the Hospital Pharmaceutist. (Fee, three guineas for three months, p. 34.)

Examinations. "Sessional" in July, and Parts I. (Chemistry) and II. † of the "First Conjoint."

Second Winter Session.*

Lectures, &c. Anatomy and Physiology with Demonstrations and Dissections. Tutorial Class in Anatomy.

Examinations. "Sessional" in December and in March; "Tests," and "Second Conjoint" (Anatomy and Physiology) in March.

N.B.—The "Final Conjoint" cannot be taken until two years after the second examination has been passed; hence the importance of passing the second at this stage.

Hospital Practice, Medical and Surgical.

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* Cards of admission to the Lectures, &c., must be obtained from the Medical Secretary at the commencement of every Session.

† Part II. (Materia Medica) *may* be deferred and taken as part of the "Second Conjoint."

Second Summer Session.*

Hospital Practice, Medical and Surgical.
Midwifery, Practical Surgery. — Lectures.
"Sessional" in July. — Examinations.

The course of instruction in Elementary Clinical Medicine to be attended by Candidates for Out-Patient Clinical Clerkships.

Third Winter Session.*

Hospital Practice, Medical and Surgical.
Medicine, Surgery, and Surgical Pathology, Practical Surgery, Practical Course of Pathological Anatomy. — Lectures.
"Sessional" in December and March. — Examinations.
Clinical Clerkship (if not held during July, August, and September), and Dressership in the Out-Patient Departments.
Maternity Cases may be attended at any time after the Lectures on Midwifery by Students who have passed the "Second Conjoint."

Third Summer Session.*

Hospital Practice, Medical and Surgical, with Clerkship or Dressership.
Pathological Anatomy, Forensic Medicine, Examination of Eye. — Lectures.
"Sessional" in July. — Examinations.

Fourth Winter Session.*

Hospital Practice, Medical, Surgical, the Special Departments, and Post-mortem Examinations. Clerk or Dress in special Departments and Post-mortem Room. Instruction in Vaccination. (Fee, one guinea, p. 34.)
Practical Course of Pathological Anatomy (if not taken in third winter), Clinical Lectures on Medicine, Surgery, and Diseases of Women; Obstetric Demonstrations; Diseases of Eye. — Lectures.

Fourth Summer Session.*

Hospital Practice, Medical and Surgical, and Special Departments.
Clinical Medicine, Clinical Surgery, Mental Disease, Public Health and Sanitary Science. Tutorial Classes in Surgery, including operations upon the Dead Subject. — Lectures.
"Final Conjoint" in Medicine, Surgery, or Midwifery. — Examinations.
NOTE.—The three subjects *may* be taken at one examination.

If a Student enters in May, intending to obtain the above qualification, he is advised to pursue the following course of study:—
N.B.—Students who join a Medical School in May have the advantage of an additional three months to devote to the preparation for the three parts of the First Examination of the "Conjoint Board."

Preliminary Summer Session.*

Lectures and Classes in Chemistry and Chemical Physics, and in Materia Medica.—Instruction in Practical Pharmacy may be obtained from the Hospital Pharmaceutist. (Fee, three guineas for three months, p. 34.) — Lectures.
Botany (if required for a higher examination).
Part II. (Materia Medica) of "First Conjoint" in July or October. — Examinations.

First Winter Session.*

(Same as for Students entering in October.)

First Summer Session.*

Practical Chemistry and Practical Physiology. — Lectures.
"Sessional" and Part I. (Chemistry and Physics) of "First Conjoint" in July. — Examinations.

* Cards of admission to the Lectures, &c., must be obtained from the Medical Secretary at the commencement of every Session.

Second Winter and Subsequent Sessions.

(Same as for Students entering in October.)

Candidates for the Final Examination for the Diploma in Medicine and Surgery of the "Conjoint Board" are required to produce a certificate of attendance on not less than twenty labours. Students who have passed the "Second Conjoint," and have attended a Course of Lectures on Midwifery, may enter their names for the Rota of Obstetric Clerks.

No Student is admitted to any part of the Final Examination of the "Conjoint Board" until at least two years after passing the Second Examination, and the latter cannot be taken until the end of the Second Winter Session.

All Students are required by the Governors to conform to the Regulations of that Hospital and Medical School, and the School Committee is empowered, with the approval of the Treasurer, to suspend or remove a Student at any time for adequate reason. (See also p. 33.)

As but few Lectures need be attended in the fourth year, the greater part of that time can, and should, be given to the practical study of disease in the Wards, Out-Patient Departments, and Post-Mortem Room.

Advanced Students are strongly advised to avail themselves of the opportunities afforded for Clinical Study of Fevers at the Hospitals of the Metropolitan Asylums Board, and of Mental Diseases at Bethlem Hospital.

All **Schedules requiring signature** should be given to the Secretary of the Medical School three weeks before the date on which they have to be sent in to the various licensing bodies. The blank spaces in the **Certificates for which signatures are wanted** must be filled in by the Student himself, or the Certificates will not be signed.

Students intending to prepare for **University Degrees and other higher Examinations** should apply to the Medical Secretary for the Regulations relating thereto. (For Special Classes for these Examinations see p. 35.)

Students have access, with the permission of the Officers under whose superintendence they are placed, to the Museums of Human and Comparative Anatomy and Pathology, of Materia Medica, of Botany, and of Chemistry and Mineralogy, and to the Laboratories of Practical Physiology and Practical Chemistry; and to the Library, which contains a large collection of works of reference and modern text-books.

Students when qualified should use every effort to obtain one or more of the senior appointments open to them, especially those of House Physician, House Surgeon, and Obstetric House Physician. These and other appointments, of which details are given at p. 27, afford opportunities for obtaining practical professional knowledge which cannot be estimated too highly. No payment is required for any of them.

N.B.—The Regulations for the Sessional Examinations and Prizes will be found on pp. 28-29.

TIMES OF ATTENDANCE OF THE PHYSICIANS AND SURGEONS IN THE WARDS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Dr. BRISTOWE	—	2	—	—	2	—
Dr. ORD	2	—	—	2	—	—
Dr. HARLEY	—	2	—	—	2	—
Dr. PAYNE	2	—	—	2	—	—
Dr. SHARKEY	—	2	—	—	2	—
Dr. CULLINGWORTH	—	2	—	—	2	—
Mr. CROFT	2	—	—	2	—	—
Sir WILLIAM MAC CORMAC	—	2	—	—	2	—
Mr. MAC KELLAR	2	—	—	2	—	—
Mr. CLUTTON	—	2	—	—	2	—
Mr. NETTLESHIP	—	2	—	—	—	—

TIMES OF ATTENDANCE OF THE ASSISTANT-PHYSICIANS AND ASSISTANT-SURGEONS ON THE OUT-PATIENTS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Dr. HADDEN	—	1.30	—	—	1.30	—
Dr. ACLAND	1.30	—	—	1.30	—	—
Dr. HAWKINS	—	—	1.30	—	—	1.30
Dr. CORY (Women and Children)	—	—	1.30	—	—	1.30
Mr. ANDERSON	1.30	—	—	1.30	—	—
Mr. PITTS	—	1.30	—	—	1.30	—
Mr. MAKINS	—	—	1.30	—	—	1.30

TIMES OF ATTENDANCE IN THE OUT-PATIENT SPECIAL DEPARTMENTS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Mr. NETTLESHIP (Diseases of the Eye)	—	1.30	—	—	1.30	—
Mr. LAWFORD (Diseases of the Eye)	1.30	—	1.30	1.30	—	—
Dr. SEMON (Diseases of Throat)	—	1.30	—	—	1.30	—
Mr. ANDERSON (Diseases of Skin)	—	—	—	—	1.30	—
Mr. BALLANCE (Diseases of Ear)	1.30	—	—	—	—	—
Mr. TRUMAN (Diseases of Teeth)	—	10	—	—	10	—
Dr. CORY (Vaccination)	—	—	11.30	—	—	—

DAYS AND HOURS OF LECTURES AND DEMONSTRATIONS.

WINTER SESSION.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Years of Attendance
Physics (Oct., Nov., Dec.)	—	—	—	—	—	12	1st Year.
Chemistry	—	10.30	—	10.30	10.30	—	do.
Descriptive and Surgical Anatomy ..	—	9.30	—	9.30	—	9.30	do.
	11	11	—	11	—	11	2nd Year.
Anatomical Demonstrations*	10½–4½	10½–4½	10½–4½	10½–4½	10½–4½	10½–1	1st & 2nd.
Physiology	9.30	—	9.30	—	9.30	—	do.
Physiological Demonstrations	10.30	12	—	—	12	—	1st Year.
	12	—	—	12	10.30	—	2nd Year.
Practical and Manipulative Surgery†	—	9	—	—	—	—	3rd Year.
Comparative Anatomy (six lectures)	—	—	11	—	—	—	3rd Year.
Medicine ..... Oct., Nov., Dec.	9	—	—	9	9	—	do.
Jan., Feb., Mar.	4	—	—	4	4	—	
Surgery ..... Oct., Nov., Dec.	—	—	9	4	—	9	do.
Jan., Feb., Mar.	9	—	—	9	9	—	
Surgical Pathology	—	—	12	—	—	—	do.
Diseases of Women (Oct., Nov., Dec.)	—	4	—	—	—	—	3rd or 4th.
„ „ Clinical Jan., Feb., Mar.	—	4	—	—	—	—	do.
Pathological Anatomy (Practical) ..	—	—	—	—	—	11½–1½	do.
Diseases of the Eye Oct., Nov., Dec.	5	—	—	—	5	—	do.
Jan., Feb., Mar.	—	—	—	—	5	—	do.
Obstetric Demonstrations (six).....	—	—	4	—	—	—	do.

SUMMER SESSION.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Years.
Botany	—	—	10	—	—	10	1st Year.
Materia Medica	—	—	—	4	—	11	do.
Practical Chemistry	10—12	—	—	10—12	10—12	—	do.
Practical Physiology	—	2	2	—	2	—	do.
Do. Advanced Voluntary Class	2‡	—	4.30‡	—	—	—	—
Anatomical Demonstrations*	11—4	11—4	11—4	11—4	11—4	11—1	2nd Year.
Midwifery	9	9	—	9	9	—	do.
Comparative Anatomy (six lectures)	—	12	—	—	—	—	do.
Practical and Manipulative Surgery†	—	—	—	—	—	9	do.
Forensic Medicine	—	4	—	4	—	9	3rd Year
Pathological Anatomy	—	—	9	—	9	—	do.
Do. Demonstration.....	4.30	—	—	—	—	—	do.
Mental Diseases	—	—	—	—	12	—	3rd or 4th
Public Health and Sanitary Science	—	—	10.30	—	—	—	do.
Therapeutics	—	—	4	—	—	—	do.
Diseases of the Eye	—	5	—	—	5	—	do.

The times of delivery of the Clinical Lectures are arranged, in accordance with other work, in the course of the Session.

* The Dissecting Room is open daily to the Students from 9 a.m. till 5 p.m. (Saturdays 9 to 1). Special Tutor Classes in Anatomy are held by the Lecturers and Demonstrators.

† Classes in Practical and Operative Surgery are held four times a week for six weeks prior to the final exam nations of the Examining Board in January, April, and July. In connection with these Classes Clinical Instructi is given in the Wards by the Resident Assistant Surgeon, and a course of demonstrations on Museum specimens given by the Curator, Mr. Shattock.

‡ Mondays, Dr. Charles (Section Cutting and Mounting, and Volumetric Analysis); Wednesdays, I Sherrington (Physiological Apparatus).

CLINICAL TEACHING OF MEDICINE AND SURGERY.
Clinical instruction is given daily by the Physicians and Surgeons during their visits to the Wards, and by the Assistant Physicians and Assistant Surgeons in the Out-Patient Departments (Time Table, p. 21). Lectures on Clinical Medicine and Surgery are given in the afternoon every week throughout the academical year by one or more of the Physicians and Surgeons.

DISEASES OF WOMEN.—Clinical instruction is given in Adelaide Ward on Tuesdays and Fridays at 2 p.m., and in the Out-Patient room on Wednesdays and Saturdays at 1.30 p.m. A course of Clinical Lectures is delivered during the latter half of the winter session.

DISEASES OF CHILDREN.—Instruction is given by Dr. CORY, in the Out-Patient room, on Saturdays at 1.30.

MIDWIFERY.—A maternity department is connected with the hospital, women being attended in confinement at their own homes by students of the hospital, under the supervision of the Assistant Obstetric Physician (p. 28). A short course of Obstetric demonstrations on the model is given by Dr. CORY during the winter session.

DAYS AND HOURS OF SURGICAL OPERATIONS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Surgical Operations	—	—	1.30	—	—	1.30
„ „ Gynæcological	—	—	—	2.0	—	—
„ „ Ophthalmic	—	4.0	—	—	2.0	—

POST-MORTEM EXAMINATIONS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Dr. HADDEN	2.0	—	2.0	—	—	2.0
Dr. HAWKINS	—	2.0	—	2.0	2.0	—

THE SPECIAL DEPARTMENTS.

(*For Times of Attendance see Table, page* 21.)

Vaccination is taught practically by Dr. CORY, who is authorised by the Local Government Board to give certificates of proficiency in Vaccination at St. Thomas's Hospital. Fee, One Guinea (see p. 34).

Diseases of the Eye.—Clinical teaching in the Out-Patient rooms daily except Saturday. Clinical Lectures or Ophthalmoscopic Demonstrations weekly.

Diseases of the Skin.—Clinical instruction by Mr. ANDERSON on Fridays.

Diseases of the Throat are treated by Dr. SEMON on Tuesdays and Fridays. During the Winter Session Dr. SEMON gives a short course of Clinical Lectures to senior students.

Diseases of the Ear.—Clinical instruction by Mr. BALLANCE on Mondays.

Diseases of the Teeth.—Mr. TRUMAN and Assistant give instruction in Dental Surgery on Tuesdays and Fridays.

The Administration of **Anæsthetics** is taught practically by Mr. TYRRELL and Mr. WHITE.

CLASSES AND DEMONSTRATIONS not Specified in the Tables at p. 22.

Anatomy.—Special Tutorial Classes in preparation for the April and July examinations (first and second) of the Conjoint Board are held in the course of the winter and summer sessions by the Lecturers Messrs. ANDERSON and MAKINS, and by the Demonstrators, Mr. PARSONS, Mr. ABBOTT, and Mr. ROBINSON; these are conducted mainly by examination upon subjects previously announced.

Physiology.—In the Summer Session instruction is given to a senior class in Cutting and Mounting Sections and in Volumetric Analysis by Dr. CHARLES on Mondays at 2 o'clock; and in advanced Practical Physiology (use of Physiological apparatus, &c.) by Dr. SHERRINGTON on Wednesdays at 4.30.

Elementary Clinical Medicine.—An elementary course of practical instruction in the means of Physical Diagnosis is held by Drs. ACLAND and HAWKINS for about a month before each quarterly appointment of Out-patient Clinical Clerks, and all intending applicants are required to attend this course, or to have attended an equivalent course elsewhere.

Practical Surgery for the Final Examination of the Conjoint Board.—In addition to the systematic instruction in the use of Surgical apparatus, &c., given in the Second Summer and Third Winter Sessions (Tables, p. 22), Tutorial Classes in Surgery are held daily for the six weeks preceding the final examination of the Conjoint Board in January, April, and July. The General Surgery, Surgical Anatomy and Operations are taken by Messrs. MACKELLAR, PITTS, and BALLANCE, the Pathological part by Mr. SHATTOCK, and the Clinical part in the Wards by the Resident Assistant Surgeon.

A Class for learning the use of the Ophthalmoscope is held each Session by Mr. LAWFORD.

The Museum is open to Students daily from 9 a.m. till 5 p.m., and every encouragement is given to Students to make use of its well arranged educational series for the purposes of their studies. A new Catalogue is being prepared by Mr. SHATTOCK, and the first part has been published, and the remainder is in an advanced state.

For the courses above referred to no extra fee is charged.

For Special courses which may be attended on payment of an extra fee, see p. 34

SCHOLARSHIPS, PRIZES, APPOINTMENTS, AND HONORARY DISTINCTIONS.

OPEN SCHOLARSHIPS IN NATURAL SCIENCE.

As an inducement to the study of Natural Science before the commencement of the strictly Medical Course, two Scholarships, of the value of 125 Guineas (*i.e.*, a free admission) and £60 respectively, are awarded annually, after an examination in Physics, Chemistry, and either Botany, Zoology or Physiology, at the option of Candidates. The standard, so far as the subjects are the same, will be that of the Preliminary Scientific Examination for Honours of the University of London.

These Scholarships are open to all Students who have passed a recognised Preliminary Examination in Arts, and have not yet attended Lectures on Anatomy of the first year, without any condition as to their becoming Students of the Hospital, except in the case of successful Candidates, who must enter at once as "Perpetual" Pupils. Chemistry and Physics are compulsory subjects for this Examination, and Candidates must take up one of the other subjects. The Examination will be conducted by means of written papers and practical work, and will be held on the 26th, 28th, and 29th of September, 1891. The names of Competitors with Certificate of Preliminary Examination must be sent to the Secretary not later than September 17th.

THE WILLIAM TITE SCHOLARSHIP.

This Scholarship, founded by the late Sir W. Tite, C.B., M.P., F.R.S., is endowed with £1,000 Consols, the Interest on which, about £27 10s., is awarded each year to the Student placed highest in the 1st Class List in the examinations at the end of the first Winter Session. Preference, in case of equality between Students, is to be given to the son of a medical man, and more particularly of one who has been educated at St. Thomas's Hospital or is in Practice in Bath.

THE MUSGROVE SCHOLARSHIP.

This Scholarship, founded by Sir John Musgrove, Bart., the late President of the Hospital, is endowed with £1,400 Consols, the Interest on which, about £38 10s., is awarded biennially to the Student who shall take the highest place in the 1st Class List in the examinations at the end of the Second Winter Session. It is tenable for two years, provided the holder obtains a place in the 1st Class in the Examinations at the end of the third winter.

THE PEACOCK SCHOLARSHIP.

This Scholarship, founded by the will of the late Dr. Thomas Bevill Peacock, for many years Physician, and at the time of his death Consulting Physician to St. Thomas's Hospital, is of the same value as the Musgrove Scholarship; is awarded and held upon the same terms; and is given every second year in alternation with that Scholarship.

Gentlemen obtaining the above Scholarships are not precluded from receiving any of the Prizes awarded at the subsequent periodical examinations.

PRIZES.

The following Scholarships, Prizes, and Medals, will be offered for Competition during the year 1891–1892 :—

TWO OPEN SCHOLARSHIPS IN NATURAL SCIENCE of the value of 125 Guineas and £60 respectively, at Entrance.

AT THE END OF FIRST YEAR.

Winter.

1st. ..	The William Tite Scholarship	£27	10s.
2nd. ..	College Prize	£20.	
3rd. ..	Ditto	£10.	

Summer.

1st. ..	College Prize	£15.	
2nd. ..	Ditto	£10.	

SECOND YEAR.

Winter.

1st. ..	The Peacock Scholarship	£38	10s.
2nd. ..	College Prize	£20.	
3rd. ..	Ditto	£10.	

Summer.

1st. ..	College Prize	£15.	
2nd. ..	Ditto	£10.	

THIRD YEAR.

Winter.

	Second Tenure of The Musgrove Scholarship (if holder obtains 1st Class in this examination)	£38	10s.
1st. ..	College Prize	£20.	
2nd. ..	Ditto	£15.	
3rd. ..	Ditto	£10.	

Summer.

1st. ..	College Prize	£15.	
2nd. ..	Ditto	£10.	

Students of each year are classed according to their respective merits in the examinations, and those in the *first* class in each year receive Certificates of Honour, and a preference in the selection for Hospital Appointments.

Free Scholarships are given to distinguished Pupils of Merchant Taylors' and City of London Schools, and Epsom College.

In addition there are awarded—

THE CHESELDEN MEDAL, *Annually.*
THE MEAD MEDAL, *do.*
THE SOLLY MEDAL AND PRIZE, *Biennially.*
THE GRAINGER TESTIMONIAL PRIZE, *Annually.*
THE TREASURER'S GOLD MEDAL, *do.*

Intending Competitors, especially those who have spent a part of their curriculum elsewhere, should apply to the Medical Secretary for detailed regulations.

The CHESELDEN MEDAL, founded by the late GEORGE VAUGHAN, Esq., is annually awarded to the Fourth Year's Student who most distinguishes himself in respect of a Special Practical Examination in Surgery and Surgical Anatomy.

The MEAD MEDAL, founded by Mr. and Mrs. NEWMAN SMITH, is awarded annually, to a Fourth Year's Student, in respect of a Special Practical Examination in Medicine, Pathology and Hygiene.

The SOLLY MEDAL, together with a Prize in Money, will be awarded biennially. Those Students are eligible to compete who shall be of from three to six years' standing. The award is made for the best series of Reports of Surgical cases coming under the Student's personal observation in the Wards, not, however, to exceed ten in number. Preference is given, merit in other respects being equal, to Reports illustrated by the author's drawings, and short Clinical Remarks must accompany each Report. The next award will be made at the end of 1891–92, papers to be sent in before April 1st, 1892.

The GRAINGER TESTIMONIAL PRIZE, of the value of Fifteen Pounds, is awarded annually for work in Anatomy and Physiology. The conditions of competition for this Prize have recently been altered, and can be learnt from the Medical Secretary.

The TREASURER'S GOLD MEDAL for General Proficiency and Good Conduct, is awarded at the end of the 4th Winter Session to the Student who has passed through his pupilage in St. Thomas's Hospital in the most meritorious manner.

APPOINTMENTS.

A RESIDENT ASSISTANT PHYSICIAN and a RESIDENT ASSISTANT SURGEON, at a salary of £100 per annum each, are from time to time appointed. The appointments are annual, but the tenure of office may be renewed for a term not exceeding three years.

Two HOSPITAL REGISTRARS, at an annual Salary of £100 each, are appointed in each year. They are eligible for annual re-appointment, but may not hold office for more than five years. Preference will be given to Gentlemen who have been distinguished for merit, and have completed their studies in the School. The payment of the Registrars is subject to the presentation of a Report upon the Practice of the Hospital, and to such Report being regarded as satisfactory by the Medical Officers to whom it shall have been referred.

House Appointments, open to Students who have obtained their diplomas. (*The duties of these offices commence on the first Tuesday in March, June, September, and December.*)

FOUR HOUSE PHYSICIANS, FOUR HOUSE SURGEONS, and TWO ASSISTANT HOUSE SURGEONS, are selected every three months. Two of the House Physicians and the Assistant House Surgeons, are non-resident, but the other Officers are provided with Rooms and Commons in the Hospital, free of expense.

A SENIOR and JUNIOR OBSTETRIC HOUSE PHYSICIAN* are selected every three months. The former is provided with Rooms and Commons in the Hospital, free of expense. The latter is provided with Commons, and must live near the Hospital.

TWO OPHTHALMIC HOUSE SURGEONS are appointed for six months, one of whom receives a Salary at the rate of £50 per annum, and the other is provided with Commons. They must live near the Hospital.

CLINICAL ASSISTANTS in the Departments for Diseases of the Skin, Throat, and Ear, are appointed every three months.

In the Special Departments preference is given to those who have worked in a satisfactory manner therein as Clinical Clerks and Dressers.

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* Hitherto known as Resident Accoucheur and Senior Obstetric Clerk.

Appointments for Un-qualified Students.

Clinical Clerks and Dressers to In-Patients are selected to the number of at least 100 each year, from amongst the most eligible pupils. The Dresser on Accident Duty is provided with a Room and Commons in the Hospital. Clinical Clerks and Dressers for the Out-Patients are also appointed, to the number of at least 80 to 100 each year; applicants are required to have passed the 2nd examination of the Conjoint Board, or an equivalent examination, and to have attended a course of instruction in Elementary Clinical Medicine (p. 24). (*The Duties commence on the first Tuesday in January, April, July, and October.*)

Obstetric Clerks are appointed, in rotation, from a list of Students who have entered their names for the purpose, have attended a course of Lectures on Midwifery, and passed the "Second Conjoint," or an equivalent Examination. Each Clerk holds office for a fortnight, and Certificates of Honour are awarded to those Gentlemen who have satisfactorily attended Sixty Maternity cases. About 50 Obstetric Clerks are appointed yearly.

Assistants to the Teachers of Practical and Manipulative Surgery are appointed for the Winter and Summer Sessions.

Students are likewise appointed to act as Assistants to the Demonstrators of Morbid Anatomy in the Post-mortem Room.

Assistants in the Physiological Laboratory are selected from Students who have completed their Second Winter Session. They receive Certificates of Honour according to merit.

Prosectors are appointed in the early part of the Winter Session, and receive Certificates of Honour if recommended.

REGULATIONS for the EXAMINATION AND CLASSIFICATION OF THE STUDENTS AT THE MEDICAL SCHOOL.

1. In accordance with the Regulations of the Qualifying Bodies, Students must attend the Class Examinations in the subjects for which they have to be certified, and show by their answers to the questions that they have paid proper attention to the Lectures, otherwise the signature to their Schedules may be withheld.

2. There shall be held at least two Examinations in each Winter and one in each Summer Session in each subject on which attendance is required during that Session, and the marks obtained in these Examinations shall be the basis for the Classification of Students and the Award of Prizes for each Session respectively. Provided that any extra Examination in the course of the Session, in any subject, be not allowed to interfere with the ordinary Lectures in other subjects.

3. Students may also be examined in Botany (1st Summer), and Comparative Anatomy (2nd Summer), for each of which 100 marks will be the maximum. But a number less than thirty per cent. of the marks obtainable in each will not be allowed to count. Students wishing to be examined in these subjects must give notice to the Medical Secretary before July 1st.

4. The number of marks allotted to each subject in the following Schedule is not to be exceeded in case the number of Examinations held during the Session be more than two, but must be distributed amongst the several Examinations.

1st YEAR'S SUBJECTS.		
Winter	Anatomy	600
	Practical Anatomy	200
	Physiology	600
	Practical Physiology	100
	Chemistry	600
	Total	2100
Summer	Practical Chemistry	300
	Materia Medica	200
	Practical Physiology	300
	Total	800

2nd YEAR'S SUBJECTS.		
Winter	Anatomy	600
	Practical Anatomy	200
	Physiology	600
	Practical Physiology	100
	Total.	1500
Summer	Midwifery	500
	Practical Surgery	200
	Total	700

3rd YEAR'S SUBJECTS.

WINTER	Medicine	650	SUMMER	Forensic Medicine	250
	Surgery	650		Pathological Anatomy	350
	Practical Surgery	300			
	Total	1600		Total	600

5. All Students who have obtained at least one-third of the total number of marks in each compulsory subject, and not less than two-thirds of the total number allotted to all the compulsory subjects collectively, shall be placed in the 1st Class.

Those who have obtained one-third of the total number of marks allotted to all the compulsory subjects collectively shall be placed in the 2nd Class.

The names of those who do not obtain either a 1st or 2nd Class position will not be published, but a General List showing the exact position of each Student at every Examination shall be kept by the Secretary, from whom any Student can learn his own position, but no Lecturer shall make known to Students the number of marks obtained by any Student in any subject.

6. The Prizes shall be awarded to the Students holding the 1st, 2nd, and 3rd positions in the 1st Class of each Winter Session, and to those holding the 1st and 2nd positions of the 1st Class in each Summer Session.

7. The number of marks allotted to the Examinations for the MEAD and CHESELDEN Medals shall be 600 each.

8. In awarding the TREASURER'S Medal the number of marks obtained at the Sessional Examinations and in the MEAD and CHESELDEN Examinations shall be counted, provided that, as regards the Examination for the Medals, two-thirds of the maximum marks be obtained, but those obtained in the Entrance Scholarship Competition shall not be included.

9. The Authorities reserve the right of withholding any Prize, if no competitor of sufficient merit present himself.

Distribution of Prizes for the Past Sessions.

SUMMER SESSION, 1890.

FIRST YEAR'S STUDENTS.

A. E. RUSSELL, *Greenwich*	College Prize, £15, and Certificate of Honour.
S. W. F. RICHARDSON, *Whitby*	College Prize, £10, and Certificate of Honour.
T. G. NICHOLSON, *Norwich*	Certificate of Honour.
H. W. HARDING, *Greenwich*	Certificate of Honour.
L. J. MISKIN, *York Road, Lambeth*	Certificate of Honour.
G. R. HARCOURT, *Wanstead*	Certificate of Honour.
E. A. SAUNDERS, *Balham*	Certificate of Honour.

SECOND YEAR'S STUDENTS.

E. MISKIN, *York Road, Lambeth*	College Prize, £15, and Certificate of Honour.
C. PLANCK, *Edenbridge*	College Prize, £10, and Certificate of Honour.

THIRD YEAR'S STUDENTS.

J. H. FISHER, *Exeter*	College Prize, £15, and Certificate of Honour.
A. BANKS, *Clapham*	College Prize, £10, and Certificate of Honour.
H. SIMPSON, *Market Weighton*	Certificate of Honour.

WINTER SESSION, 1890-91.

ENTRANCE SCIENCE SCHOLARSHIPS.

P. J. Dear, *Sutton* ... ... — Ranks as First Scholar, but had previously obtained a Free Admission. Certificate of Honour.

W. E. Dixon, *Dulwich*... ... ... — Scholarship, 125 Gs., and Certificate of Honour.

H. C. Crouch, *Haverstock Hill* ... ... — Scholarship, £60, and Certificate of Honour.

FIRST YEAR'S STUDENTS.

K. J. Previté Orton, *Leicester*... ... ... — The Wm. Tite Scholarship, £27 10s., and Certificate of Honour.

G. G. Genge, *Croydon* ... ... — College Prize, £20, and Certificate of Honour.

W. H. J. Paterson, *Shepherd's Bush* ... ... — College Prize, £10, and Certificate of Honour.

E. L. Perry, *St. George's Square* ... ... — Certificate of Honour.

A. L. Home, *Hampstead* ... ... — Certificate of Honour.

H. C. Crouch, *Haverstock Hill* ... ... — Certificate of Honour.

W. E. Dixon, *Dulwich*... ... ... — Certificate of Honour.

E. O. Thurston, *Panton Street* ... ... — Certificate of Honour.

P. W. Kent, *St. Albans* ... ... — Certificate of Honour.

L. N. Pentreath, *Regent's Park* ... ... — Certificate of Honour.

R. G. Strange, *Hampstead* ... ... — Certificate of Honour.

SECOND YEAR'S STUDENTS.

S. W. F. Richardson, *Whitby* ... ... — The Musgrove Scholarship, £38 10s., and Certificate of Honour.

A. E. Russell *Greenwich* ... ...
L. J. Miskin, *York Road, Lambeth* } Æq ... ... — College Prize, £20, and Certificate of Honour.
College Prize, £10, and Certificate of Honour.

H. W. Harding, *Greenwich* ... ... — Certificate of Honour.

A. E. Thorp, *Lordship Lane, Dulwich* ... ... — Certificate of Honour.

E. A. Saunders, *Balham* ... ... — Certificate of Honour.

L. Harman, *Brixton* ... ... — Certificate of Honour.

THIRD YEAR'S STUDENTS.

E. M. Hainworth, *Blackheath* ... ... — College Prize, £20, and Certificate of Honour.

E. Smith, *Wandsworth Common*... ... ... — College Prize, £15, and Certificate of Honour.

C. Planck, *Edenbridge* ... ... — College Prize, £10, with 2nd Tenure of the Peacock Scholarship, and Certificate of Honour.

PRACTICAL MEDICINE.

C. Latter, *Downham Market* ... ... — The Mead Medal, founded by Mr. and Mrs. Newman Smith.

C. S. Jaffé, *Westbourne Terrace* ... ... — Certificate of Honour.

SURGERY AND SURGICAL ANATOMY.

A. Banks, *Clapham* ... ... — The Cheselden Medal, founded by the late George Vaughan, Esq.

J. H. Fisher, *Exeter* ... ... — Special Mention and Certificate of Honour.

R. R. Law, *Heslington* ... ... — Certificate of Honour.

W. P. Purvis, *Greenwich* ... ... — Certificate of Honour.

PROSECTORS.

T. O. Halliwell, *Dewsbury* ... ... — Certificate of Honour.

H. W. Harding, *Greenwich*... ... ... — Certificate of Honour.

H. M. Harrison, *Barmouth*... ... ... — Certificate of Honour.

L. J. Miskin, *York Road, Lambeth* ... ... — Certificate of Honour.

S. W. F. Richardson, *Whitby* ... ... — Certificate of Honour.

A. E. Russell, *Greenwich* ... ... — Certificate of Honour.

ASSISTANTS IN PHYSIOLOGICAL LABORATORY.

W. A. Bowring, *Norbiton* ... ... — Certificate of Honour.

H. M. Moore, *Eastbourne* ... ... — Certificate of Honour.

C. L. B. Stares, *Portchester* ... ... — Certificate of Honour.

E. A. Saunders, *Balham* ... ... — Certificate of Honour.

PATHOLOGICAL ASSISTANT.

H. J. Frederick, *Sidcup* ... ... — Certificate of Honour.

HOUSE PHYSICIANS.

W. Wilking Stabb, A. King, W. F Umney ... ... — Certificate of Honour.

G. H. Wickham — Non-Resident ... ... — Certificate of Honour

H. J. Cooper — Non-Resident ... ... — Certificate of Honour.

H. Low — Non-Resident ... ... — Certificate of Honour.

C. P. Lovell — Non-Resident ... ... — Certificate of Honour.

HOUSE SURGEONS.

A. F. Stabb ... ... — Certificate of Honour.

A. C. Lankester ... ... — Certificate of Honour.

H. W. Nix ... ... — Certificate of Honour.

E. E. Ware ... ... — Certificate of Honour.

S. G. Toller ... ... — Certificate of Honour.

W. S. Griffith ... ... — Certificate of Honour.

W. G. G. Stokes ... ... — Certificate of Honour.

L. A. J. Rouillard ... ... — Certificate of Honour.

ASSISTANT HOUSE SURGEONS.

H. W. Nix ... ... — Certificate of Honour.

E. E Ware ... ... — Certificate of Honour.

S. G. Toller ... ... — Certificate of Honour.

W. G. G. Stokes ... ... — Certificate of Honour.

D. F. Shearer ... ... — Certificate of Honour.

L. A. J. Rouillard ... ... — Certificate of Honour.

T. H. Haydon ... ... — Certificate of Honour.

J. R. Harper ... ... — Certificate of Honour.

RESIDENT ACCOUCHEURS.

H. B. Osburn... ... ... — Certificate of Honour.

H. Gervis ... ... — Certificate of Honour.

H. Low ... ... — Certificate of Honour.

W. R. Carter ... ... — Certificate of Honour.

SENIOR OBSTETRIC CLERKS.

W. G. G. Stokes ... ... Certificate of Honour.
W. R. Carter... ... ... Certificate of Honour.
J. R. Harper... ... ... Certificate of Honour.
H. D. Levick ... ... Certificate of Honour.

OPHTHALMIC HOUSE SURGEONS.

H. C. Bristowe ... ... Certificate of Honour.
F. E. Forward ... ... Certificate of Honour.

CLINICAL ASSISTANTS IN THE SPECIAL DEPARTMENTS.

H. Low ... ... } Skin { ... ... Certificate of Honour.
A. J. Adkins ... ... } { ... ... Certificate of Honour.
A. Y. Pringle ... ... } Throat { ... ... Certificate of Honour.
W. H. Millar ... ... } { ... ... Certificate of Honour.
G. H. Bristow ... ... } Ear { ... ... Certificate of Honour.
A. W. F. Sayres ... ... } { ... ... Certificate of Honour.

FOR GENERAL PROFICIENCY AND GOOD CONDUCT.

J. H. Fisher ... ... { **The Treasurer's Gold Medal.**

The following Distinctions have been obtained by Students of St. Thomas's Hospital during the past year:—

HONOURS EXAMINATIONS—UNIV. LOND.

First Class in Medicine, Obstetric Medicine, and Forensic Medicine (M.B.), by Mr. F. C. Abbott.

First Class in Forensic Medicine and Second Class in Medicine (M.B.), by Mr. C. J. Martin.

Second Class in Physiology and Third Class in Materia Medica (Intermed. M.B.), by Mr. C. S. Jaffé.

Second Class in Organic Chemistry and Third Class in Materia Medica (Intermed. M.B.), by Mr. W. B. Winston.

Second Class in Physiology (B.Sc.), by Mr. W. B. Winston.

Third Class in Chemistry (B.Sc.), by Mr. T. G. Nicholson.

FEES FOR ATTENDANCE ON THE LECTURES AND ON THE PRACTICE OF THE HOSPITAL.

COMPOSITION FEES.

The Composition Fee * to Hospital Practice and Lectures may be paid in several ways :

1st. One Hundred and Twenty-five Guineas on entrance;

2nd. One Hundred and Thirty-eight pounds in two payments, £75 on entrance, and £63 at the beginning of the next year;

3rd. Payment by three instalments, viz., of £65 at the beginning of the first year, £50 at the beginning of the second year, and £30 at the beginning of the third year.

Gentlemen entering at St. Thomas's for Lectures and Hospital Practice of the second and subsequent years pay £85 on entrance, or two instalments of £65 and £25 (see pages 18 and 19.) Students entering for Lectures and Hospital Practice of third and subsequent years (see page 19) pay a composition fee of £55, or £40 on entrance, and £20 one year subsequently.

The Fee for attendance on the *general* subjects required of Students in Dental Surgery, is for the two years, £55, or by instalments, £50 for the first year, and £10 for the second year. If certificates for *Dental* practice are also required, the special fee for that subject (page 34) has to be paid.

N.B.—It should be understood that the Composition or "Perpetual" Fees are intended to cover unlimited attendance on Lectures and Hospital Practice. If, however, a student fail to pass the several professional examinations within periods deemed reasonable by the School authorities, his rights as a Student may be suspended or determined at any time by the School Committee, with the approval of the Treasurer.

Legally qualified Medical Practitioners are admitted to the Hospital practice, and to the Lectures and Library, on payment of a fee of £12 10s. for unlimited attendance; but are not entitled to receive certificates for such attendance without payment for the special certificates required (see p. 34).

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* Students who have commenced the study of the Profession otherwise than by attendance at a Medical School, will be considered to be first year's Students, on joining the Medical School, but a deduction from the Composition Fee will be allowed in such cases.

NOTE.—Cheques may be made payable to the Medical Secretary, and crossed "London and County Bank, Lambeth."

The Courses may be attended separately on the following terms, which entitle to Certificates for such Attendances.

For the Medical and Surgical Practice, including Clinical Lectures and the Special Departments. *

Three months	£15	Twelve months	£40
Six ditto	£26	"Perpetual"	£55
Nine ditto	£35		

Dental Practice, 1 year 2 Gs., "Perpetual" 3 Gs.

For Lectures and Demonstrations.	1 *Course.*	"*Perpetual.*"
Medicine, Surgery, Physiology, Anatomy, Chemistry each	7 Gs. ..	10 Gs.
Midwifery	5 „ ..	6 „
Materia Medica, Physics, Forensic Medicine, and Pathological Anatomy each	4 „ ..	5 „
Mental Diseases, Diseases of the Eye, Public Health, each	2 „ ..	3 „
† Practical Chemistry, Practical Surgery, Practical Physiology, Pathological Anatomy including the Practical Course .. .. each	6 „	—

Dissections, three months 4 Gs., six months 6 Gs., "Perpetual" 10 Gs.

SPECIAL COURSES (not included in the Composition Fee) and EXTRA EXPENSES.

Botany.—A course of Lectures on Structural and Systematic Botany is given by Mr. Bennett, in the Summer Session. Fee, £3 3*s*.

Comparative Anatomy.—A course of six Lectures especially intended for the Primary F.R.C.S. is given twice a year. Fee, £2 2*s*.

Operative Surgery.—A voluntary class will be formed by Messrs. Pitts and Ballance during the Summer, and at other convenient times, for Gentlemen who wish to prepare for the Fellowship or other Examinations. This course will not include Operations on the Eye-ball. Fee, £5 5*s*.

Operative Surgery of the Eye.—A voluntary class will be formed by Mr. Lawford during the Summer, and at other convenient times Fee, £2 2*s*.

Advanced Anatomy.—Voluntary classes for the M.B. Examinations of Oxford and Cambridge and for the Fellowship of the Royal College of Surgeons will be formed by the Demonstrators commencing in the months of February and October. Fee, £6 6*s*.

Laryngology.—A special course is given by Dr. Semon during the Winter Session. Fee for Gentlemen, not Students of the Hospital, £3 3*s*.

Special Courses of Obstetric Demonstrations are given by Dr. Cory throughout the year. Fee, £3 3*s*.

Public Health and Sanitary Science.—Six months' Laboratory Instruction for the Diplomas in Public Health, by Dr. Seaton, Dr. Bernays, and Mr. Shattock, £21. A short course of one or two months for candidates who do not need the above. Fee, £6 6*s*.

The fees for instruction in Vaccination and in Practical Pharmacy are not included in the Composition Fees, as it is open to students to obtain instruction in these subjects elsewhere. But Dr. Cory is authorised by the Local Government Board to give certificates for proficiency in Vaccination (fee, 1 guinea); and Practical Pharmacy is taught by the Hospital Pharmaceutist to those students who require it (fee, 3 guineas for 3 months). Application to be made to the Medical Secretary.

Students who pay a Composition Fee are now supplied with chemicals and materials for one course of Practical Chemistry and Physiology without extra charge but there are certain instruments and materials required during the course of study, as follows, viz.:

Those attending Practical Physiology and Physiological Demonstrations must provide themselves with Microscopes.

Students Dissecting pay for the "parts" they dissect at fixed rates, which are notified in the Library.

Each Clinical Clerk must provide himself with a Stethoscope and Registering Clinical Thermometer. Each Dresser is required to have a Registering Clinical Thermometer, a Pocket Case of Instruments, and a Case of Silver or Plated Catheters.

* The Practice in the Special Departments only can be attended on terms to be learnt from the Medical Secretary.

† These amounts do not include the extra charges in the Practical Courses for Materials, Instruments, &c.

UNIVERSITY OF LONDON.

PRELIMINARY SCIENTIFIC AND INTERMEDIATE M.B. CLASSES.

PRELIMINARY SCIENTIFIC EXAMINATION.

Special instruction in the subjects required for this Examination is given in the form of (*a*) Lectures and (*b*) Classes, from October to July.

		Mon.	Tues.	Wed.	Thu.	Fri.	Sat.
Botany. A. W. BENNETT, M.A.	Lectures (Summer)	—	—	10.0	—	—	10.0
	Classes (Winter & Summer)	—	—	11.0	—	—	—
Chemistry. A. J. BERNAYS, Ph.D.	Lectures (Winter)	—	1030	—	1030	1030	—
	Classes (Winter)	—	1130	—	—	—	—
	„ (Summer)	—	11.0	—	12.0	—	—
	Practical (Winter)				12 or 1130		
Physics. A. J. BERNAYS, Ph.D.	„ (Summer)			Laboratory open daily			
	Lectures (Oct., Nov., Dec.)	—	—	—	—	—	12.0
The DEMONSTRATOR.	Classes (Winter & Summer.)	—	—	—	—	3.0	—
Zoology. The DEMONSTRATOR.	Lectures (Summer)		(See Time Table, p. 22.)				
	Classes (Winter)	—	—	1.30	—	—	—
	„ (Summer)	—	—	—	1030	—	—

N.B.—A Microscope and simple Dissecting Apparatus must be provided by each Member of the Class, and Two Guineas are charged for materials.

Fee, inclusive of Practical Chemistry .. .. .. *Sixteen Guineas.*
Fee for any single subject.. .. .. *Five Guineas.*
Subsequent Courses, half Fee, if recommended by the respective Teachers.
In the Practical Classes of Botany and Zoology, each Student has the opportunity of dissecting the chief types.

INTERMEDIATE EXAMINATION IN MEDICINE.

Special Classes in the subjects required for the July Examination are held from January to July.

		Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Anatomy.	W. ANDERSON, F.R.C.S. G. H. MAKINS, F.R.C.S.			Twice a week			
Materia Medica and Pharmaceutical Chemistry.	E. WHITE.		Once	a week	in the	Summer.	
Organic Chemistry	A. J. BERNAYS, Ph.D.	—	Summer 10	11	—	—	—
Organic Analysis		—	—	—	—	—	10
Physiology, The DEMONSTRATOR.				Twice a week			

Fee to Students of the Hospital inclusive of Organic Analysis and Chemicals* .. .. .. *Nine Guineas.*
To others ditto .. .. *Twelve Guineas.*
Fee for any Single Subject .. .. *Three Guineas.*
Subsequent Courses, half Fee, if recommended by the respective Teachers (except Chemicals, for which full fee is charged).

* Instruction and Practice in Organic Analysis is essential for this Examination.

N.B.—Private Classes are held for the Final M.B. Examination.

THE MUSEUM OF HUMAN AND COMPARATIVE ANATOMY AND PATHOLOGY.

Curator.—S. G. Shattock, Esq., F.R.C.S.

Among the earliest contributors to this Museum were Mr. Cline, Sir A. Cooper, Mr. Travers, and Mr. Tyrrell.

The Printed Catalogue of the Museum consists of three octavo volumes: in the first volume, edited by Mr. John F. South, are described the preparations of Normal Human, Microscopical, and Comparative Anatomy; and the 2nd and 3rd volumes, edited by Mr. Sydney Jones, contain descriptions of the specimens illustrative of Pathological Anatomy. A Second Edition of the Pathological Catalogue by Mr. Shattock is in course of preparation. The first part of this, including the Injuries and Diseases of Bones and Joints is already published.

The COLLECTION of HUMAN ANATOMY consists of a Physiological and a Pathological Department: the former contains, besides wax models and casts, a large number of dissected Preparations, illustrating the Organs of Locomotion and Sense; the Nervous System; the Digestive, Respiratory, and Urinary Apparatus; the Vascular System, the Organs of Reproduction, and the tissues.

The Pathological Division is very rich, containing above 4000 Specimens, arranged in thirty-seven Sections, as follows:—

SECT.
A. Injuries of Bone: Fractures.
B. Injuries of Joints: Dislocations.
C. Diseases of Bone.
D. Diseases of Joints.
E. Diseases of the Spinal Column.
F Injuries and Diseases of the Muscular System.
G. Injuries and Diseases of the Eye.
H Injuries and Diseases of the Ear.
I. Injuries and Diseases of the Nose, Antrum, &c.
K. Injuries and Diseases of the Skin and Subcutaneous Cellular Tissue.
L. Injuries of the Skull.
M. Injuries of the Spine.
N. Injuries and Diseases of the Nervous System.
O. Injuries and Diseases of Mouth, Fauces, Pharynx, and the Œsophagus.
P Injuries and Diseases of the Stomach.
Q. Injuries and Diseases of the Intestines and Peritoneum.
R. Intussusception, Internal Strangulation, and Hernia.
S. Injuries and Diseases of the Liver.
T. Diseases of the Pancreas and Salivary Glands.
U. Injuries and Diseases of the Spleen.
V. Diseases of Thyroid, Thymus, and Suprarenal Capsules.

SECT.
W. Injuries and Diseases of the Respiratory Apparatus.
X. Injuries and Diseases of the Heart and Pericardium.
Y. Injuries and Diseases of Arteries and Veins.
Z. Diseases of Lymphatic and Lacteal Vessels and Glands.
AA. Injuries and Diseases of the Kidneys, and Ureters.
BB. Injuries and Diseases of the Bladder.
CC. Diseases of the Prostate Gland and Vesiculæ Seminales, Urinary and Prostatic Calculi.
DD. Injuries and Diseases of the Penis and Urethra.
EE. Injuries and Diseases of the Testicles and Scrotum.
FF. Diseases of the Ovaries and Fallopian Tubes.
GG. Injuries and Diseases of the Uterus, Vagina, and external organs
HH. Diseases and displacements of the Ovum.
II. Diseases of the Breast.
KK. Tumours and other allied Morbid Growths.
LL. Malformations.
MM. Wax Models and Casts.

Bones, Joints, &c.—Amongst the specimens illustrating Injuries of Bones and Joints, are nearly all those described and figured in Sir A. Cooper's Treatise on 'Dislocations and Fractures of the Joints, and in Cooper's and Travers's 'Surgical Essays.'

This section has been enriched by Sir William MacCormac, who presented numerous specimens of gunshot fractures, &c., obtained from cases under his care during the Franco-German War (1870).

Sir A. Cooper's preparations, illustrating repair after fracture, are contained in this Section.

Eye.—This Section was arranged by Mr. Dixon, and contains specimens described and figured by Sir A. Cooper, Mr. Travers, and Mr. Saunders. A number of Specimens are also kept for purposes of Demonstration in the Eye Department.

Skin.—Several Tumours are contained in this Section, as well as, amongst others, the horn, ten inches in length, removed from a man's forehead by Sir A. Cooper.

Head, Spine, Nervous System.—Showing all kinds of Injuries to the Skull; Spinal Injuries, which have been subjected to operation by Cline, Tyrrell, and South, as well as every variety, frequent and rare, of disease of the Nervous System.

Intestines and Peritoneum.—Travers's Preparations, illustrating 'The Process of Nature in repairing Injuries of the Intestines,' are contained in this Section.

Hernia.—This Section contains nearly all the Preparations figured and described in 'Cooper's Hernia.' Besides the more common varieties of Hernia, there are Specimens of Thyroideal, Ischiatic, Perineal, Phrenic, and other rare forms of Hernia.

Liver.—Besides every variety of Hepatic Disease, this Section contains a large number of Biliary Calculi, many of which have been presented by Dr. Ord. Some specimens of Actinomycosis are also contained in it.

Respiratory and Vascular Systems.—Amongst these Preparations are two Specimens, showing ligature of the Abdominal Aorta; one of them the case of Sir A. Cooper; the other that of Mr. John F. South. There are also Specimens of spontaneous obliteration of the Aorta.

The Preparations illustrative of Travers's experiments on Arteries and Veins are in the collection.

There are also very interesting Specimens of Diseased Heart, described by Dr. Wells and Dr. Elliotson.

Kidneys.—Described and arranged by Sir John Simon.

Urinary Calculi.—250 in number—analysed by Mr. Heisch and Dr. Bernays.

Testes.—Most of the preparations figured in Sir A. Cooper's work 'On the Testis,' are contained in this Section.

Malformations.—This Section contains Specimens of Spina Bifida, Acephalous and Double monsters, Ectopia Cordis, Malformations of the Heart, Urinary, and Generative Organs. Most of them have been elaborately described by Mr. R. D. Grainger, and the malformations of the heart are referred to by Dr. Farre and Dr. Peacock in their works. There are also very interesting specimens of malformation described by Dr. Bristowe, Mr. Le Gros Clark, and Mr. Sydney Jones.

The Museum contains a considerable number of valuable Ethnological Specimens.

The Collection of Comparative Anatomy comprises about 700 Preparations, some of them very rare and valuable.

A large number of these Specimens were made by Sir A. Cooper, to illustrate his Lectures, when Professor of Comparative Anatomy to the Royal College of Surgeons.

The Cabinets of Microscopical Anatomy, which are under the charge of the Demonstrator of Practical Physiology, contain upwards of 2,000 injected and other Specimens of normal and morbid Histology, parasites, urinary deposits, &c. These include the Preparations made by Mr. Rainey, to illustrate the Histological Course of Lectures; and others described by him in Papers published in the Philosophical, Medico-Chirurgical, and Microscopical Transactions, and in various scientific works. This collection has been considerably enlarged by the addition of a series of specimens presented by Dr. Acland, which includes the chief forms of micro-organisms found in diseased tissues, as well as specimens illustrating the development of the Chick. The specimens are available for use by students who wish to examine them, subject to such regulations as may be deemed necessary.

The Materia Medica Museum contains in cases a complete collection of all the chemicals and organic substances included in the British Pharmacopœia of 1885; all these are named and numbered.

A second collection of all the chief medicinal substances is placed in drawers, and is freely accessible to students.

A large and very fine collection of dried medicinal plants, named according to the latest nomenclature, is displayed on the walls of the Museum.

The Museum is under the conjoint superintendence of Dr. Hadden and Mr. Shattock.

The Collection of Chemistry and Mineralogy is under the Superintendence of Dr. Bernays, who presented the larger part of the Specimens contained in it. It is displayed with the Collection of Materia Medica.

St. Thomas's Hospital.

MEDICAL AND PHYSICAL SOCIETY.

President, 1891-92.

Mr. J. B. Lawford.

Vice-Presidents.

The Physicians.
The Surgeons.
The Assistant Physicians.
The Assistant Surgeons.
Dr. Bernays.
Mr. Le Gros Clark.
Dr. Cranstoun Charles.
Dr. Copeman.
Mr. Walter Edmunds.
Mr. Sydney Jones.
Dr. Kilner.
Dr. Mackenzie.
Dr. Rayner.
Mr. G. Rendle.
Mr. S. G. Shattock.
Dr. Sherrington.
Dr. Seymour Taylor.
Mr. C. E. Truman.

Hon. Secretaries.

Mr. J. J. Perkins.
Mr. A. Banks.

Committee.

Mr. T. H. Kellock.
Mr. J. J. Perkins.
Mr. J. H. Fisher.
Mr. A. Banks.
Mr. L. V. Tebbs.
Mr. R. Fox Symons.
Mr. T. G. Nicholson.
Mr. E. A. Saunders.
Mr. W. H. J. Paterson.
Mr. P. L. Blaber.

This Society was originated in the early part of the present century by students of the Hospital, and has for its object the reading and discussion of papers on Medicine, Surgery, and subjects of General Interest, the narration of cases, and the exhibition of specimens of Physiological and Pathological interest. The Meetings are held in the Library on alternate Thursdays at 8.30 p.m., and terminate not later than 10 p.m.

The soirée, to which past and present students are invited, will be held in May or June.

Further information can be obtained of the Hon. Secretaries.

ST. THOMAS'S HOSPITAL REPORTS.

VOL. XX., NEW SERIES,

EDITED BY

W. B. HADDEN, M.D., F.R.C.P., AND
W. ANDERSON, F.R.C.S.,

Will be Published in due Course.

It will contain contributions from Members of the Staff and others, together with the Statistical Reports of the Hospital, by the Medical and Surgical Registrars, to December 31st, 1890.

The New Series commenced in 1870, and complete Sets may still be had.

Intending Subscribers are requested to communicate with Mr. G. RENDLE, the Secretary of the Medical School, at the Hospital, to whom P.O. Orders on the Westminster Bridge Office are to be made payable.

PRICE OF THE VOLUME (including Postage or delivery):—

To Subscribers in Great Britain and Countries within the Postal Union .. .. 6*s.* 0*d.*

To Non-Subscribers do. do. .. .. 8*s.* 6*d.*

SEPTEMBER, 1891.

1	Tu	House Officers, &c., commence duty.
2	W	Last day for applications for Clinical Clerkships and
3	Th	[Dresserships.
4	F	
5	S	
6	☽	Fifteenth Sunday after Trinity.
7	M	
8	Tu	
9	W	
10	Th	
11	F	
12	S	
13	☽	Sixteenth Sunday after Trinity.
14	M	
15	Tu	
16	W	Meeting to appoint Clinical Clerks and Dressers.
17	Th	
18	F	
19	S	
20	☽	Seventeenth Sunday after Trinity.
21	M	St. Matthew. Last day for entry for B.Sc. Exam. Univ.
22	Tu	[Lond.
23	W	
24	Th	
25	F	
26	S	
27	☽	Eighteenth Sunday after Trinity.
28	M	Last day for entry for M.B. Exam. Univ. Lond.
29	Tu	Michaelmas Day.
30	W	Last day for Essay for Grainger Prize.

Preliminary Examination in Arts of the Society of Apothecaries held this month.
The Hospital Entrance Science Scholarships Examination takes place during the last week of this month.

OCTOBER, 1891.

1	Th	Distribution of Prizes, 3 P.M. Annual Dinner.
2	F	Meeting of Library Committee.
3	S	
4	S	Nineteenth Sunday after Trinity.
5	M	
6	Tu	Clinical Clerks and Dressers commence duty.
7	W	
8	Th	
9	F	
10	S	
11	S	Twentieth Sunday after Trinity.
12	M	
13	Tu	
14	W	
15	Th	
16	F	
17	S	
18	S	Twenty-first Sunday after Trinity. St. Luke.
19	M	Univ. Lond. B.Sc. Exam.
20	Tu	
21	W	
22	Th	
23	F	
24	S	
25	S	Twenty-second Sunday after Trinity.
26	M	Univ. Lond. M.B. Exam.
27	Tu	
28	W	St. Simon and St. Jude.
29	Th	
30	F	
31	S	

The Registration and Museum Committees meet during this month.

The Primary Examination of the Society of Apothecaries is held Quarterly, in the months of October, January, April, and July. The Final is held monthly; the Surgical part commences on the second Wednesday, and the Medical on the Monday following.

First, Second, and Third Examinations of the Examining Board in England are held this month.

NOVEMBER, 1891.

1	☉	Twenty-third Sunday after Trinity. All Saints.
2	M	*Notice*—30th, last day for applications for Medical and
3	Tu	[Surgical Registrarships.
4	W	Last day for applications for House Offices, &c.*
5	Th	
6	F	
7	S	
8	☉	Twenty-fourth Sunday after Trinity.
9	M	Entry for M.D. and M.S. Exams. Univ. Lond. Prince
10	Tu	[of Wales b. 1841.
11	W	Meeting to appoint House Officers, &c.
12	Th	
13	F	
14	S	
15	☉	Twenty-fifth Sunday after Trinity.
16	M	
17	Tu	Univ. Lond. M.B. Pass List published.
18	W	Univ. Lond. M.B. Honours Exam.
19	Th	
20	F	
21	S	Univ. Lond. B.Sc. Pass List published.
22	☉	Twenty-sixth Sunday after Trinity.
23	M	
24	Tu	Last day for Entry for B.S. Exam., Univ. Lond.
25	W	
26	Th	
27	F	
28	S	
29	☉	First Sunday in Advent.
30	M	St. Andrew. Last day for applications for Medical
		[and Surgical Registrarships.

Examinations for the Fellowship of the Royal College of Surgeons of England held this month.

* *Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*

DECEMBER, 1891.

1	Tu	House Officers, &c., commence duty.
2	W	Last day for applications for Clinical Clerkships and
3	Th	[Dresserships.
4	F	
5	S	
6	S	Second Sunday in Advent.
7	M	Univ. Lond. M.D. and M.S. Exam.
8	Tu	Univ. Lond. B.S. Exam.
9	W	Meeting to appoint Clinical Clerks and Dressers.
10	Th	
11	F	
12	S	
13	S	Third Sunday in Advent.
14	M	Last day for Entry for Matriculation Univ. Lond.
15	Tu	
16	W	
17	Th	
18	F	Univ. Lond. M.D. List published. 1st Sessional Exam.
19	S	[commences.
20	S	Fourth Sunday in Advent.
21	M	St. Thomas. Last day for Entry for Prel. Sci. and Int.
22	Tu	[Med. Exam. Univ. Lond.
23	W	
24	Th	
25	F	Christmas Day.
26	S	Saint Stephen.
27	S	First Sunday after Christmas. Saint John, Evang.
28	M	Holy Innocents.
29	Tu	
30	W	
31	Th	

University of Cambridge First, Second, and Third M.B. Examinations are held this month.

Preliminary Examination in Arts of the Society of Apothecaries held this month.

Examinations for Diploma in Public Health of the Royal Colleges of Physicians and Surgeons held this month.

JANUARY, 1892.

1	F	Circumcision. Meeting of Library Committee.
2	S	
3	S	Second Sunday after Christmas.
4	M	
5	Tu	Clinical Clerks and Dressers commence duty.
6	W	Epiphany.
7	Th	
8	F	
9	S	
10	S	First Sunday after Epiphany.
11	M	Univ. Lond. Matriculation Examination.
12	Tu	
13	W	
14	Th	
15	F	
16	S	
17	S	Second Sunday after Epiphany.
18	M	Univ. Lond. Prelim. Scientific (M.B.) Exam. and
19	Tu	Intermd. Exam. in Medicine.
20	W	
21	Th	
22	F	
23	S	
24	S	Third Sunday after Epiphany.
25	M	Conversion of St. Paul.
26	Tu	
27	W	
28	Th	
29	F	
30	S	
31	S	Fourth Sunday after Epiphany.

First, Second, and Third Examinations of the Examining Board in England are held this month.

The Registration and Museum Committees meet during this month.

FEBRUARY, 1892.

1	M	
2	Tu	
3	W	Last day for applications for House Offices, &c.*
4	Th	
5	F	
6	S	
7	☩	Fifth Sunday after Epiphany.
8	M	
9	Tu	
10	W	Queen Victoria married, 1840. Univ. Lond. Prel. Sci.
11	Th	[(M.B.) List published. Meeting to appoint
12	F	[House Officers, &c.
13	S	
14	☩	Septuagesima Sunday.
15	M	
16	Tu	Univ. Lond. Int. Med. Pass List published.
17	W	Univ. Lond. Matric. List published.
18	Th	
19	F	
20	S	
21	☩	Sexagesima Sunday.
22	M	
23	Tu	
24	W	St. Matthias.
25	Th	
26	F	
27	S	
28	☩	Quinquagesima Sunday.
29	M	

* *Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*

MARCH, 1892.

1	Tu	House Officers, &c., commence duty.
2	W	Ash Wednesday. Last day for applications for Clinical
3	Th	[Clerkships and Dresserships.
4	F	
5	S	
6	✠	First Sunday in Lent.
7	M	
8	Tu	
9	W	Meeting to appoint Clinical Clerks and Dressers.
10	Th	Prince of Wales married, 1863.
11	F	
12	S	
13	✠	Second Sunday in Lent.
14	M	
15	Tu	
16	W	
17	Th	
18	F	
19	S	
20	✠	Third Sunday in Lent.
21	M	
22	Tu	
23	W	
24	Th	
25	F	Annunciation. Lady Day.
26	S	
27	✠	Fourth Sunday in Lent.
28	M	
29	Tu	
30	W	
31	Th	Registrar's Report for last year due. Last day for
		[Reports for Solly Medal.

Preliminary Examination in Arts of the Society of Apothecaries held this month.

APRIL, 1892.

1	F	Meeting of Library Committee.
2	S	
3	S	Fifth Sunday in Lent.
4	M	Last day for Entry for M.B. Exam. Univ. Lond.
5	Tu	Clinical Clerks and Dressers commence duty.
6	W	
7	Th	
8	F	
9	S	
10	S	Palm Sunday.
11	M	
12	Tu	
13	W	
14	Th	
15	F	Good Friday.
16	S	
17	S	Easter Sunday.
18	M	Bank Holiday.
19	Tu	
20	W	
21	Th	
22	F	
23	S	
24	S	First Sunday after Easter. Low Sunday.
25	M	St. Mark.
26	Tu	
27	W	
28	Th	
29	F	
30	S	

First, Second, and Third Examinations of the Examining Board in England are held this month.

The Examinations for the Mead and Cheselden Medals take place this month.

The Annual Inspection of the Museum and meeting of Museum Committee take place during this month.

The Registration Committee meets during this month.

MAY, 1892.

1	S	Second Sunday after Easter. St. Philip and St. James.
2	M	Summer Session commences. Univ. Lond. M.B. Exam.
3	Tu	
4	W	Last day for applications for House Offices, &c.*
5	Th	
6	F	
7	S	
8	S	Third Sunday after Easter.
9	M	Last day for Entry for Matric. Univ. Lond.
10	Tu	
11	W	First Stone of St. Thomas's New Hospital laid by H.M.
12	Th	[the Queen, 1868. Meeting to appoint House
13	F	[Officers, &c.
14	S	
15	S	Fourth Sunday after Easter.
16	M	
17	Tu	
18	W	
19	Th	
20	F	
21	S	
22	S	Fifth Sunday after Easter. Rogation Sunday.
23	M	
24	Tu	Queen Victoria born, 1819. Univ. Lond. M.B. Pass List
25	W	[published.
26	Th	Ascension Day. Holy Thursday.
27	F	
28	S	
29	S	Sunday after Ascension Day.
30	M	
31	Tu	

Examinations for the Fellowship of the Royal College of Surgeons of England and Univ. Camb. Third M.B. Exam. held this month.

** Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*

JUNE, 1892.

1	W	Last day for applications for Clinical Clerkships and
2	Th	[Dresserships.
3	F	
4	S	
5	✠	Whit Sunday.
6	M	Bank Holiday. No Lectures.
7	Tu	House Officers, &c., commence duty.
8	W	Meeting to appoint Clinical Clerks and Dressers.
9	Th	
10	F	
11	S	St. Barnabas.
12	✠	Trinity Sunday.
13	M	Univ. Lond. Matric. Exam. Last day for Entry for
14	Tu	[Int. Med. Exam. Univ. Lond.
15	W	
16	Th	
17	F	
18	S	
19	✠	First Sunday after Trinity.
20	M	Queen's Accession. Last day for Entry for Prel. Sci. (M.B.) Exam. Univ. Lond.
21	Tu	New St. Thomas's Hospital opened by H. M. the
22	W	[Queen, 1871.
23	Th	
24	F	St. John Baptist. Midsummer Day.
25	S	
26	✠	Second Sunday after Trinity.
27	M	
28	Tu	Queen Victoria crowned 1838.
29	W	St. Peter.
30	Th	

The Harveian Oration is delivered at the Royal College of Physicians annually in the month of June.

Doctor of Science Examination at London University takes place within the first 21 *days of June.*

Univ. Camb. First and Second M.B. Examinations are held within the first 14 *days of June.*

Preliminary Examination in Arts of the Society of Apothecaries held this month.

Examinations for Diploma in Public Health of the Royal Colleges of Physicians and Surgeons held this month.

JULY, 1892.

1	F	Meeting of Library Committee.
2	S	
3	S	Third Sunday after Trinity.
4	M	
5	Tu	Clinical Clerks and Dressers commence duty.
6	W	Last day for applications for House Offices, &c., for
7	Th	[September.*
8	F	
9	S	
10	S	Fourth Sunday after Trinity.
11	M	Univ. Lond. Int. Med. Exam.
12	Tu	
13	W	Meeting to appoint House Officers, &c., for September.
14	Th	[Univ. Lond. Matric. List published.
15	F	
16	S	
17	S	Fifth Sunday after Trinity.
18	M	Univ. Lond. Prelim. Scientific (M.B.) Exam.
19	Tu	
20	W	
21	Th	
22	F	
23	S	
24	S	Sixth Sunday after Trinity.
25	M	St. James.
26	Tu	
27	W	
28	Th	
29	F	
30	S	
31	S	Seventh Sunday after Trinity.

First, Second, and Third Examinations of the Examining Board in England are held this month.

The Registration and Museum Committees meet during this month.

** Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*

AUGUST, 1892.

1	M	Bank Holiday.
2	Tu	
3	W	
4	Th	
5	F	
6	S	
7	S	Eighth Sunday after Trinity.
8	M	
9	Tu	Univ. Lond. Int. Med. Pass List published.
10	W	Univ. Lond. Prelim. Sci. Pass List published.
11	Th	
12	F	
13	S	
14	S	Ninth Sunday after Trinity.
15	M	
16	Tu	
17	W	
18	Th	
19	F	
20	S	
21	S	Tenth Sunday after Trinity.
22	M	
23	Tu	
24	W	St. Bartholomew.
25	Th	
26	F	
27	S	
28	S	Eleventh Sunday after Trinity.
29	M	
30	Tu	
31	W	

SEPTEMBER, 1892.

1	Th	
2	F	
3	S	
4	☥	Twelfth Sunday after Trinity.
5	M	
6	Tu	House Officers, &c., commence duty.
7	W	Last day for applications for Clinical Clerkships and
8	Th	[Dresserships.
9	F	
10	S	
11	☥	Thirteenth Sunday after Trinity.
12	M	
13	Tu	
14	W	
15	Th	
16	F	
17	S	
18	☥	Fourteenth Sunday after Trinity.
19	M	Last day for Entry for B.Sc. Exam., Univ. Lond.
20	Tu	
21	W	St. Matthew. Meeting to appoint Clinical Clerks and
22	Th	[Dressers.
23	F	
24	S	
25	☥	Fifteenth Sunday after Trinity.
26	M	
27	Tu	
28	W	
29	Th	Michaelmas Day.
30	F	Last day for Essay for Grainger Prize.

Preliminary Examination in Arts of the Society of Apothecaries held this month. The Hospital Entrance Science Scholarships Examination takes place during the last week of this month.

LIST OF STUDENTS

WHO HAVE OBTAINED

Honours in the Annual Examinations.

w refers to Winter and s to Summer Session.

The Addresses are those given at the time of Entry.

Abbott (F. C.),* Gorleston.
w 1884–5. 1st Year Student, 1st Entrance Science Scholarship. The Wm. Tite Scholarship.
s 1885. 1st Year Student, 1st Coll. Prize.
w 1885–6. 2nd Year Student, The Peacock Scholarship.
w 1886–7. 3rd Year Student, 2nd tenure of Peacock Scholarship with 1st College Prize.
w 1887–8. 4th Year Student, The Cheselden Medal;
Treasurer's Gold Medal.

Acland (T. D.),† Oxford.
w 1877–8. 3rd Year Physical Society's Prize. Paper published in Hospital Reports, Vol. VIII.
w 1878–9. 4th Year Student. Mead Medal.

Addy (B.), West Deeping, Lincolnshire.
1869. 1st Year Student, 1st College Prize; Physical Society's 1st Year's Prize.
1870. 2nd Year Student, 1st Coll. Prize; Physical Society's 2nd Year's Prize.
1871. 3rd Year Student, 1st Coll. Prize; Prosector's Prize;
Treasurer's Gold Medal.

Allingham (W.),‡ Bermondsey.
1852. Descriptive Anatomy, Hon. Cert.; Chemistry, Hon. Cert.
1853. Midwifery, Hon. Cert.
1854. Medicine, Hon. Cert.; Descriptive Anatomy, Prize; Midwifery, Hon. Cert.; Physical Society's Essay, Prize; Surgery, Prize; Physiology, Hon. Cert.
1855. Medicine, Prize; Descriptive Anatomy, Hon. Cert.; Physiology, Hon. Cert.; Clinical Medicine, President's Prize; Clinical Medicine, Treasurer's Prize.

Anderson (W.),§ Clapham, Surrey.
1865. 1st Year Student, 3rd Coll. Prize.
1866. 2nd Year Student, 3rd Coll. Prize.
1867. 3rd Year Student, 1st Coll. Prize; Physical Society's 3rd Year's Prize; Cheselden Medal.

Armstrong (H. G.), Reading.
s 1872. 1st Year Student, Hon. Cert.
w1874. 3rd Year Student, 3rd Coll. Prize.

Atkinson (F. P.), Kew.
1861. 1st Year Matriculation Examination—Classics and Mathematics, Hon. Cert.

Atkinson (J.), Kirkby-Lonsdale.
1853. Chemistry, Hon. Cert.

Aveling (C. T.), Shacklewell.
1863. Matriculation Examination—Physics and Natural History, 1st College Prize;
1st Year Student, 1st College Prize.
1864. 2nd Year Student, 2nd College Prize.
1865. 3rd Year Student, 3rd College Prize.

Bailey (J. H. T.), Greenwich.
1843. Materia Medica, Hon. Cert.

Bain (J.)
1855. Midwifery, Hon. Cert.

Ballance (C. A.),‖ Lower Clapton.
w 1875-6. 1st Year Student, Hon. Cert.
w 1876-7. 3rd Year Student, 3rd College Prize, and Physical Society's 3rd Year's Prize;
1880. The Solly Medal and Prize.

Banks (A.), Clapham.
w 1887–8. 1st Year Student, 1st Coll. Prize.
s 1890. 3rd Year Student, 2nd Coll. Prize.
w 1890–91. 4th Year Student, The Cheselden Medal.

Barker (F. R.), Aldershot.
w 1875. Prosector's Prize.

Barron (H. J.), Guilford Street, Russell Square.
w 1877-8. 2nd Year Student, Prosector's Prize.

* Demonstrator of Anatomy at St. Thomas's Hospital.

† Assistant Physician, St. Thomas's Hospital. Assistant Physician, Brompton Hospital.

‡ Late Surgeon to St. Mark's Hospital and to Great Northern Hospital, formerly Surgical Tutor, Demonstrator of Anatomy, and Surgical Registrar at St. Thomas's Hospital.

§ Senior Assistant Surgeon, Surgeon for Skin Diseases to, and Joint Lecturer on Anatomy at, St. Thomas's Hospital. Professor of Anatomy to the Royal Academy, Hunterian Professor of Pathology and Surgery to the Royal College of Surgeons, Member of the Board of Examiners in Anatomy to the Examining Board in England.

‖ Assistant Surgeon for Diseases of the Ear, and Teacher of Practical Surgery, St. Thomas's Hospital. Assistant Surgeon to the Hospital for Sick Children, Great Ormond Street. Late Senior Assistant Surgeon to the West London Hospital. Late Surgical Registrar and Demonstrator of Anatomy at St. Thomas's Hospital.

BARWELL (R.),* Norwich.
1847. Medicine, Hon. Cert.; Midwifery, Hon. Cert.
1848. Physical Society's Essay, Treasurer's Prize; Physiology and Anatomy, Hon. Cert., Midwifery, Hon. Cert.; Dresser's Surg. Repts., Hon. Cert.
1850. Clinical Medicine, Prize.

BATESON (J. M.), Kirkby-Lonsdale.
1855. Chemistry, Hon. Cert.

BATTLE (W. H.),† Hanworth, Lincolnshire.
s 1874. Hon. Cert.
w 1875. 2nd Year Student, 3rd College Prize.
w 1876-7. 3rd Year Student, The First Solly Medal and Prize.

BEAL (P.), Plymouth.
1844. Chemistry, 2nd Prize.

BEARDSLEY (A.), Shipley, Derby.
1843. Midwifery, 2nd Prize.

BEDFORD (R. J.),‡ Sleaford.
1858. Midwifery, Hon. Cert.

BENWELL (H. D.), Greenwich.
1843. Chemistry, 2nd Prize.
1845. Physiology and Anatomy, Medal.
1847. Clinical Medical Reports, Prize; Gen. Proficiency, Trea. Medal.

BELL (C. N.), Rochester.
1867. 3rd Year Student, 3rd Coll. Prize.

BELL (J. V.), Rochester.
1859. 1st Year Student, Treasurer's 2nd Prize; Matriculation Examination—Classics and Mathematics, Hon. Cert.
1860. 2nd Year Student, Hon. Cert.
1861. 3rd Year Student, 3rd Coll. Prize.

BERNAYS (H. L.), Chatham.
w 1873. Prosector's Prize.

BERNAYS (A. V.), Great Stanmore.
s 1876. 1st Year Student, Hon. Cert.
w 1880–81. 3rd Year Student, 1st Coll. Prize.

BICKLE (L. W.), St. Leonard's-on-Sea.
s 1878. 1st Year Student, 3rd Coll. Prize;
s 1879. 2nd Year Student, 1st Coll. Prize.

BIDDLE (D.), Wotton-under-Edge.
1860. 1st Year Student, Trea. Prize; Matriculation Exam.—Prize.
1861. 2nd Year Student, Hon. Cert.
1862. 3rd Year Student, Hon. Cert

BIDWELL (H.), Ely.
w 1883–4. 4th Year Student, qualified for Mead Medal.

BIDWELL (L. A.), Lee.
w 1885–6. 4th Year Student, qualified for Cheselden Medal.

BIRTWELL (H. H.), Enfield, Lancashire.
1865. 3rd Year Student, Hon. Cert.

BLACK (J.), Kentish Town.
w 1872. 2nd Year Student, Prosector's Prize.

BLACK (W. S.), Chesterfield, Derby.
1855. Midwifery, Hon. Cert.; Medicine, Hon. Cert.

BLACKETT (W. C.), Durham.
1851. Descriptive Anatomy, Hon. Cert.

BLADES (C. C.).
1855. Midwifery, Hon. Cert.

BONE (W.), Camberwell.
1857. 1st Year Student, Trea. 1st Prize.
1858. 2nd Year Student, Trea. 1st Prize.

BONSER (J. H.), Sutton-in-Ashfield.
1871. 3rd Year Student, 2nd Coll. Prize; Cheselden Medal.

BOULGER (J.), Gravesend.
1870. 1st Year Student, Sir Wm. Tite's Scholarship.
1871. 2nd Year, Sir W. Tite's Scholarship.
w 1872. 3rd Year, Sir W. Tite's Scholarship.

BOX (C. R.), Camberwell.
w 1885–6. 1st Year Student, 2nd Coll. Prize.

BOWEN (E.), Llyn Gwair, Pembroke.
1847. Descriptive and Surgical Anatomy, Hon. Cert.; Materia Medica, Hon. Cert.
1848. Descriptive and Surgical Anatomy, Hon. Cert.; Physiology and Anatomy, Ho. Cert.; Botany, Hon. Cert.; Comparative Anatomy, Hon. Cert.

BOWN (J. Y.), America.
1848. Descriptive and Surgical Anatomy Hon. Cert.

BOYCOTT (A. N.), Rugeley.
w 1887–8. 4th Year Student, qualified for Cheselden Medal.

BRAKE (J.), Holt, Wilts.
1851. Matriculation Scholarship, Hon. Cert.; Descriptive Anatomy, Hon. Cert.; 1st Year Student, Scholarship; Chemistry, Hon. Cert.
1852. 2nd Year Student, Scholarship; Physiology, Prize; Materia Medica, Hon. Cert. Botany, Hon. Cert.; Medicine, Hon. Cert.
1853. 3rd Year Student, Scholarship; Clinical Medicine, Trea. Prize; Midwifery, Prize; Forensic Medicine, Prize.

BRISTOWE (J. S.),§ Camberwell.
1847. Medicine, Hon. Cert.; Physiology and Anatomy, Hon. Cert.; Descriptive and Surgical Anatomy, Prize.

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* Consulting Surgeon to Charing Cross Hospital.

† Assistant Surgeon to the Royal Free Hospital, and to the East London Hospital for Children and Women, Shadwell. Late Resident Assistant Surgeon, and Surgical Registrar, St. Thomas's Hospital.

‡ Late Assistant-Surgeon at the "Dreadnought" Hospital Ship.

§ Physician to, and Joint Lecturer on Medicine at, St. Thomas's Hospital. Examiner in Medicine, University of Oxford. Late Lecturer on General Pathology, St. Thomas's Hospital.

1848 Descriptive and Surgical Anatomy, Hon. Cert.;
Physiology and Anatomy, Prize;
Practical Chemistry, Prize;
Botany, Prize;
Midwifery, Hon. Cert.;
Comparative Anatomy, Prize;
Surgery, Prize;
General Proficiency, Treasurer's Medal.

Britton (T.), Doncaster.
1861. 1st Year Student, Hon. Cert.

Brock (J.), Northwich.
w 1872. 1st Year Student, 2nd Coll. Prize.
s 1872. Hon. Cert.

Brockatt (A. A.), Denmark Hill.
w 1884–5. 4th Year Student, qualified for the Mead Medal.

Brown (F. G.), London.
1860. 1st Year Student, Hon. Cert.
1861. 2nd Year Student, 3rd Coll. Prize.
1862. 3rd Year Student, 3rd Coll. Prize.

Brown (G. D.), Croydon.
1851. Physiology, Hon. Cert.;
Botany, Prize;
Surgery, Hon. Cert;
1852. Physiology, Hon. Cert.;
Physical Society's Essay, Treasurer's Prize;
Medicine, Hon. Cert.;
Pathology, Prize.

Brown (T. J. E.), Dorchester.
1848. Practical Midwifery, Hon. Cert.

Bucknill (E. R.), Bedford.
1855. 1st Year Student, Scholarship;
Midwifery, Hon. Cert.;
Chemistry, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
Materia Medica, Hon. Cert.

Bull (J.), Norwood, Surrey.
1848. Midwifery, Hon. Cert.

Burden (H.), Belfast.
w 1886–7. 1st Year Student, The William Tite Scholarship.
s 1887. 1st Year Student, 2nd Coll. Prize.
w 1887–8. 2nd Year Student, 2nd Coll. Prize.

Butler (W.), Stoke Newington.
1845. Materia Medica, Hon. Cert.

Caiger (F. F.), Gloucester-st., S.W.
w 1879–80. 1st Year Student, 3rd Coll. Prize.
w 1880–81. 2nd Year Student, 3rd Coll. Prize.
w 1882–83. 4th Year, the Mead Medal.

Cann (R. T.), Plymouth.
s 1882. 2nd Year Student. 1st Coll. Prize.
s 1883. 3rd Year Student. 2nd Coll. Prize.

Carpenter (A.),* Rothwell.
1848. Descriptive and Surgical Anatomy, Hon. Cert.;
Chemistry Prize;
Materia Medica, Hon. Cert.;
Matriculation Scholarship, Prize.
1849. Physiology Hon. Cert.;
Midwifery, Hon. Cert.;
Descriptive Anatomy, 1st Prize;
Medicine, 2nd Prize.

* Examiner in State Medicine, University of Cambridge. Late Lecturer on State Medicine at St. Thomas's Hospital.

1850. Physiology, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.,
Botany, Prize;
Medicine, Prize;
Surgery, Prize; [Medal.
General Proficiency, Treasurer's
1851. (Accoucheur) Midwifery, Prize;
Essay on Chorea, Mr. N. Smith's Prize.
1852. Surgical Reports, President's Prize;
Medical Reports, Dr. Roots' Prize;
Ophthalmic Reports, a Governor's Prize;
Clinical Medicine, Senior Prize.

Carpenter (A. B.), Croydon.
w 1876–7. 1st Year Student, Hon. Cert.

Carpenter (G. A.), Streatham.
w 1880–81. 1st Year Student, 3rd Coll. Prize.
s 1881. 1st Coll. Prize.
w 1881–2. 2nd Year Student, 3rd Coll. Prize.
Prosector's Prize.

Carr (J. T.), Bombay.
1844. Surgery, Prize.

Castle (H.), Newport, I. of Wight.
w 1874–5. 1st Year Student, 2nd Coll. Prize.
s 1875. 3rd College Prize.
w1876–7. Physical Society's 3rd Year's Prize.

Caudle (A.W.W.), Henfield, Sussex.
1858. Clinical Medicine, Prize.

Chaldecott (C. W.), Dorking.
1849. Descriptive Anatomy, Hon. Cert.;
Chemistry, Hon. Cert.;
Materia Medica, 2nd Prize;
1st Year Student, Scholarship.
1850. Physiology, Hon. Cert.;
Surgery, Prize.
1851. Physiology, Prize;
Descriptive Anatomy, Hon. Cert.;
Medicine, Hon. Cert.;
Physical Society's Essay, Treasurer's Prize;
Surgery, Hon. Cert.;
General Proficiency, Treasurer's Silver Medal.

Chaldecott (T. A.), Newington
1848. Descriptive Surgical Anatomy, Hon.
Chemistry, Hon. Cert.; [Cert.;
Botany, Hon. Cert.;
Materia Medica, Hon. Cert.;
Comparative Anat., Hon. Cert.;
Matriculation Scholarship, Prize;
Practical Chemistry, Hon. Cert.
1849. Physiology, Hon. Cert.;
Midwifery, Hon. Cert.;
Surgery, 2nd Prize;
Medicine, Hon. Cert.
1850. Physiology, Hon. Cert.;
Forensic Medicine, Prize;
Pathology, Prize;
Medicine, Hon. Cert.;
Surgery, Hon. Cert.

Chapman (C. E.), Preston.
1855. Midwifery, Hon. Cert.;
Materia Medica, Hon. Cert.
1857. Clinical Assistant, Prize;
Physical Society's Essay, Prize.

Charpentier (A. E.).
1882–3. 4th Year, The Mead Medal Exam., Special Mention and Hon. Cert.

Cherry (A. H.), Clapham.
1845. Clinical Medicine, Hon. Cert.

CHIPPERFIELD (W. N.), Reading.
1852. 1st Year Student, Scholarship; Descriptive Anatomy, Prize.
1853. 2nd Year Student, Scholarship; Physiology, Prize; Descriptive Anatomy, Prize; Midwifery, Prize; Physical Society's Essay, Prize; Medicine, Prize; Surgery, Prize.
1854. 3rd Year Student, Scholarship; Medicine, Prize; Descriptive Anatomy, Hon. Cert.; Midwifery, Prize; Physical Society's Essay, Treasurer's Prize; Forensic Medicine, Prize; Chemistry, Hon. Cert.; Comparative Anatomy, Prize; Pathology, Prize; Surgery and Surgical Anatomy, Cheselden Medal; Clinical Medicine, Treasurer's Prize, Physiology, Prize; [Medal. General Proficiency, Treasurer's

CLAPTON (E.),* Stamford.
1851. Matriculation Scholarship, Hon. Cert.; 1st Year Student, 1st Scholarship; Descriptive Anatomy, Prize; Chemistry, Prize.
1852. 2nd Year Student, Scholarship; Physiology, Prize; Materia Medica, Prize; Botany, Prize; Medicine, Hon. Cert.
1853. 3rd Year Student, Scholarship; Physiology, Hon. Cert.; [Prize; Clinical Medicine, Treasurer's Midwifery. Hon. Cert.: Physical Society's Essay, Treasurer's Prize; Medicine, Hon. Cert.; Forensic Medicine, Hon. Cert.; Chemistry, Hon. Cert.; Surgery, Hon. Cert.
1854. Ophthalmic Reports, Governor's Prize; Clinical Medicine, Mr. N. Smith's Prize.

CLAPTON (W.), Stamford.
1855. Midwifery, Hon. Cert.; Descriptive Anatomy, Hon. Cert.; Materia Medica, Prize.
1856. Clinical Medicine, Prize.
1858. Midwifery, Hon. Cert.

CLARKE (A.), Dorking.
1856. 1st Year Student, Treasurer's 2nd Prize.

CLARK (J. H.), Jamaica.
1867. 2nd Year Student, Physical Society's 2nd Year's Prize.

CLARKSON (J. W.), Surbiton.
w 1872. 2nd Year Student, 3rd Coll. Prize.
w 1873. 3rd Year Student. 2nd Coll. Prize; Surgery and Surgical Anatomy, Hon. Cert.

CLEGHORN (G.), Bedford.
1872. 3rd Year Student, Hon. Cert.

CLUTTERBUCK (M. C.), Bath.
w 1886–7. 1st year Student, 2nd Entrance Science Scholarship.

* Late Physician to, and Lecturer on Materia Medica at, St. Thomas's Hospital. Physician to the Magdalen Hospital.

COGGINS (T.), Hayford, Woodstock.
1847. Chemistry, Hon. Cert.
1848. Descriptive and Surgical Anatomy, Hon. Cert.; Midwifery, Hon. Cert.
1849. Midwifery, Hon. Cert.; Medicine, Hon. Cert.
1850. Surgical Reports, Prize; (Accoucheur) Midwifery, Hon. Cert.

COLBY (W. T.), Malton, York.
1849. Descriptive Anatomy, Hon. Cert.; Midwifery, Hon. Cert.

COLLIER (T. P.), Worship Square.
1847. Practical Midwifery, Prize.

COMPLIN (E. J.), Charterhouse Sq.
1851. Clinical Medicine, Prize; Medical Cases, President's Prize; Surgery, Hon. Cert.
1852. Midwifery, Hon. Cert.; Pathology, Hon. Cert.

COOK (S. B.), Cape of Good Hope.
s 1883. 1st year Student, 2nd Coll. Prize.

COOK (W.), Gainsboro'.
1844. Chemistry, Hon. Cert.; Materia Medica, Hon. Cert.

COOKE (C. W.), Regent's Park.
w 1883–4. 1st year Student, 1st Entrance Science Scholarship.

COOKE (J.), Stamford.
1855. Comparative Anatomy, Prize; Midwifery, Hon. Cert.; Physiology, Hon. Cert.

COOPER (H. S.), Brightlingsea.
s 1887. 2nd Year Student, 2nd Coll. Prize.

COPELAND (W. H. L.), South Kensington.
w 1887-8. 4th Year Student, qualified for the Mead Medal.

CORY (R.),† Carlisle.
1870. Physical Society's 3rd Year's Prize.

COUSINS (J. W.), Portsea.
1854. Descriptive Anatomy, Hon. Cert.; Chemistry, Hon. Cert.
1855. Surgery, Prize; Midwifery, Prize; Midwifery, Hon. Cert.
1856. Clinical Medicine, Prize; Surgery and Surgical Anatomy, Cheselden Medal.

COWEN (P.), Kennington.
1862. 1st Year Student, 2nd Coll. Prize.
1863. 2nd Year Student, 2nd Coll. Prize.
1864. 3rd Year Student, 2nd Coll. Prize.

COWEN (T. P.), Upper Holloway.
w 1884–5. 1st Year Student, ½ 1st and 2nd Coll. Prizes.
s 1885, 1st Year Student, 2nd Coll. Prize.
w 1885-6. 2nd Year Student, 1st. Coll. Prize.
s 1886. 2nd Year Student, 1st College Prize.
w 1886–7. 3rd Year Student, 2nd Coll. Prize.
w 1887–8. 4th Year Student, qualified for the Mead Medal.

COX (E.), Maiden Newton, Dorsetshire.
1866. 1st Year Student, 3rd Coll. Prize.
1868. 3rd Year Student, 2nd Coll. Prize.

† Assistant Obstetric Physician to, and Joint Lecturer on Forensic Medicine at, St. Thomas's Hospital.

COXWELL (C. F.), Brighton.
1880. 4th Year Student, the Mead Medal.

CRICK (S. A.), Cosby-hill, Leicestershire.
s 1875. 1st Year Student, Hon. Cert.
w 1875–6. Prosector's Prize.
w 1876-7. 3rd Year Student, 3rd Coll. Prize.

CROFT (J.),* Clapton.
1851. Descriptive Anatomy, Hon. Cert.
1853. Midwifery, Hon. Cert.

CROFTS (W. C.), Rowston, Lincoln.
1855. Surgery, Hon. Cert.;
Midwifery, Hon. Cert.

CROSBY (T. B.), Gosberton, Lincoln.
1851. Physiology, Prize;
Descriptive Anatomy, Prize;
Medicine, Prize;
Surgery, Prize.
1852. Physiology, Prize;
Descriptive Anatomy, Hon. Cert.;
Medicine, Hon. Cert.;
Forensic Medicine, Prize;
Practical Chemistry, Prize;
Surgery, Hon. Cert.;
Surgery and Surgical Anatomy, *Bronze* Cheselden Medal;
Comparative Anatomy, Prize.

CROSSMAN (J.), Redruth.
1871. Physical Society's 1st Year's Prize.
1872. Physical Society's 2nd Year's Prize.
1873. Physical Society's 3rd Year's Prize.

CROUCH (H. C.), Haverstock Hill.
w 1890–91. 1st Year Student, 2nd Entrance Science Scholarship.

CROWDY (F. D.), Bath.
w 1884–5. 4th Year Student, the Mead Medal.

DAVIES (D.), Carmarthenshire.
1843. Chemistry, 1st Prize;
Midwifery, Hon. Cert.;
Materia Medica, Prize.
1844. Medicine, Hon. Cert.;
Physiology and Anatomy, Hon. Cert.
1845. Clinical Surgical Reports, Medal.

DAVIES (D. S.), Bristol.
1875–6. Physical Society's 1st Year's Prize.

DAY (W. H.), Norwich.
1844. Surgery, Prize;
Physical Society's Essay, Hon. Cert.;
Dresser's Clinical Surgery, Prize.

DEAR (P. J.), Sutton.
w 1890–91. Ranks as First Scholar in Natural Science.

DECK (J. F.), Nelson, New Zealand.
1860. 1st Year Student, 1st Coll. Prize.
1861. 2nd Year Student, 1st Coll. Prize;
Physical Society's Prize.
1862. 3rd Year Student, 1st Coll. Prize;
Physical Society's Prize;
Cheselden Medal;
Treasurer's Gold Medal.

DICKERSON (S. H.), Hartest, Suffolk.
1853. Physiology, Hon. Cert.;
Materia Medica, Hon. Cert.;
Midwifery, Hon. Cert.;
Medicine, Hon. Cert.

DIXON (E. L.), Preston, Lancashire.
1852. 1st Year Student, Scholarship;
Chemistry, Hon. Cert.
1853. 2nd Year Student, Scholarship;
Physiology, Hon. Cert.;
Materia Medica, Prize;
Descriptive Anatomy, Hon. Cert.;
Midwifery, Hon. Cert.;
Botany, Prize;
Medicine, Hon. Cert.
1854. 3rd Year Student, Scholarship;
Descriptive Anatomy, Hon. Cert.;
Practical Chemistry, Prize;
Physiology, Hon. Cert.

DIXON (W. E.), Dulwich.
w 1890–91. 1st Year Student, 1st Entrance Science Scholarship.

DOBSON (N. C.),† Holbeach, Lincolnshire.
1865. 1st Year Student, 1st Coll. Prize.
1866. 2nd Year Student, 1st Coll. Prize.
1867. 3rd Year Student, 2nd Coll. Prize;
A Prize and Hon. Cert. for Proficiency in Surgery and Surgical Anatomy at the Cheselden Medal Examination;
Treasurer's Gold Medal.

DRAKE (A. J.), Kingsclere, Hants.
1870. 3rd Year Student, 1st Coll. Prize.

DRAKE (C. H.), Kingsclere, Hants.
1857. 1st Year Student, Hon. Cert.;
1858. 2nd Year Student, Treasurer's 1st Prize;
Clinical Medicine, 2nd Prize.
1859. 3rd Year Student, Hon. Cert.;
Surgery and Surgical Anatomy, Cheselden Medal; [Medal.
General Proficiency, Treasurer's

DRAKE (T.), Kingsclere, Hants.
1858. 2nd Year Student, Treasurer's 1st Prize;
1859. 2nd Year Student, President's Prize.
1860. 3rd Year, 1st College Prize;
Surgery and Surgical Anatomy, Cheselden Medal; [Medal.
General Proficiency, Treasurer's

DREW (G. F. A.), Plymouth.
1848. Descriptive and Surg. Anat. Prize;
Chemistry, Hon. Cert.;
Botany, Prize;
Comparative Anatomy, Hon. Cert.
Practical Chemistry, Prize;
Gen. Proficiency, Hon. Cert.
1849. Physiology, 2nd Prize;
Midwifery, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
Medicine, Hon. Cert.
1850. Physiology, Prize;
Descriptive Anatomy, Hon. Cert.;
Medicine, Hon. Cert.;
Surgery, Hon. Cert.

DUKES (C.),‡ Dalston.
1865. 1st Year Student, Hon. Cert.
1867. 3rd Year Student, Hon. Cert.;
Prosector's Prize and Hon. Cert.

* Late Member of Council Royal College of Surgeons. Late Surgeon to, Special Lecturer on Clinical Surgery, Lecturer on Practical Surgery, and Assistant Demonstrator of Anatomy at St. Thomas's Hospital. Late Examiner in Surgery, University of Durham.

† Surgeon to the Bristol General Hospital and Lecturer on Surgery at the Bristol Medical School.

‡ Physician to Rugby School, and Senior Physician to Rugby Hospital.

DUKES (T. A.), Croydon.
w 1888-9. 4th Year Student, Qualified for Mead Medal.

DUNCAN (H.), London.
w 1882-3 1st Year Student, 1st Entrance Science Scholarship, 1st Coll. Prize.
w 1883-4. 2nd Year Student, Prosector's Prize.

DUNCAN (W.),* Manchester.
w 1876-7. 1st Year Student, The William Tite Scholarship.
s 1877. 1st College Prize.
w 1877-8. 2nd Year Student, The Musgrove Scholarship.
2nd Year Physical Society's Prize.
s 1878. 1st College Prize.
w 1878-9. 2nd Tenure Musgrove Scholarship.
1st College Prize;
3rd Year Physical Society's Prize;
Grainger Testimonial Prize.
1880. 4th Year Student, The Cheselden Medal.
The Treasurer's Medal.
w 1881-2. The Solly Medal and Prize.

DUNMAN (G.), Camberwell.
1852. Chemistry, Hon. Cert.
1854. Midwifery, Hon. Cert.

DYER (F. J.), Blackheath.
1847. Chemistry, Prize;
Materia Medica, Hon. Cert.;
1849. Physiology, Hon. Cert.;
Midwifery, 2nd Prize;
Medicine, Hon. Cert.

ECCLES (C. H.), Brigg.
w 1884-5. 2nd Year Student, 1st Coll Prize.
s 1885. 2nd Year Student, 1st Coll. Prize.
w 1885-6. 3rd Year Student, 1st Coll. Prize.
s 1886. 3rd Year Student, 1st College Prize.

EDDOWES (J. H.), Loughboro'.
1843. Physiology and Anatomy, Hon. Cert.;
Chemistry, Hon. Cert.;
Comparative Anatomy, Prize.
1844. Physiology and Anatomy, Hon. Cert.;
Clinical Medical Reports, Silver Medal.
1845. Clinical Medicine, Prize.

EDDOWES (W. D.), Loughboro'.
1845. Descriptive and Surgical Anatomy, Prize.

EDMONDS (S.), St. Helen's, Lancashire.
1852. Chemistry, Hon. Cert.
1853. Midwifery, Hon. Cert.;
Medicine, Hon. Cert.;
Surgery, Hon. Cert.
1854. Surgery and Surgical Anatomy, Hon. Cert.;
Clinical Medicine, Treas. Prize;
Clinical Medicine, Pres. Prize.
1855. Surgical Reports, Pres. Prize;
Clinical Medicine, Dr. Roots' Prize.

EDWARDS (S.), Littlehampton.
1855. Midwifery, Hon. Cert.

EDWARDS (V.), Woodbridge, Suffolk.
1843. Surgery, Prize.

* Obstetric Physician to, and Lecturer on Obstetric Medicine and Practical Midwifery at, Middlesex Hospital. Obstetric Physician Royal Hospital for Women and Children. Examiner in Midwifery, Examining Board in England.

ELBOROUGH (P. J.), Herne Bay.
1845. Chemistry, Hon. Cert.
1847. Medicine, Hon. Cert.;
Midwifery, Prize.
1848. Medicine, Hon. Cert.;
Surgery, Hon. Cert.;
Surgical Reports, Pres. Prize.

ELLIS (J.), Portsea, Hants.
1857. Clinical Assistant (Medicine), Hon. Cert.

ELWIN (C. J.), London.
1855. Practical Midwifery, Prize.

EVANS (C. W. DE LACEY), Bangor.
w 1876-7. 3rd Year Student, The Solly Prize and Hon. Cert.

FAIRBANK (J.), Islington.
1865. 1st Year Student, Hon. Cert.
1866. 2nd Year Student, Prosec. Prize.

FARRANT (S.), Collumpton, Devon.
1859. 2nd Year Student, Hon. Cert.
1860. 3rd Year Student, Hon. Cert.

FAULKNER (R.), Camberwell.
1844. Botany, Prize;
Clinical Medical Reports, Hon. Cert.

FAWSSETT (F.), Surbiton.
w 1883-4. 1st Year Student, 2nd Entrance Science Scholarship. The William Tite Scholarship.
s 1884. 1st Year Student, 1st Coll. Prize.
w 1884-5. 2nd Year Student, The Musgrove Scholarship.
w 1885-6. 3rd Year Student, 2nd tenure of Musgrove Scholarship, with 3rd College Prize.
w 1886-7. 4th Year Student. The Cheselden Medal. Treasurer's Gold Medal.

FELL (W.), Kensington.
w 1878-9. 2nd Year Student, Prosector's Prize.

FENTON (H. A. H.), Westminster.
w 1875-6. 1st Entrance Science Scholarship.
s 1876. 1st Year Student, 1st College Prize.

FERNIE (A.), Yeldon, Beds.
1853. Physiology, Hon. Cert.;
Surgery, Hon. Cert.

FERNIE (W. T.), Yeldon, Beds.
1852. Practical Midwifery, Prize;
Midwifery, Hon. Cert.

FISHER (J. H.), Exeter.
w 1887-8. 1st Year Student, The William Tite Scholarship.
s 1888. 1st Year Student, 1st Coll. Prize.
w 1888-9. 2nd Year Student, The Musgrove Scholarship.
w 1889-90. 3rd Year Student, 2nd tenure of Musgrove Scholarship, with 1st College Prize.
s 1890. 3rd Year Student, 1st College Prize.
w 1890-91. 4th Year Student, qualified for the Cheselden Medal.
Treasurer's Gold Medal.

FISHER (T.), St. Michael's.
s 1872. 1st Year Student, Hon. Cert.
s 1873. 2nd Year Student, 2nd College Prize.
w 1874. 2nd Year Student, 3rd College Prize.
w 1875. 3rd Year Student, Surgery and Surgical Anatomy, Prize, and Cert. of Hon.

FORD (G. W.), Cape of Good Hope.
w. 1880-81. 3rd Year Student, Prosector's Prize.

FOWLER (J. T.), Winterton, Lincoln.
1854. Chemistry, Hon. Cert.
1855. Botany, Hon. Cert.

FOWLER (J.), Winterton, Lincoln.
1859. 1st Year Student, Hon. Cert.
1860. 2nd Year Student, 2nd College Prize.
1861. 3rd Year Student, 2nd College Prize.

FREEMAN (D.), Kennington.
1859. Clinical Medicine, Prize.

FREEMAN (A. J.), Southsea, Hants.
1865. 3rd Year Student, Hon. Cert.

FULTON (J. A.), Stockwell.
1852. Botany, Hon. Cert.
1853. Practical Chemistry, Prize.

FURNIVAL (F. H.), Nottingham.
w 1878-9. 1st Year Student;
The Wm. Tite Scholarship.

GARDNER (E. B.), London.
1858. Matriculation Examination—Classics and Mathematics, Prize.

GARTON (W.), St. Helier's.
1870. 2nd Year Student, 2nd College Prize, Physical Society's 2nd Year's Prize,
1871. Physical Society's 3rd Year's Prize.

GENGE (G. G.), Croydon.
w 1890-91. 1st Year Student, 1st Coll. Prize.

GEORGE (C. F.), Kirton-on-Lindsay.
1855. Midwifery, Hon. Cert.
1856. 2nd Year Student, Dr. Roots' Prize.
1857. 3rd Year Student, Hon. Cert.;
Surgery and Surgical Anatomy, Cheselden Medal.

GERVIS (F. H.), Tiverton.
1861. 1st Year Matriculation Scholarship.—College Prize, 2nd Coll. Prize.
1862. 2nd Year Student, 1st College Prize.
1863. 3rd Year Student, Hon. Cert. and Physical Society's Prize.

GERVIS (H.),* Tiverton.
1856. 1st Year Student, Trea. 1st Prize; Matriculation Examination, Physics, &c., Prize.
1857. 2nd Year Student, Pres. Prize; Physical Society's Essay, Prize.
1858. Clinical Assistant (Medicine), 2nd Prize;
Physical Society's Essay, Prize;
General Proficiency, Treasurer's Medal.

GILES (F. W.), Henley-on-Thames.
w 1875-6. 3rd Year Student, Hon. Cert.

GIMBLETT (J.), Taunton.
1860. 1st Year Student, Hon. Cert.

GIMLETTE (G. H. D.), Southsea.
s 1874. 1st Year Student. Hon. Cert.
w 1875-6. 3rd Year Student, Hon. Cert.
w 1876-7. Physical Society's 3rd Year's Prize.

* Consulting Obstetric Physician to St. Thomas's Hospital, and to the Royal Maternity Charity. Late Examiner in Obstetric Medicine at the University of Cambridge and the Royal College of Physicians. Late Obstetric Physician to, and Lecturer on Midwifery and Diseases of Women and Children at, St. Thomas's Hospital.

GLOVER (J. P.), Lansdowne Road.
w 1881-2. 3rd Year Student, 3rd Coll. Prize.

GODDARD (E.), London.
1860. Matriculation Examination, Classics, &c., Prize.

GODDARD (L.), London.
1856 Matriculation Examination, Classics and Mathematics, Prize.

GODFREY (A. E.), Northampton.
s 1883. 2nd Year Student, 2nd Coll. Prize.
w 1883-4. 3rd Year Student, 2nd Coll. Prize.

GOODDY (E. S.), Hampstead.
w 1882-3. 2nd Year Student, 3rd Coll. Prize.
s 1883. 2nd Year Student, 1st Coll. Prize.

GOWLAND (W.), London.
1845. Botany, Hon. Cert.

GRABHAM (C.), Islington.
1857. Matriculation Examination, Modern Languages, Prize.

GRABHAM (G. W.),† Islington.
1855. Matriculation Examination, Scholarship;
Midwifery, Hon. Cert.;
Materia Medica, Hon. Cert.

GRABHAM (J.), Rochford, Essex.
1848. Descriptive and Surgical Anatomy, Hon. Cert.;
Chemistry, Hon. Cert.;
Botany, Hon. Cert.;
Comparative Anatomy, Prize.
1850. Physiology, Hon. Cert.
1851. Physiology, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
Forensic Medicine, Prize;
Surgery, Prize;
Midwifery, Hon. Cert.

GRABHAM (M. C.), Islington.
1860. 2nd Year Student, Hon. Cert.
1861. 3rd Year Student, Hon. Cert.

GREAVES (C. A.), Derby.
1861. 1st Year Student, Treasurer's Prize; Matriculation Examination, Hon. Cert.
1862. 2nd Year Student, 2nd College Prize; Physical Society's Prize.
1863. 3rd Year Student, 1st College Prize; Physical Society's Prize;
Cheselden Medal.

GREEN (C. D.), New Cross.
w 1879-80. 1st Year Student, The Wm. Tite Scholarship.
s 1880. 3rd College Prize.
w 1880-81. 1st College Prize.
s 1882. 1st Coll. Prize.
w 1882-3. 4th Year Student, qualified for Treasurer's Gold Medal.

GREEN (J. T.), Peckham, Surrey.
1865. 1st Year Student, Physical Society's Prize.

GREEN (M. H.), Peckham.
s 1873. 1st Year Student, 2nd College Prize.

GROSE (S.), Boston, Lincoln.
1858. 2nd Year Student, Hon. Cert.
1859. Physical Society's Essay Prize.

† Government Inspector of Lunatic Asylums and Hospitals, New Zealand. Late Resident Medical Superintendent at Earlswood Asylum.

GRIFFITHS (A. L.), London.
1859. Midwifery, Hon. Cert.

GULLIVER (G.),* Canterbury.
w 1876-7. Physical Society's 2nd Year's Prize.

GURNEY (R. A. F.), Rampton, Cambridge.
1851. Practical Midwifery, Prize.

HAGUE (S.),† Camberwell.
1863. 1st Year Student, 2nd Coll. Prize.

HAIG-BROWN (C. W.), Godalming.
s 1878. 1st Year Student, 2nd College Prize;
w 1878-9. 2nd Year Student, 2nd College
w 1880-81. The Cheselden Medal. [Prize.

HAINWORTH (E. M.), Blackheath.
w 1888-9. 1st Year Student, 1st Entrance Science Scholarship.
s 1889. 1st Year Student, 2nd College Prize.
w 1890-91, 3rd Year Student, 1st Coll. Prize.

HAMMERTON (E.), Elland, York.
1857. 1st Year Student, Hon. Cert.

HAMMOND (J. H.), Bridlington, York.
1850 Medical Cases, President's Prize.

HARDING (J. A.), Bath.
1859. Clinical Medicine, 2nd Prize.
1860. Clinical Assistant (Medicine), 1st Prize.

HARPER (R.), Brighton.
1844. Clinical Surgical Reports, Hon. Cert.
1845. Physical Society's Essay, Prize; Dresser's Clinical Surgery, Prize.

HARRIS (J. E.), Lavender Hill.
w 1887-8. 1st Year Student, 1st Entrance Science Scholarship.

HASLAM (W. F.),‡ Reading.
s 1876. 2nd Year Student, 1st College Prize.
w 1877-8. The Cheselden Medal.

HATCHETT (F. W.), S. Wales.
s 1880. 1st Year Student, 1st College Prize.

HATTON (G. S.), Newent, Glo'stershire. [Prize.
w 1876-7. 2nd Year Student, Prosector's

HAWKINS (H. P.).§ Hawkhurst.
w 1882-3. 1st Year Student, The William Tite Scholarship.
w 1883-4. 2nd Year Student. The Peacock Scholarship.
w 1884-5. 3rd Year Student, 2nd tenure of Peacock Scholarship and 1st Coll. Prize.
w 1885-6. 4th Year Student, qualified for Mead Medal.

HAYDON (T. H.), Richmond, Surrey.
w 1889-90. 4th Year Student, qualified for Cheselden Medal.

* Late Physician to London Fever Hospital. Late Assistant Physician to, and Lecturer on Comparative Anatomy at, St. Thomas's Hospital.

† Late Medical Registrar at St. Thomas's Hospital.

‡ Assistant Surgeon to the Birmingham General Hospital; late Demonstrator of Anatomy at St. Thomas's Hospital.

§ Assistant Physician to, and Demonstrator of Morbid Anatomy at, St. Thomas's Hospital; Radcliffe Travelling Fellow, Oxford, 1886.

HEELIS (R.), Carshalton.
s 1877. 1st Year Student, 2nd College Prize.
s 1878. 2nd Year Student, 2nd Coll. Prize.

HEFFERNAN (H. H.), Southsea.
w 1883-4. 1st Year Student, 2nd Coll. Prize.
w 1886-7. 4th Year Student, qualified for Cheselden Medal.

HEIGHTON (T.), Leicester.
w 1873. 3rd Year Student, Hon. Cert.

HEWLETT (T. J.), Harrow.
1850. Matriculation Scholarship, Prize.

HEYGATE (W. N.), Harslope, Bucks.
1863. 2nd Year Student, Hon. Cert.
1864. 3rd Year Student, Hon. Cert.

HEYWOOD (C. C.), Swinton, Manchester.
s 1888. 3rd Year Student, 2nd Coll. Prize.

HICKS (J. W.), ‖ Highgate New Town, N.
1859. 1st Year Student, Trea.'s 1st Prize.
1860. 2nd Year Student, 1st College Prize; Physical Society's Prize.
1861. 3rd Year Student, 1st College Prize; Physical Society's Prize; Cheselden Medal; Treasurer's Gold Medal.

HIGGINS (A. H.), Bermondsey.
1857. Midwifery, Hon. Cert.

HILDITCH (J.), Sandbach, Cheshire.
1857. 1st Year Student, Hon. Cert.
1858. Physical Society's Essay, Prize.
1859. Essay on Neuralgia, Mr. N. Smith's Prize.

HOBHOUSE (E.), Batcombe.
w 1885-6. 3rd Year Student, 2nd Coll. Prize.
w 1886-7. 4th Year Student, qualified for the Mead Medal.

HODGES (H. B.).
1855. Midwifery, Hon. Cert.

HODGES (R.), London.
1843. Physiology and Anatomy, Hon. Cert.:
Medicine, Hon. Cert.;
Clinical Medicine, Hon. Cert.;
Surgical Essay, Silver Medal.

HO KAI, Hong Kong, China.
w 1875-6. 1st Year Student, Hon. Cert.
s 1876. Hon. Cert.
w 1876-7. 2nd Year Student, Hon. Cert.

HOLBERTON (H. N.), Hampton.
w 1876-7. 2nd Entrance Science Scholarship, and 2nd College Prize.
w 1877-8. 2nd Year Student, 1st Coll. Prize.

HOOPER (J. H.), Upton Warren.
1858. 1st Year Student, Hon. Cert.
1859. 2nd Year Student, College Prize.
1860. 3rd Year Student, Hon. Cert.

HOPTON (A. W.), Stockwell.
1851. Descriptive Anatomy, Hon. Cert.

HOUSE (F. M.), Chilbolton, Hants.
w 1886-7. 4th Year Student, qualified for the Mead Medal.

HOWELL (T.), London.
1850. Practical Midwifery, Prize.

‖ Late Lecturer on Botany at St. Thomas's Hospital; late Curator of the Museum.

HUBBARD (J. W.), Leicester.
1847. Clinical Medical Reports, Prize; Medicine, Prize; Physiology and Anatomy, Hon. Cert. Physical Society's Essay, Treasurer's Prize.

HULBERT (H. H.), Highworth.
w 1887–8. 4th Year Student, qualified for Cheselden Medal.

HULL (W. W.), Acton.
w 1878–9. 2nd Entrance Science Scholarship.
w 1881–2. The Mead Medal.

HUNT (J. A.), Derby.
w 1873. 1st Year Student, Hon. Cert.
w 1874. Prosector's Prize.

HUNTER (W. F.), Margate.
1859. 1st Year Student, Hon. Cert.; Matriculation Examination in Classics and Mathematics, Prize; Matriculation Examination in Modern Languages, Prize.
1860. 2nd Year Student, 3rd Coll. Prize.
1861. 3rd Year Student, Hon. Cert.

HURMAN (H. B.), Bridgewater.
1853. Midwifery, Hon. Cert.

HUTTON (J. S.), Sevenoaks.
w 1881–2. Entrance Science Scholarship. 2nd Coll. Prize.
s 1882. 1st Coll. Prize.
s 1884. 3rd Year Student, ½ 1st and 2nd Coll. Prizes.
w 1884–5. 4th Year Student, qualified for the Mead and Treasurer's Medals.

ILES (D.), Fairford.
1863. 2nd Year Student, Hon. Cert.
1864. 3rd Year Student, Hon. Cert.

INGLIS (W. W.),* Brixton Hill.
1864. 1st Year Student, 2nd Coll. Prize.
1865. 2nd Year Student, 2nd Coll. Prize.
1866. 3rd Year Student, 3rd Coll. Prize Cheselden Medal.

IVES (R.).
1855. Midwifery, Hon. Cert.

JACKSON (T. C.), Rotherhithe.
1844. Materia Medica, Hon. Cert.

JACOB (E. H.), Winchester.
w 1875–6. Physical Society's 3rd Year's Prize.

JACOBSON (T. E.), Sleaford, Lincoln.
1852. Practical Midwifery, Prize.

JAFFÉ (C. S.), Hyde Park.
w 1887–8. 1st Year Student, ½ 2nd Coll. Prize.
w 1890–91. 4th Year Student, qualified for the Mead Medal.

JAMES (C. H.), Oudh, India.
w 1887–8. Solly Medal and Prize.

JARDINE (J. L.), Brixton.
1848. Physiology and Anatomy, Hon. Cert.
1850. Medical Reports, Dr. Roots' Prize.

JAY (M.), Wallaroo, South Australia.
w 1877–8. 1st Year Student, 3rd Coll. Prize.

* Late Medical Registrar at St. Thomas's Hospital.

w 1878–9. 2nd Year Student, 2nd College Prize; Prosector's Prize.

JEFFERSON (T. J.), Hull.
1861. 2nd Year Student, Hon. Cert.
1862. 3rd Year Student, Hon. Cert.

JOHNSON (W. G.), Wandsworth.
1853. Chemistry, Hon. Cert.
1854. Midwifery, Hon. Cert.
1855. Comparative Anatomy, Prize; Midwifery, Hon. Cert.

JOHNSTON (G. D.).
w 1882–3. 4th Year, Cheselden Medal.

JONES (S.),†Cricklewood, Middlesex.
1851. Matriculation Scholarship, Prize; Descriptive Anatomy, Hon. Cert.; Chemistry, Hon. Cert.; 1st Year Student, Scholarship.
1852. 2nd Year Student, Scholarship; Physiology, Hon. Cert.; Descriptive Anatomy, Prize; Botany, Hon. Cert.
1853. Physiology, Hon. Cert.; Descriptive Anatomy, Hon. Cert.; 3rd Year Student, Scholarship; Materia Medica, Hon. Cert.

JONES (Sydney H.), George Street, Hanover Square.
w 1881–2. 1st Year Student, Entrance Science Scholarship. The Wm. Tite Scholarship.
w 1882–3. 2nd Year Student, ½ Musgrove Scholarship and 1st Coll. Prize combined. Prosector's Prize.
w 1883–4. 3rd Year Student, 2nd tenure of ½ Musgrove Scholarship, with 1st College Prize.
s 1884. 3rd Year Student, ½ 1st and 2nd Coll. Prizes.
w 1884–5. 4th Year Student, The Cheselden Medal. Treasurer's Gold Medal.

JONES (A. O.), Islington.
1862. 1st Year Student, Hon. Cert.

JONES (A. W.), Godington, Oxon.
s 1888. 3rd Year Student, 1st Coll. Prize.
w 1888–9. 4th Year Student, qualified for Mead Medal.

JONES (J.), Ilfracombe.
1863. Matriculation Examination — Modern Languages and Modern History, College Prize.

JONES (W. Wansbrough),‡ Leek.
w 1877–8. 1st Year Student; 1st Entrance Science Scholarship; £60. The William Tite Scholarship.
w 1877–8. 1st Year Physical Society's Prize;
s 1878. 1st Year Student, 1st Coll. Prize;
w 1878–9. 2nd Year Student, The College Scholarship;
s 1879. 2nd Year Student, 2nd Coll. Prize;
w 1879–80. 3rd Year Student, 2nd tenure of Coll. Scholarship, and 1st Coll. Prize.
w 1880–81. The Mead Medal; Treasurer's Gold Medal.

† Late Member of Council, Royal College of Surgeons; Consulting Surgeon to St. Thomas's Hospital; late Lecturer on Surgery, Anatomy and Ophthalmic Surgery.
‡ Radcliffe Travelling Fellow, Oxford, 1880. Late Resident Medical Officer, Barnes Convalescent Hospital, Manchester.

JOSEPH (S. W. J.), St. Leonards.
1873. Physical Society's 2nd Year Prize.

KEELE (J. T.), South Lambeth.
1853. Materia Medica, Hon. Cert.;
Midwifery, Hon. Cert.

KELLOCK (T. H.), Totnes.
w 1889-90. 4th Year Student; The Cheselden Medal.

KERAKOOSE (J.), East Indies.
1854. Midwifery, Hon. Cert.

KEYWORTH (J. W.),* Aston, Berks.
1848. Chemistry, Hon. Cert.;
Materia Medica, Prize;
General Proficiency, Hon. Cert.
1849. Physiology, Hon. Cert.;
Midwifery, 3rd Prize;
Medicine, Hon. Cert.;
Physical Society's Essay, Prize.
1850. Physiology, Hon. Cert.;
(Accoucheur)Midwifery,Hon. Cert.;
Ophthalmic Reports, a Governor's Prize;
Essay on Neuralgia, Mr. Newman Smith's Prize.
1851. Comparative Anatomy, Prize;
Clinical Medicine, Prize;
Surgical Reports, Prize;
Midwifery, Prize;
Medical Reports, Prize;
Pathology, Prize;
Physical Society's Essay, Prize.

KIDD (H. C.), Upper Norwood.
w 1881-2. 1st Year Student, 3rd Coll. Prize.
w 1884-5. 4th Year Student, qualified for the Mead Medal.

KING (A.), Norwich.
w 1886-7. 1st Year Student, 1st Coll. Prize.
s 1887. 1st Year Student, 1st Coll. Prize.
s 1888. 2nd Year Student, 1st Coll. Prize.
w 1888-9. 3rd Year Student, 3rd Coll. Prize.
s 1889. 3rd Year Student, 1st Coll. Prize.
w 1889-90. 4th Year Student; Treasurer's Gold Medal.

KNAGGS (R. H. E.), Trinidad, W. Indies.
w 1875-6. Prosector's Prize.

LAKE (W. W.), Ilford, Essex.
1873. Physical Society's 1st Year's Prize.

LAKE (R.), Dover.
w 1881-2. 2nd Year Student, Prosector's Prize.
w 1883-4. 4th Year Student, qualified for Cheselden Medal.

LAMBERT (T. W.), Cottingham.
w 1888-9. 4th Year Student, qualified for Cheselden Medal.

LANGLEY (R. J.), Tilehurst, Reading.
w 1886-7. 4th Year Student, qualified for Cheselden Medal.

LANKESTER (A. C.), Leicester.
w 1885-6. 1st Year Student, 1st Coll. Prize.
w 1886-7. 2nd Year Student, ‡, 1st and 2nd College Prizes.
w 1888-9. 4th Year Student, The Cheselden Medal.

LANKESTER (H.), Poole, Dorset.
1850. 1st Year Student, Scholarship;
Descriptive Anatomy, 1st Prize;
Chemistry, Prize.
1851. Physiology, Prize;
Materia Medica, Prize;
Descriptive Anatomy, Hon. Cert.;
Botany, Hon. Cert.;
Medicine, Prize;
Physical Society's Essay, Prize;
Surgery, Hon. Cert.
1852. 3rd Year Student, Scholarship
Physiology, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
Medical Cases, President's Prize;
Medicine, Prize;
Surgery, Prize;
Surgery and Surgical Anatomy Cheselden Medal;
General Proficiency, Treasurer's Medal.
1853. Surgical Essay, President's Prize.

LANKESTER (H. H.), Leicester.
w. 1880-81. Entrance Science Scholarship.
1st Year Student, 2nd Coll. Prize.
w 1881-2. 2nd Year Student, The College Scholarship Two Years.

LATTER (C.), Downham Market.
w 1890-91. 4th Year Student, The Mead Medal.

LAVER (H.)
1855. Midwifery, Hon. Cert.

LAVER (A. H.), Rayleigh.
1870. 1st Year Student, 3rd Coll. Prize.
1871. 2nd Year Student, 2nd Coll. Prize.
w 1872. 3rd Year Student, 2nd Coll. Prize, Cheselden Medal.

LAW (R. R.), Heslington.
w 1890-91. 4th Year Student, qualified for the Cheselden Medal.

LAWSON (R.), St. Andrews, N.B.
w 1880-81. 1st Entrance Science Scholarship.
1st Year Student, The Wm. Tite Scholarship.
s 1881. 2nd Coll. Prize.
w 1881-2. 2nd Year, 2nd Coll. Prize.
w 1882-3. 3rd Year, 2nd Coll. Prize.
w 1883-4. 4th Year Student, The Cheselden Medal;
Treasurer's Gold Medal.

LAXTON (T. L.), Stamford.
w1876-7. 2nd Year Student, Prosector's Prize.

LEDGER (M.), London.
1845. Dresser's Clinical Surgery, Prize.

LEES (J.),† Wolverhampton.
1859. 1st Year Student, Hon. Cert.;
1861. 3rd Year Student, Hon. Cert.;
Physical Society's Prize.

LEESON (T.), Snaith, York.
1847. Medicine, Hon. Cert.;
Surgery, Prize;
Physiology and Anatomy, Hon. Cert.;
Descriptive and Surgical Anatomy Hon. Cert.;
Midwifery, Hon. Cert.
1848. Descriptive and Surgical Anatomy, Hon. Cert.;
Physiology and Anatomy, Hon. Cert.;
Medicine, Hon. Cert.;
Midwifery, Prize.

LE GROS (J.), Jersey.
1844. Medicine, Hon. Cert.;
Midwifery, 1st Prize.
1845. Clinical Medical Reports, Medal;
Medicine, Hon. Cert.;
Dresser's Clinical Surgery, Prize.

* Late Lecturer on Physiology at Sydenham College, Birmingham.

† Late Demonstrator of Morbid Anatomy at St. Thomas's Hospital.

LEREW (F. W.), Maida Vale.
s 1876. 1st Year Student, Hon. Cert.

LITTELJOHN (S. G.), Falmouth, Jamaica.
1865. 1st Year Student, Hon. Cert.

LOCOCK (H. S.), Blackheath.
1848. Descriptive and Surgical Anatomy, Hon. Cert.;
Physiology and Anatomy, Hon. Cert.;
Midwifery, Hon. Cert.
1849. Physiology, Hon. Cert.

LONGSTAFF (G. B.), Wandsworth.
w 1873-4. 1st Year Student, 2nd Coll. Prize.
s 1874. 1st Coll. Prize;
Physical Society's 1st Year's Prize;
s 1875. 2nd Year Student, 2nd Coll. Prize.
w 1875-6. 3rd Year Student, 1st Coll. Prize.
w 1876-7. 4th Year Student, Mead Medal.

LOVELL (C. P.), Hyde Park.
w 1886-7. 1st Year Student, 1st Entrance Science Scholarship.
w 1887-8. 2nd Year Student, The Peacock Scholarship.
w 1888-9. 3rd Year Student, Second Tenure of Peacock Scholarship.

LUARD (H. B.), Aveley, Essex.
s 1886. 3rd Year Student, 2nd Coll. Prize.
w 1886-7. 4th Year Student, qualified for the Mead Medal.

LUSH (W. H.), Devizes.
w 1872. 2nd Year Student, Prosector's Prize.

LUSH (J. S.), West Lavington.
s 1873. 1st Year Student, 3rd Coll. Prize.

MACEVOY (H. J.), Chantilly.
w 1884-5. 3rd Year Student, ½ 2nd and 3rd College Prizes.
s 1885. 3rd Year Student, ½ 1st and 2nd Coll. Prizes.
w 1885-6. 4th Year Student, Bronze Mead Medal.

MACKENZIE (H. W. G.),* Edinburgh.
w 1882-3. 3rd Year Student, 3rd Coll. Prize.
s 1883. 3rd Year Student, 1st Coll. Prize.
w 1883-4. 4th Year Student, The Mead Medal.

MACMURDO (H. H.), New Broad Street.
1847. Chemistry, Hon. Cert.
1849. Midwifery, Hon. Cert.

MANBY (W. G.), Barking, Essex.
1851. Descriptive Anatomy, Hon. Cert.

MARCH (H. C.), Newbury.
1858. 1st Year Student, Treasurer's 2nd Prize.
1859. 2nd Year Student, Hon. Cert.
1860. 3rd Year Student, Hon. Cert.

MARTIN (C. J.), Dalston.
w 1884-5. 1st Year Student, 2nd Entrance Scholarship.

MASON (M. T.), Newington.
1845. Practical Midwifery, Hon. Cert.

MAYBURY (A. C.), Frimley, Surrey.
1865. 3rd Year Student, Hon. Cert.

MAYBURY (W. A.), Frimley, Surrey.
1867. 1st Year Student, 3rd College Prize.

MAYBURY (H. M.), Frimley, Surrey.
1869. 1st Year Student, 2nd Coll. Prize.
1871. 3rd Year Student, 3rd Coll. Prize.

MAYBURY (A. V.), Frimley.
1870. 1st Year Student, 2nd Coll. Prize.
1871. 2nd Year Student, 1st Coll. Prize.
w 1872. 3rd Year Student, 1st Coll. Prize; Treasurer's Gold Medal.

MAYNARD (J. C. M.)
1855. Midwifery, Hon. Cert.

MEADOWS (H.), Leicester.
1867. 1st Year Student, The William Tite Scholarship;
Phys. Soc. 1st Year's Prize.
1868. 2nd Year, Tite Scholarship;
Phys. Soc. 2nd Year's Prize.

MILLAR (W. H.), Brixton Hill.
w 1888-9. 3rd Year Student, 2nd Coll. Prize.
s 1889. 3rd Year Student, 2nd Coll. Prize.

MILLER (B.), London.
1845. Midwifery, Hon. Cert.;
Practical Midwifery, Prize;
Clinical Medicine, Prize.

MILNE (C. W.), Aberdeen.
1865. 1st Year Student, Hon. Cert.

MISKIN (E.), Lambeth.
s 1890. 2nd Year Student, 1st Coll. Prize.

MISKIN (L. J.), Lambeth.
w 1889-90. 1st Year Student, 2nd Coll Prize.
w 1890-91. 2nd Year Student, Half 1st and 2nd Coll. Prizes.

MITCHELL (J.), Leicester.
1866. 1st Year Student, 2nd Coll. Prize;
Phys. Society's 1st Year's Prize.
1867. 2nd Year Student, 2nd Coll. Prize.
1868. 3rd Year Student, 2nd Coll. Prize.

MONEY (F. J.), Offham, Kent.
1849. Descriptive Anatomy, 2nd Prize;
Chemistry, Prize;
Materia Medica, 1st Prize;
Matriculation Scholarship, Prize;
1st Year Student Scholarship.
1850. Physiology, Prize;
Comparative Anatomy, Prize;
Descriptive Anatomy, Prize;
Medicine, Prize;
Surgery, Hon. Cert.
1851. Descriptive Anatomy, Hon. Cert.;
Midwifery, Prize;
Medicine, Prize;
Physical Society's Essay, Prize;
Surgery, Prize;
Surgery and Surgical Anatomy, Cheselden Medal;
General Proficiency, Treasurer's Gold Medal.

MONTAGUE (A. J. H.), Wandsworth Road.
w 1884-5. 4th Year Student, qualified for the Mead Medal.

MORETON (J. E.), Marton, Cheshire.
1850. 1st Year Student, Scholarship;
Descriptive Anatomy, Hon. Cert.;
Chemistry, Hon. Cert.
1851. Materia Medica, Hon. Cert.;
Botany, Hon. Cert.;
1852. Physiology, Prize;
Descriptive Anatomy, Prize;
Physical Society's Essay, Prize;
Medicine, Prize;
Surgery, Prize;
2nd Year Student, Scholarship.

* Assistant Physician to the Royal Free Hospital and to the Hospital for Consumption, Brompton; Medical Registrar at, late Resident Assistant Physician to, St. Thomas's Hospital.

1853. 3rd Year Student, Scholarship; Physiology, Prize; Clinical Medicine, Pres. Prize; Clinical Medicine, Treas. Prize; Clinical Medicine, Mr. N. Smith's Prize; Descriptive Anatomy, Hon. Cert.; Midwifery, Hon. Cert.; Ophthalmic Surgery, Prize; Medicine, Prize; Forensic Medicine, Hon. Cert.; Surgery, Hon. Cert.; Surgery and Surgical Anatomy, Cheselden Medal; Gen. Proficiency, Treas. Medal.
1854. Clinical Med., Dr. Roots' Prize; Pathology, Hon. Cert.

MORETON (T.), Marton, Cheshire.
1857. 1st Year Student, Treasurer's 2nd Prize; Matriculation Examination, Classics and Mathematics, Prize.
1858. Clinical Medicine, Prize.
1859. 3rd Year Student, Hon. Cert.; Clinical Medicine, Hon. Cert.

MORGAN (S.), London.
1852. Descriptive Anatomy, Hon. Cert.
1853. Midwifery, Hon. Cert.
1854. Midwifery, Hon. Cert.; Forensic Medicine, 2nd Prize.

MORRIS (C. K.), Spalding, Lincolnshire.
w 1875. Prosector's Prize.

MORTON (J.), Holbeach, Lincoln.
1861. 1st Year Student, Hon. Cert.
1862. 2nd Year Student, Hon. Cert.
1863. 3rd Year Student, Hon. Cert.

MOXON (H. M.), Brigsham.
1871. Prosector's Prize.

MUSSON (A. W.), Clitheroe.
w 1888–9. 4th Year Student, qualified for Mead Medal.

MUSSON (W. E.), Birkholme, Lincoln.
1850. Matriculation Scholarship, Prize; Descriptive Anatomy, Hon. Cert.
1851. Physiology, Hon. Cert.; Comparative Anatomy, Hon. Cert.; Medicine, Hon. Cert.

NEWBY (C. H.),* London.
1870. Prosector's Prize.

NEWSHOLME (A.), Bradford.
w 1875-6. 1st Year Student, 1st Coll. Prize.
w 1876-7. 2nd Year Student, 1st College Scholarship.
s 1877. Ditto 1st Coll. Prize.
w 1877-8. 3rd Year Student, The "College Scholarship," 1st Coll. Prize.

NEWTH (A. H.), Kennington, Surrey.
1865. 1st Year Student, Hon. Cert.

NICHOL (F. E.), Roupell Park.
w 1884-5. 4th Year Student, qualified for the Cheselden Medal.

NICHOL (R.), Camberwell.
1844. Chemistry, 1st Prize; Materia Medica, Prize.
1845. Physiology and Anatomy, Hon. Cert.; Botany, Prize; Comparative Anatomy, Prize.

* Late Surgical Registrar at St. Thomas's Hospital.

NICHOLSON (F. W.), Putney.
s 1877. 1st Year Student, 3rd Coll. Prize.
w 1877-8. 2nd Year Student, Prosector's Prize.

NICHOLSON (J. F.),† Brigg, Lincoln.
w 1873. 1st Year Student, 1st Coll. Prize.
s 1873. 1st Year Student, 1st Coll. Prize.
w 1874. 2nd Year Student, 1st Coll. Prize.
s 1874. Ditto 1st Coll. Prize.
w 1875. 3rd Year Student, 1st Coll. Prize; Cheselden Medal; Mead Medal; Treasurer's Gold Medal.

NICHOLSON (T. G.), Norwich.
w 1889–90. 1st Year Student, 1st Entrance Science Scholarship.

NIX (H. W.), Somersham.
w 1888–9. 4th Year Student, qualified for Cheselden Medal.

O'CALLAGHAN (C.), Killarney.
1847. Chemistry, Hon. Cert.; Materia Medica, Prize.
1848. Medical Reports, President's Prize; Physiology and Anat., Hon. Cert. Midwifery, Hon. Cert.; Practical Midwifery, Prize; Forensic Medicine, Prize; Physical Society's Essay, Prize.
1849. Physical Society's Essay, Treasurer's Prize; Resident Accoucheur's Report, Prize.

ORANGE (W.),‡ Torquay.
1854. Midwifery, Hon. Cert.
1856. Midwifery, Hon. Cert.

ORD (G. R.), Brixton.
1858. Midwifery, Hon. Cert.

ORD (W. M.),§ Brixton.
1853. Matriculation Exam. Scholarship; 1st Year Student, Scholarship; Descriptive Anatomy, Prize; Chemistry, Prize.
1854. 2nd Year Student, Scholarship; Medicine, Prize; Materia Medica, Prize; Descriptive Anatomy, Hon. Cert.; Midwifery, Hon. Cert.; Surgery, Hon. Cert.; Physiology, Prize.
1855. 3rd Year Student, Scholarship; Surgery and Surgical Anatomy, Cheselden Medal; Forensic Medicine, Prize; Pathology, Prize; Practical Chemistry, Prize; Medicine, Hon. Cert.; Descriptive Anatomy, Hon. Cert.; Physiology, Prize; General Proficiency, Treasurer's Medal.
1856. Registrar, Prize.

ORD (W. W.), Brook Street.
s 1884. 1st Year Student, 2nd Coll. Prize.
w 1884–5. 2nd Year Student, ‡ 2nd College Prize.
w 1886-7. 4th Year Student, Mead Medal.

† Physician to the Hull General Infirmary.

‡ Late Resident Medical Superintendent at Broadmoor Asylum.

§ Physician to, and Joint Lecturer on Medicine at, St. Thomas's Hospital. Late Lecturer on Comparative Anatomy, Physiology, and Practical Physiology.

ORTON (K. J. P.), Leicester.
w 1890-91. 1st Year Student, The Wm. Tite Scholarship.

OSBORN (S.),* Brixton.
1870. Physical Society's 2nd Year's Prize.

OUGHTON (T.), London.
1858. Clinical Medical Assistant, 1st Prize.

OZANNE (C. H.), Guernsey.
1844. Descriptive and Surgical Anatomy, Prize.

OZANNE (J.), Guernsey.
1843. Physiology and Anatomy, Cheselden Medal;
Comparative Anatomy, Hon. Cert.
1844. Medicine, Prize;
Midwifery, 2nd Prize;
Surgery, Hon. Cert.;
Physical Society's Essay, Prize;
Clinical Surgical Reports, Silver Medal.

PAGE (W. H.), Cheltenham.
s 1872. 1st Year Student, Hon. Cert.
w 1873. 3rd Coll. Prize.

PALMER (M. H. C.), Newbury, Berks.
1870. Physical Society's 2nd Year's Prize.
1872. Physical Society's 3rd Year's Prize.

PARSONS (F. G.), Lee, Kent.
w 1882-3. 2nd Year, Prosector's Prize.
w 1886-7. 6th Year, Grainger Testimonial Prize.

PATERSON (W. H. J.), Shepherd's Bush.
w 1890-91. 1st Year Student, 2nd Coll. Prize.

PEARCE (G.), Salisbury.
1860. 1st Year Student, 2nd Coll. Prize.
1861. 2nd Year Student, 2nd Coll. Prize.

PEEK (F. H.), Diss, Norfolk.
s 1872. 1st Year Student, 1st Coll. Prize.
w 1873. The William Tite Scholarship.
w 1874. 2nd Year Wm. Tite Scholarship.

PENBERTHY (J.), Redruth.
1854. 1st Year Student, Scholarship;
Descriptive Anatomy, Prize;
Chemistry, Hon. Cert.
1855. 2nd Year Student, Scholarship;
Midwifery, Hon. Cert.;
Botany, Prize;
Descriptive Anatomy, Hon. Cert.

PERKINS (J. J.), Brixton.
w 1888-9. 3rd Year Student 1st Coll. Prize.
w 1889-90. 4th Year Student, qualified for Mead Medal.

PERN (A.), Winchester, Hampshire.
1865. 1st Year Student, Hon. Cert.

PHILLIPS (G. G.), Newcastle Emlyn.
1859. 2nd Year Student, Hon. Cert.
1860. 3rd Year Student, 3rd Coll. Prize.

PICKFORD (J. K.), Brixton.
w 1872. 1st Year Student, 3rd Coll. Prize.
s 1872. Hon. Cert.

PIETERSEN (J.), Cape of Good Hope.
w 1883-4. Solly Medal and Prize.

PIKE (W. R.), Leicester.
1868. Physical Society's 1st Year's Prize.

PIKE (J. B.), Leicester.
w 1872. 2nd Year Student, Hon. Cert.
w 1873. 3rd Year Student, Hon. Cert.

PLANCK (C.), Edenbridge.
w 1888-9. 1st Year Student, 2nd Coll. Prize.
w 1889-90. 2nd Year Student, The Peacock Scholarship.
s 1890. 2nd Year Student, 2nd Coll. Prize.
w 1890-91. 3rd Year Student, 2nd tenure of Peacock Scholarship: with 3rd Coll. Prize.

PLOWMAN (R.), Bridgewater, Somst.
1862. 1st Year Student, Hon. Cert.
1863. 2nd Year Student, Hon. Cert.
1865. 3rd Year Student, Hon. Cert.

POLLARD (F.), Taunton, Somerset.
1865. 1st Year Student, 2nd Coll. Prize.
1866. 2nd Year Student, 2nd Coll. Prize;
Physical Society's 2nd Year's Prize.
1868. 3rd Year Student, 1st Coll. Prize;
Physical Society's 3rd Year's Prize;
Cheselden Medal.

POTTER (H. P.),† Denmark Hill.
w 1872. 1st Year Student, Hon. Cert.
s 1872. 3rd College Prize.
w 1873. 2nd Year Student, 2nd Coll. Prize;
Prosector's Prize.
w 1874. 3rd Year Student, 1st Coll. Prize;
Cheselden Medal;
Hon. Cert. for Gen. Proficiency.
1875. Grainger Testimonial Prize.

POYNDER (G. F.), Clapham.
1872. Phys. Society's 1st Year's Prize.
1874. Phys. Society's 3rd Year's Prize.

PURKISS (A.), Kennington.
w 1875-6. 1st Year Student, Hon. Cert.
s 1876. Hon. Cert.

PURVIS (J. P.), Blackheath.
1861. 1st Year's Student, Hon. Cert.;
Matriculation Examination, Hon. Cert.
1862. 2nd Year Student, Hon. Cert.
1863. 3rd Year Student, Hon. Cert.

PURVIS (W. P.), Greenwich.
w 1890-91. 4th Year Student, qualified for the Cheselden Medal.

RAINBOW (F.), Lower Norwood.
1864. 1st Year Student, Hon. Cert.
1865. 2nd Year Student, 3rd Coll. Prize.
1866. 3rd Year Student, 2nd Coll. Prize.

RAYNER (H.),‡ Hythe, Kent.
1862. Matriculation Examination—Physics and Natural History, Hon. Cert.;
1st Year Student, 1st Coll. Prize.
1863. 2nd Year Student, 1st Coll. Prize.
1864. 3rd Year Student, Hon. Cert.;
Hon. Cert. for the Cheselden Medal.

RELTON (B.), Ealing.
1880. 2nd Entrance Science Scholarship.

RICHARDSON (C. S.), Greenwich.
1851. Surgery, Hon. Cert.
1852. Midwifery, Prize.

RICHARDSON (L.), Greenwich.
1848. General Pathology, Prize.

RICHARDSON (S. W. F.), Whitby.
w 1889-90. 1st Year Student, The William Tite Scholarship.
s 1890. 1st Year Student, 2nd Coll. Prize.
w 1890-91. 2nd Year Student, The Musgrove Scholarship.

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* Assistant Surgeon to the Hospital for Women, Soho Square. Late Surgical Registrar at St. Thomas's Hospital.

† Late Surgical Registrar to St. Thomas's Hospital.

‡ Lecturer on Psychology at St. Thomas's Hospital. Late Lecturer on Psychology at Middlesex Hospital, and Medical Superintendent Hanwell Asylum.

RIDGE (J. J.), Horselydown.
1864. 1st Year Student, The William Tite Scholarship.
1865. 2nd Year of Tite's Scholarship; Physical Society's 2nd Year's Prize Prosector's Prize.
1866. The Grainger Testimonial Prize.
1868. 3rd Year Tite Scholarship; Hon. Cert. for Proficiency in Surgery and Surgical Anatomy; Treasurer's Gold Medal.

ROBERTS (E. A.), Birmingham.
w 1884–5. 1st Year Student, ½ 1st and 2nd College Prizes.
s 1887. 3rd Year Student, 2nd Coll. Prize.

ROBINSON (H. B.),* Lower Norwood.
s 1881. 2nd Year Student, 1st Coll. Prize.

ROE (A. D.), Eccles.
w. 1880–81. 3rd Year Student, 2nd Coll. Prize.

ROGERS (R. S.), Greenwich.
1843. Midwifery, First Prize; Clinical Medicine, Hon. Cert.

ROSSITER (G. F.), Taunton.
1871. 1st Year Student, 1st Coll. Prize.
w 1872. 2nd Year Student, 2nd Coll. Prize.
s 1872. 1st Coll. Prize.
w 1873. 3rd Year Student, 3rd Coll. Prize; Cheselden Medal; Treasurer's Gold Medal.

ROUSE (R. E.), Woodbridge.
s 1880. 2nd Year Student, 3rd College Prize.

RUDALL (J. T.), Crediton, Devon.
1853. Physiology, Hon. Cert.; Midwifery, Hon. Cert.; Medicine, Hon. Cert.; Surgery, Hon. Cert.

RUSSELL (A. E.), Greenwich.
w 1889–90. 1st Year Student, 2nd Entrance Science Scholarship; 1st Coll. Prize.
s 1890. 1st Year Student, 1st College Prize.
w 1890–91. 2nd Year Student, ½ 1st and 2nd College Prizes.

SANDFORD (H. C.), Brixton.
w 1872. 1st Year Student, 1st Coll. Prize.
s 1872. 2nd College Prize.
w 1873. 2nd Year Student, 1st Coll. Prize.
s 1873. 3rd College Prize.
w 1874. 3rd Year Student, 2nd Coll. Prize; Treasurer's Gold Medal.

SANEYOSHI (Y.), Tokio, Japan.
w 1881–2. 3rd Year Student, 1st. Coll. Prize.

SANKEY (G. G.), Ashford, Kent.
1864. 3rd Year Student, 3rd Coll. Prize.

SAUNDERS (G. M. C.), London.
1843. Midwifery, Hon. Cert.

SAUNDERS (H. W.), London.
1867. 1st Year Student, 2nd Coll. Prize.
1868. Prosector's Prize.
1869. 3rd Year Student, 1st. Coll. Prize; Treasurer's Gold Medal; Physical Society's 3rd Year's Prize.

SAUNDERS (W. S.), Camden Town.
1844. Midwifery, Hon. Cert.
1845. Medicine, Prize; Midwifery, Prize; Clinical Medicine, Prize.

* Junior Demonstrator of Anatomy at St. Thomas's Hospital. Late Resident Assistant Surgeon to St. Thomas's Hospital.

SAVILL (T. D.), Brixton.
w 1875–6. 2nd Entrance Science Scholarship; 1st Year Student, The William Tite Scholarship.
s 1876. 3rd College Prize.
w 1876–7. 2nd Year Student, Hon. Cert.
s 1877. 2nd Year Student, 2nd Coll. Prize.

SCOTT (R. J.), Omagh, Tyrone.
1861. 1st Year Student, Hon. Cert.

SCUTT (T.), Bere Regis.
w 1882–3. 3rd Year Student, 1st Coll. Prize.

SEDGWICK (J.), Boroughbridge.
1854. Descriptive Anatomy, Hon. Cert.
1855. Surgery, Hon. Cert.; Midwifery, Hon. Cert.

SEDGWICK (L. W.), Boroughbridge.
1848. Descriptive and Surgical Anatomy, Prize; Physiology and Anatomy, Prize; Medicine, Hon. Cert.; Midwifery, Prize; Surgery, Prize;
1849. Physiology, 1st Prize; Midwifery, 1st Prize; Surgery, Prize; Medicine, 1st Prize; General Proficiency, Treasurer's Medal.

SERGEANT (E.), Preston.
1870. 3rd Year Student, 3rd Coll. Prize; Cheselden Medal.

SEWELL (E.), Little Oakley.
1848. Physiology and Anatomy, Hon. Cert

SHARKEY (S. J.),† Galway.
1874. Physical Society's 2nd Year's Prize.

SHAW (J.), Clapham Road.
w 1874–5. 1st Year Student, 1st Coll. Prize.
s 1875. 1st Coll. Prize.
w 1875–6. 2nd Year Student, 1st Coll. Prize

SHEA (H. G.), London.
1860. 1st Year Student, Hon. Cert.
1861. 2nd Year Student, Hon. Cert.
1862. 3rd Year Student, 2nd Coll. Prize.

SHEA (J.), London.
1855. Midwifery, Hon. Cert.
1859. Midwifery, Hon. Cert.

SHEARER (D. F.), Bradford, Yorks.
s 1888. 2nd Year Student, ½ 2nd Coll. Prize.
w 1889–90. 4th Year Student, qualified for Cheselden Medal.

SHEPPARD (C. E.),‡ Kensington.
w 1873–4. 1st Year Student, 1st Coll. Prize.
s 1874. 1st Year Student, 2nd Coll. Prize.
w 1874–5. 2nd Year Student, 1st Coll. Prize.
s 1875. 1st Coll. Prize.
w 1875–6. 3rd Year Student, 2nd Coll. Prize; Physical Society's 2nd Year's Prize.
w 1876–7. 4th Year Student, the Treasurer's Gold Medal.
w 1877–8. Solly Medal and Prize, £20. Paper published in Hosp. Reports, Vol. VIII.

† Physician to St. Thomas's Hospital. Late Joint Lecturer on Patholog. Anatomy and Demonstrator of Morbid Anatomy at St. Thomas's Hospital.

‡ Late Anæsthetist to the Dental Department, Resident Assistant-Physician and Medical Registrar, St. Thomas's Hospital.

SHEPPARD (W. J.), Kensington.
w. 1880–81. 3rd Year Student, 3rd Coll. Prize.
w 1881–2. The Treasurer's Gold Medal.

SHERRINGTON (C. S.),* Caius Coll., Cambs.
w 1882–3. 6th Year, Gralnger Testimonial Prize.

SHIRTLIFF (E. D.), Kingston-on-Thames.
w 1882–3. 2nd Entrance Science Scholarship.

SIDDALL (J. B.),† Morton, Derby.
1862. 1st Year Student, Hon. Cert.
1863. 2nd Year Student, Hon. Cert.
1864. 3rd Year Student, Hon. Cert.; Hon. Cert. for the Cheselden Medal.

SIMMONS (H. B. M.), West Indies.
1849. Descriptive Anatomy, Hon. Cert.

SIMON (M. F.), Blackheath.
1866. 1st Year Student, 1st Coll. Prize.
1869. 3rd Year Student, 3rd Coll. Prize; Prosector's Prize; Prize and Hon. Cert. for Surgery and Surgical Anatomy.

SIMPSON (H.), Market Weighton.
w 1889–90. 3rd Year Student, 3rd Coll. Prize.

SIMS (G. S.), Derby.
s 1881. 1st Year Student, 3rd Coll. Prize.

SISSONS (W. H.), Hull.
1858. Matriculation Examination—Physics, &c., Prize.
1859. 2nd Year Student, Hon. Cert.; Clinical Medicine, Prize; Physical Society's Essay, Prize.
1860. 3rd Year Student, 2nd Coll. Prize. Physical Society's Prize.

SKINNER (W.), Stockton-on-Tees.
1848. Botany, Hon. Cert.; Materia Medica, Hon. Cert.

SKIPPER (J.), Dalston, London.
1852. Midwifery, Hon. Cert.

SKIPTON (S. S.), East Indies.
1851. Midwifery, Hon. Cert.

SLATER (J. S.), Bath.
1868. 1st Year Student, 1st Coll. Prize.
1869. Physical Society's 2nd Year's Prize.
1870. 3rd Year Student, 2nd Coll. Prize; Treasurer's Gold Medal.

SLAUGHTER (C. H.), Farningham.
1855. Midwifery, Hon. Cert.

SLAUGHTER (G. M.), Farningham.
1854. Midwifery, Hon. Cert.

SMITH (E.), Wandsworth Common.
w 1888–9. 1st Year Student, 2nd Entrance Science Scholarship. The William Tite Scholarship.
s 1889. 1st Year Student, 1st Coll. Prize.
w 1889–90. 2nd Year Student, 1st Coll. Prize.
w. 1890–91. 3rd Year Student, 2nd College Prize.

SMITH (H. U.), Reading.
w 1876–7. 4th Year Student, Cheselden Medal.

SMITH (R. P.),‡ Belvedere.
s 1876. 2nd Year Student, 2nd College Prize.

SMYTH (H. J.), Brondesbury.
w 1882–3. 1st Year Student, 3rd Coll. Prize.
s 1883. 1st Year Student, 1st Coll. Prize.
w 1883–4. 2nd Year Student, 1st Coll. Prize.
s 1884. 2nd Year Student. 2nd Coll. Prize.
w 1885–6. 4th Year Student, Treasurer's Gold Medal.

SNAITH (F.), Boston, Lincolnshire.
1864. 3rd Year Student, Hon. Cert.

SOLLY (E.),§ Congleton.
w 1883–4. 2nd Year Student, 2nd Coll. Prize.
w 1885–6. Solly Medal and Prize.

SOLLY (R. V.), Congleton.
w 1884–5. 2nd Year Student, ‡ 2nd College Prize.
w 1886–7. 4th Year Student, qualified for Cheselden Medal.

SPRAKELING (R. J.), Canterbury.
1855. Midwifery, Hon. Cert.
1856. 2nd Year Student, Hon. Cert.; Clinical Medicine, Prize.

STABB (A. F.), Ilfracombe.
w 1885–6. 1st Year Student, 1st Entrance Science Scholarship; The William Tite Scholarship.
s 1886. 1st Year Student, 2nd College Prize.
w 1886–7. 2nd Year Student, The Musgrove Scholarship.
s 1887. 2nd Year Student, 1st Coll. Prize.
w 1887–8. 3rd. Year Student, 2nd Tenure of Musgrove Scholarship, with 1st Coll. Prize.
w 1888–9. 4th Year Student, qualified for Cheselden Medal. Treasurer's Gold Medal.

STABB (E. C.),‖ Ilfracombe.
w 1883–4. 2nd Year Student, Prosector's Prize.
s 1884. 2nd Year Student, 1st Coll. Prize.
w 1885–6. 4th Year Student, qualified for Cheselden Medal.

STABB (W. W.), Torquay.
w 1889–90. 4th Year Student. The Mead Medal.

STADDON (J. H.), London.
1858. Clinical Medicine, Prize.
1859. Clinical Medicine, Prize.

STEPHENS (J. N.), Walton-on-Thames.
w 1876–7. Physical Society's 1st Year's Prize.

STEPHENS (S. Sanders), Taunton.
1863. Physical Society's 2nd Year's Prize

STODDART (F. W.), Bristol.
w 1877–8. 1st Year Student, 1st Coll. Prize.

STOKES (W. G. G.), Cambridge.
w 1887–8. 3rd Year Student, 3rd Coll. Prize.

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* Lecturer on Physiology at St. Thomas's Hospital. Fellow of Gonville and Caius College, Cambridge. Physiological Society Hon. Sec. Examiner for the Natural Science Tripos, Parts II. and I., and in Physiology for the M.B. Degree, Univ. Camb. Examiner in Physiology for the Conjoint Board in England.

† Late Physician to H.B.M. Legation, Japan.

‡ Resident Physician and Medical Superintendent, Bethlem Royal Hospital for Lunatics. Late Resident Assistant-Physician to St. Thomas's Hospital

§ Resident Medical Officer, Royal Free Hospital. Late Surgical Registrar at St. Thomas's Hospital.

‖ Resident Assistant Surgeon and Surgical Registrar, St. Thomas's Hospital.

STONE (W. H.),* London.
1854. Matriculation Examination—Scholarship;
1st Year Student, Scholarship;
Descriptive Anatomy, Hon. Cert.;
1854. Botany, Prize;
Chemistry, Prize.
1855. 2nd Year Student, Scholarship;
Forensic Medicine, Prize;
Physical Society's Essay, Prize;
Practical Chemistry, Prize;
Medicine, Prize;
Descriptive Anatomy, Hon. Cert.;
Materia Medica, Prize;
Physiology, Prize; [Prize.
Clinical Medicine, Mr. N. Smith's
1856. Clinical Medical Prize; [Medal.
General Proficiency, Treasurer's

SUMMERHAYES (H.), Crewkerne, Somersetshire.
1861. Matriculation Examination—Classics and Mathematics, President's Prize; [Prize;
Modern Languages, &c., College Physics and Natural History, College Prize;
The William Tite Scholarship.
1862. 2nd Year Tite's Scholarship.
1863. 3rd Year Tite's Scholarship;
Treasurer's Gold Medal.

SUMMERHAYES (W.), Crekwerne, Somersetshire.
1856. Matriculation Examination—Classics and Mathematics, Hon. Cert.;
Matriculation Examination—Modern Languages, Prize.

SUTCLIFF (E.), Camberwell.
1861. 1st Year, 3rd College Prize;
Matriculation Examination—Hon. Cert.
1863. 3rd Year Student, 3rd Coll. Prize.

SUTCLIFFE (J.), Ashton-under-Lyne
1869. Prosector's Prize.

SUTCLIFFE (W. G.), Clapham.
w 1888–9. 1st Year Student, 1st Coll. Prize.
s 1889. 1st Year Student, 2nd Coll. Prize.
w 1889-90. 2nd Year Student, 2nd Coll. Prize.

SWALLOW (J. D.), Reading.
1861. 2nd Year Student, Hon. Cert.

SWEETING (R. B.), Reading.
1853. 1st Year Student, Scholarship;
Descriptive Anatomy, Hon. Cert.;
Chemistry, Hon. Cert.
1854. 2nd Year Student, Scholarship;
Midwifery, Prize.
1855. 3rd Year Student, Scholarship;
Midwifery, Hon. Cert.; [Prize.
Clinical Medicine, Treasurer's

SWEETING (T.), Reading.
1855. Midwifery, Hon. Cert.

TAKAKI (Kanehiro),† Kasumigaseki, Tokio, Japan.
w 1875–6. 1st Year Student, 3rd Coll. Prize.
s 1876. 2nd College Prize.
w 1876–7. 2nd Year Student, 1st Coll. Prize.
s 1877. 2nd Year Student, 3rd Coll. Prize.
w 1877–8. 3rd Year Student, 2nd Coll. Prize.
w 1878–9. 4th Year Student;
The Cheselden Medal;
The Treasurer's Gold Medal.

TALBOT (G. T.), Kidderminster.
1848. Medical Reports, Dr. Roots' Prize.

TAYLOR (C. M.), Wrawby, Brigg.
1871. 1st Year Student, 2nd Coll. Prize.
w 1872. 2nd Year Student, 1st Coll. Prize.
w 1873. 3rd Year Student, 1st Coll. Prize;
Surgery and Surgical Anatomy, Hon. Cert.

TAYLOR (S.),‡ Burton-on-Trent.
w 1872. 3rd Year Student, Hon. Cert.

TAYLOR (S. J.), Grantham.
s 1875. 1st Year Student, Hon. Cert.
w 1875–6. 2nd Year Student, The Musgrove Scholarship.
w 1876–7. 3rd Year Student, 2nd Year Musgrove Scholarship, and 1st College Prize.
w 1877–8. The Mead Medal;
The Treasurer's Gold Medal.

TEANBY (F. W.), Turnham Green.
1851. Practical Midwifery, Prize.
1852. Clinical Medicine, Junior Prize;
Midwifery, Hon. Cert.

THOMAS (L. M.), Camberwell.
1866. 1st Year Student, 3rd Coll. Prize.
1867. 2nd Year Student, 3rd Coll. Prize.
1869. 3rd Year Student, 2nd Coll. Prize;
Cheselden Medal.

THOMAS (P. C.), Chelsea.
w 1887–8. 4th Year Student, qualified for the Mead Medal.

THOMAS (W. L.), Neath, Glamorgan.
1845. Chemistry, Prize;
Materia Medica, Prize.
1847. Medicine, Hon. Cert.;
Physiology and Anatomy, Prize;
Physical Society's Essay, Prize.

THOMPSON (F. H.), Tenbury.
1870. Prosector's Prize.

THUDICHUM (G. D.), Kensington.
w 1878–9. Physical Society's 2nd Year's Prize.

TIMOTHY (P. V.), London.
1851. Practical Midwifery, Prize;
Midwifery, Hon. Cert.

TODD (A. J. M.), Gravesend.
w 1863. 1st Year Student, 2nd Coll. Prize.
w 1864. Prosector's Prize.

TOLLER (S. G.), Notting Hill.
w 1885–6. 1st Year Student, 2nd Entrance Science Scholarship.
s 1886. 1st Year Student, 1st College Prize.
w 1886–7. 2nd Year Student, ½ 1st and 2nd College Prizes.
w 1887–8. 3rd Year Student, 2nd Coll. Prize.
w 1888–9. 4th Year Student, The Mead Medal.

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* Late Physician to, and Lecturer on Physics and Natural Philosophy, and on Materia Medica at, St. Thomas's Hospital; Late Examiner in Medicine, Royal College of Physicians; Late Assistant-Physician to the Hospital for Consumption, Brompton.

† Director-General of the Medical Department Imperial Japanese Navy. Surgeon to the Tokio General Hospital.

‡ Assistant Physician West London Hospital. Late Demonstrator of Anatomy, St. Thomas's Hospital. Late Physician North London Hospital for Consumption.

TOMSON (K.), Luton, Beds.
1842. Materia Medica, Prize.
1843. Medicine, Prize;
Clinical Medicine, Hon. Cert.

TOMSON (W. B.), Luton, Beds.
w 1879–80. 1st Year Student, 2nd Coll. Prize.
s 1880. 1st Year Student, 2nd Coll. Prize.
w 1880–81. 2nd Year Student, The Musgrove Scholarship, Prosector's Prize.
w 1881–2, 3rd Year Student, 2nd Coll. Prize; 2nd Tenure of Musgrove Scholarship.
s 1882. 2nd Coll. Prize.
w 1882–3. Treasurer's Gold Medal.

TONKING (J. H.), Camborne.
w 1884–5. 3rd Year Student, ½ 2nd and 3rd College Prizes
w 1885–6. 4th Year Student, The Cheselden Medal.

TOTSUKA (K.),* Tokio, Japan.
s 1882. 1st Year Student, 2nd Coll. Prize.
w 1882–3. 2nd Year Student, ½ Musgrove Scholarship and 1st Coll. Prize combined.
w 1883–4. 3rd Year Student, 2nd tenure of ½ Musgrove Scholarship, with 3rd College Prize.

TREND (H. G.), Bridgewater.
1853. Practical Midwifery, Prize;
Midwifery, Hon. Cert.
1854. Midwifery, Hon. Cert.;
Clinical Medicine, Treasurer's Prize.

TREVES (W. K.), Dorchester.
1863. Matriculation Examination—Physics and Natural History, Hon. Cert.; and
Modern Languages and Modern History, College Prize and Hon. Cert.;
1st Year Student, Hon. Cert.
1865. 3rd Year Student, 2nd Coll. Prize;
Prosector's Prize.

TURNEY (H. G.),† Camberwell Grove.
w 1885–6. 2nd Year Student, 2nd Coll. Prize.
s 1886. 2nd Year Student, 2nd College Prize.
w 1886–7. 3rd Year Student, 3rd Coll. Prize.
s 1887. 3rd Year Student, 1st Coll. Prize.
w 1887–8. The Mead Medal.

TYRRELL (W.), Richmond.
1851. Descriptive Anatomy, Hon. Cert.
1852. Medicine, Hon. Cert.;
Surgery, Hon. Cert.
1853. Forensic Medicine, Hon. Cert.;
Ophthalmic Essay, Mr. Dixon's Prize
1854. Surgical Reports, President's Prize

UMNEY (W. F.), Sydenham.
w 1887–8. 2nd Year Student, 1st Coll. Prize.

VARDY (J. L.), London.
1854. Midwifery, Hon. Cert.
1855. Practical Midwifery, Prize.

VERDON (H. W.), Eccles.
1872. 2nd Year Student, Hon. Cert.

WAGSTAFFE (W. W.),‡ Kennington.
1862. Matriculation Examination—Classics and Mathematics, President's Prize.
Physics and Natural History College Prize;
Modern Languages, &c., College Prize;
1st Year Student, Treasurer's Prize;
1863. 2nd Year Student, 1st. Coll. Prize.
1864. 3rd Year Student, 1st Coll. Prize;
Physical Society's 3rd Year's Prize
Cheselden Medal;
Treasurer's Gold Medal.

WALKER (R.), Kendal.
1854. Descriptive Anatomy, Hon. Cert.;
Midwifery, Hon. Cert.
1855. Midwifery, Hon. Cert.

WALLACE (C. S.), Haslemere.
w 1887–8. 1st Year Student, ½ 2nd Coll. Prize
s 1888. 1st Year Student, 2nd Coll. Prize.
w 1888–9. 2nd Year Student, 1st Coll. Prize.
w 1889–90. 3rd Year Student, 2nd Coll. Prize.

WALLER (A.), Islington.
1864. 1st Year Student, 1st Coll. Prize.
1865. 2nd Year Student, 1st Coll. Prize.
1866. 3rd Year Student, 1st Coll. Prize;
Physical Society's 3rd Year's Prize
Treasurer's Gold Medal.

WALLER (C. B.), London.
1860. 2nd Year Student, Hon. Cert.

WARD (F. H.),§ Scarboro'.
1863. 1st Year Student, Treas. Prize.
1864. 2nd Year Student, 1st Coll. Prize;
Physical Soc. 2nd Year's Prize.
1865. 3rd Year Student, 1st Coll. Prize;
Physical Soc. 3rd Year's Prize;
Cheselden Medal;
Treasurer's Gold Medal.

WATSON (F.), Nottingham.
1859. 1st Year Student, Hon. Cert.;
Matriculation Examination—Physics, &c., Prize.

WAY (F. W.), Fratton, Portsmouth.
1853. Descriptive Anatomy, Hon. Cert.;
Chemistry, Hon. Cert.;
1854. Midwifery, Hon. Cert.;
Surgery, Hon. Cert.

WAY (J. P.), Portsmouth.
1861. 1st Year, Hon. Cert.

WEBBER (W. W.), Crewkerne.
w 1876–7. 1st Year Student, 3rd Coll. Prize.

WEBSTER (E.), Lee.
w 1883–4. 1st Year Student, 1st Coll. Prize.
s 1885. 2nd Year Student, ½ 2nd Coll, Prize.

WEBSTER (H.), Dulwich.
1851. Matriculation Sch., Hon. Cert.;
Descriptive Anatomy, Hon. Cert.
1852. Botany, Hon. Cert.
1853. Midwifery, Hon. Cert.

WEEKES (F. H.), Southampton.
w 1873–4. 1st Year Student, 3rd Coll. Prize.
s 1874. 3rd Coll. Prize.
w 1874–5. 2nd Year Student, 2nd Coll. Prize.
s 1875. 3rd Coll. Prize.
w 1875–6. 3rd Year Student, 3rd Coll. Prize.

WELLS (A. E.), Brixton.
w 1877–8. 1st Year Student, 2nd Entrance Science Scholarship.

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* Deputy Inspector General of Hospitals, Imperial Japanese Navy.
† Resident Assistant Physician to St. Thomas's Hospital.
‡ Late Assistant Surgeon to, and Joint Lecturer on Anatomy at, St. Thomas's Hospital. Late Member of the Board of Examiners, Royal College of Surgeons.

§ Assistant Medical Officer, County Asylum, Tooting, Surrey.

WEST (J. F.) *
1853. Midwifery, Hon. Cert.
1854. Forensic Medicine, Hon. Cert.; Pathology, Hon. Cert.
1855. Ophthalmic Reports, Prize.

WHEATON (F. D. W.), Honiton.
1845. Practical Midwifery, Hon. Cert.

WHEATON (S. W.),† Battersea Park.
s 1885. 3rd Year Student, ½ 1st and 2nd College Prizes.
w 1885–6. 4th Year Student, The Mead Medal.

WHITEHEAD (E. T.), Battersea.
w 1886–7. 1st Year Student, 2nd Coll. Prize.
s 1888. 2nd Year Student, ½ 2nd Coll. Prize.

WHITEHEAD (J.), Preston.
1861. 1st Year, Hon. Cert.
1862. 2nd Year Student, 3rd Coll. Prize.
1863. 3rd Year Student, 2nd Coll. Prize.

WILES (J.), Hitchin, Herts.
1850. Physiology, Hon. Cert.
1851. (Accoucheur) Midwifery, Prize.

WILLIAMS (H.), Longley, near Gloucester.
1868. 1st Year Student, 2nd Coll. Prize.
1869. 2nd Year Student, 3rd Coll. Prize.

WILLIAMS (J.), Westerleigh, Bristol.
1855. 1st Year Student, Scholarship; Midwifery, Prize; Botany, Prize; Chemistry, Hon. Cert.; Descriptive Anatomy, Prize; Materia Medica, Hon. Cert.
1856. 2nd Year Student, Trea.'s 1st Prize.
1857. 3rd Year Student, Hon. Cert. Gen. Proficiency, Treasurer's Medal.

WILLIAMS (J.), Doncaster.
1858. 1st Year Student, Hon. Cert.
1859. 2nd Year Student, Hon. Cert.; Clinical Medicine, Prize.
1860. 3rd Year Student, Hon. Cert.

WILLIAMS (P. H.), Monmouth.
s 1872. 1st Year Student, Hon. Cert.

WILLIAMS (P. M. G.), Newcastle Emlyn.
1864. Practical Midwifery, Prize.

WILLIAMS (R. M.), Beaumaris.
w 1879–80. 1st Entrance Science Scholarship.

WILLIAMS (W. R.),‡ Nottingham.
1856. Matriculation Examination in Classics, Mathematics, Hon. Cert.

* Late Surgeon to Queen's Hospital, and Professor of Clinical Surgery at Queen's College, Birmingham.

† Physician to the Royal Hospital for Children and Women, to the Surrey Dispensary, and to the St. John's Home for Women.

WILLIAMSON (R. J.), Ripon.
w 1876–7. 1st Entrance Sc. Scholarship.

WINSTON (W. B.), Oxford Gardens.
w 1887–8. 1st Year Student, 2nd Entrance Science Scholarship.
w 1888–9. 2nd Year Student, 2nd Coll. Prize.
s 1889. 2nd Year Student, 1st Coll. Prize.

WITHERBY (W. H.), Croydon.
1858. Matriculation Examination in Modern Languages, Prize.

WOAKES (E.), Luton, Beds.
1856. 1st Year Student, Hon. Cert.
1857. 2nd Year Student, 2nd Prize; Clinical Medical Prize.
1858. Essay on Neuralgia, Mr. N. Smith's Prize; Surgery and Surgical Anatomy, Cheselden Medal.

WOOD (G. J.), London.
1863. Descriptive Anatomy, Hon. Cert.

WOOD (R. H.), Loughborough Leicester.
1854. Descriptive Anatomy, Hon. Cert.
1855. Surgery, Hon. Cert.; Midwifery, Prize; Medicine, Hon. Cert.; Descriptive Anatomy, Prize; Physiology, Hon. Cert.
1856. Physical Society's Essay, Prize.

WOODHOUSE (T. J.), London.
1855. Chemistry, Hon. Cert.; Materia Medica, Hon. Cert.

WOODMAN (W. E.), Camberwell.
s 1875. 1st Year Student, 2nd Coll. Prize.

WOTTON (H. G.)
1855. Midwifery, Hon. Cert.
1856. Midwifery, Hon. Cert.

WRENCH (E. M.), Cornhill.
1851. Descriptive Anatomy, Hon. Cert.; Physical Society's Essay, Treasurer's 1st Year's Prize;
1852. Physiology, Hon. Cert.

WRIGHT (E. H.), Jersey.
s 1885. 2nd Year Student, ½ 2nd Coll. Prize

WYMAN (C.), Putney.
w 1889–90. Solly Medal and Prize.

WYMAN (W. S.), Kettering, Northampton.
1852. Matriculation Examination Scholarship.

‡ Late one of H. M. Commissioners in Lunacy; late Resident Physician to Bethlem Royal Hospital; late Lecturer on Mental Diseases at St. Thomas's Hospital.

All old Students of St. Thomas's Hospital are requested to send their *present* addresses to The Medical Secretary, *St. Thomas's Hospital, Albert Embankment, Westminster Bridge, S.E.*

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