EXPERIMENTAL PROOF OF AERATION OF COKE BEDS.

At the experimental filters at Crossness two vertical pipes were inserted into the coke bed, to the depth of 6 and 13 feet respectively. After the sewage had been allowed to drain off, the percentage proportions of oxygen and carbonic acid were estimated from samples taken at stated intervals from the interspaces between the coke fragments. After the air had been in contact with the lower strata of the coke for seventy hours, it still contained an average of about 75 per cent. of its original oxygen, and the average amount of carbonic acid did not exceed 3 per cent.

FROST.

The fear which has been expressed that a hard frost would seriously interfere with the working of the filter beds has so far not been justified. Sewage is generally at a temperature of 60°F., and I have only heard of one case where it has frozen. This was at Colonel Ducat's system at Sutton, but here the filter was not built or protected as Colonel Ducat wished or designed, the consequence was that its arrangement of open pipes drew the outside cold air into the interior of the filter and proved nothing more or less than a freezing machine.

At the Northern Main Drainage Works at Barking, during the great frost about five years ago, the Thames was frozen and Barking Creek was one mass of ice. Nevertheless the coke filters there continued to work without the slightest interruption, nor was there even a film of ice to be seen on the surface of the filter.

SCREENING.

In the so-called Septic Tank System, the sewage flows from the sewers directly into the anaërobic tank, deposits its solid matter in suspension, the organic part of which is gradually destroyed by micro-organisms, and only a fluid effluent is allowed to run on to the aerobic filter beds. In the aerobic system, where there is no tank, the paper, straw, rags, offal, etc., must perforce be got rid of before it passes on to the filter beds, otherwise they would become speedily choked. At Sutton this is effected by a "roughing screen," an automatic machine in constant rotary motion, driven by a water-wheel which is actuated by the sewage. This is a somewhat malodorous operation and entails the expense of attendants and the trouble of carting away and burying the filth.

At Crossness the whole of the sewage of the south side of London undergoes sedimentation in tanks, after which a certain portion is allowed to run over three experimental filters, 22 ft. 6 in. long, 10 ft. 8 in. broad; two have a depth of 12 feet of coke and one of 6. But even after this the efficiency of the filters is seriously interfered with by the chaff, straw, cotton, and woody fibre (the latter most probably from the London wood pavements), which clog the filter bed. This gradually lessens the amount of sewage which can be dealt with, and no amount of aëration will restore the capacity of the bed, proving that the deposit on the surface of the coke is not organic matter of animal origin. The capacity of the bed may be reduced in this manner as much as 50 per cent. The question of preventing this deposit reaching the filter bed is somewhat perplexing. No means altogether satisfactory have been found of doing what is wanted, while at the same time allowing the sludge, (which is also in suspension), to pass on to the bed. This is its natural destination, and it is utterly destroyed, whereas the *débris* referred to never undergoes destruction, and continually increases in amount.

A screen to be of any use at all would have to be so fine that it would speedily get clogged itself, unless an attendant was constantly on the spot to rake it clear. In all probability if a large quantity of sewage was being dealt with, and the screen became choked, the sewage would either flow over the top or the pressure behind would break the screen down.

SECONDARY SEDIMENTATION.

A more satisfactory way of getting over the difficulty is by the use of a sort of "flume," a long open box with transverse partitions reaching nearly to the top of the sides. This flume slopes slightly downwards to the filter bed. The sewage passes slowly over these partitions, the *débris* is caught, and time is given it to settle down at the bottom, whence it is removed when sufficient sewage has been passed into the filter. A certain amount of sludge must be, of course, collected as well, but up to the present no practicable way has been found to prevent this.

AN ACCOUNT OF SOME OF THE MEDALS OF THE LONDON HOSPITALS.

(With Special Illustrations.)

By T. E. JAMES.

Clerk to Assistant Secretary to the Royal Society.

MEDAL awards form a convenient mode of commemorating personal work and events, and, in spite of the fact that their exact propriety as gifts in the domain of science is sometimes called in question, it is not likely that they will decline to any extent in general estimation.

In medicine and surgery, however, such honorary rewards really require no apology. The discoveries and investigations made in these departments of knowledge, as well as the meritorious performance of duties in the school and hospital, seem deserving of special recognition, and experience goes to show that the medallic method is one of the most suitable that can be adopted. In the first place it offers something tangible; while, further, it expresses the judgment of the time, and the opinion of a class of men not prone to compromise on questions of fact.

Photographs of some of the most interesting of the medals thus open to medical students at the London hospitals are here brought together, while some account is given of the conditions under which they are to be gained.

Although, strictly speaking, the examples refer to the schools of medicine attached to the London hospitals, it cannot be inappropriate to designate them by the more inclusive title. Happily the interests of the hospital and medical school have now a common basis, the alleviating functions of the one being dependent on the teachings of the other.

The hospitals with affiliated medical schools which possess medal endowments are noticed here in the following order: St. Thomas's, St. Bartholomew's, Guy's, St. George's, King's College, Charing Cross, St. Mary's, University College, Westminster and Middlesex. The space placed at my disposal has compelled a selection of examples for illustration, as well as a reduction in size in some cases; but each hospital is represented, while particulars are given of all the foundations.

ST. THOMAS'S.

St. Thomas's is pardonably proud of its gifts, and they not only commemorate eminent physicians and surgeons who practised within its walls in past days, such, for instance, as the noted William Cheselden, and Richard Mead—the man who moved, as Dr. Johnson said, "in the broad sunshine of life;" but the medals are themselves, by reason of their excellence, a pleasing tribute to the achievements of the present recipients. The services of the Wyon family to medallic art are particularly illustrated by these medals. The "Cheselden" (Figs. 1, 2) is given for a special practical examination in surgery and surgical anatomy. An admirable bust occupies the obverse, while the reverse shows an interesting composition distinctly suitable to the foundation. It depicts a subject stretched upon an operating table, adjacent to which are emblems of anatomy. Cheselden was born in 1688, and became one of the principal surgeons of St. Thomas's in 1719. He is famous in surgical annals as the author of new, brilliant, and successful methods which procured for him a European reputation. He was the most successful lithotomist of his own and perhaps any other day. The masses, it is said, regarded him with the highest veneration; while on the other hand, his ability was so admirably linked with amiable social qualities that he was a prime favourite at Court and in the *salons* of the great folk of the period.

Dr. Mead, F.R.S., was appointed Physician to St. Thomas's in 1703. It was he who attended Queen Anne on her death-bed. A medal (Figs. 3, 4) commemorating his name is given annually to a fifth year's student, and, like the preceding, on the results of a practical examination, but in the departments of medicine, pathology, and hygiene. The obverse shows a profile of marked power and character; the reverse bears the figure of Hygeia, her arm with entwined serpent.

The remaining gifts of St. Thomas's are the Treasurer's gold medal and the Solly and Syer Bristowe silver medals.

The first-named is annually awarded at the end of the fifth winter's session to the student who has passed through his

Fig. 1.—St. Thomas's: Cheselden Silver Medal

Fig. 2.—Cheselden Medal—reverse.

Fig. 9.—St. Thomas's: Solly Silver Medal

Fig. 3.—St. Thomas's: Mead Medal.

Fig. 4.—Mead Medal—reverse.

Fig. 10.—King's College: Jelf Bronze Medal.

Fig. 5.—St. Thomas's: Bristowe Silver Medal.

Fig. 6.—Bristowe Medal—reverse.

Fig. 11.—Charing Cross: Huxley Medal

Fig. 7.—King's College: Robert B. Todd Bronze Medal.

Fig. 8.—Todd Medal—reverse.

Fig. 12.—Guy's: Golding-Bird Gold Medal.

Fig. 13.—St. Bartholomew's: Lawrence Medal.

Fig. 14.—Lawrence Medal—reverse.

Fig. 21.—University College: Liston Gold Medal.

Fig. 15.—St. George's: Thompson Silver Gilt Medal.

Fig. 16.—Thompson Medal—reverse.

Fig. 22.—University College: Fellowes Clinical Medal.

Fig. 17.—St. Mary's: Cheadle Gold Medal.

Fig. 18.—Cheadle Medal—reverse.

Fig. 23.—Westminster: Bird Medal.

Fig. 19.—Guy's: Treasurer's Gold Medal.

Fig. 20.—Treasurer's Medal—reverse.

Fig. 24.—Middlesex: John Murray Medal.

pupilage in the most meritorious manner. Visitors to the hospital will have seen in the grounds near the entrance a brass statue, by Scheemaker, of King Edward VI, its benefactor, which was erected in 1737 upon the hospital's old site near London Bridge. A copy of this representation of the youthful King appears on the obverse of the medal. He is seen wearing a cap and cloak; the right hand is outstretched; below is the date 1553. The reverse bears the hospital arms and the legend, "*Bene merito melius meritorio*" in German letters. It is interesting to note that the late Dr. J. Syer Bristowe, F.R.S., received this prize at St. Thomas's in the session 1847-48.

The Solly medal (Fig. 9) was founded in 1873 and is awarded biennially for the best series of reports of surgical cases coming under the student's personal observation in the wards. The reverse bears an inscription, date of foundation, and name of recipient.

The Syer Bristowe medal (Figs. 5, 6) is St. Thomas's youngest foundation. On Dr. Bristowe's retirement from the service of the hospital in 1894 his portrait was subscribed for and presented to him, the balance being devoted to the institution of this annual award in respect of a practical examination in pathology and morbid anatomy. A pathologist is represented on the reverse who leans forward to the right, facing a bacterial oven; he examines an opened human heart, behind him is a laboratory bench bearing a microscope and other apparatus; in the field appears a shield charged with the arms of St. Thomas's.

ST. BARTHOLOMEW'S.

Passing to St. Bartholomew's Hospital we find that it possesses the Kirkes, Duncan, and Lawrence medals, all struck in gold. It is somewhat curious that the long association of the illustrious Harvey with this ancient "spytell"—he was appointed physician in 1609, and remained so for thirty-four years—has not been made the subject of medallic celebration, although it should be mentioned that a Harvey money prize in practical physiology exists.

The Kirkes medal is given annually for proficiency in clinical medicine and arose out of a foundation established by the widow and friends of Dr. W. S. Kirkes, sometime physician to the hospital. Third year or later students are eligible and a scholarship of the value of £30 accompanies the medal.

The Duncan medal marks a departure from the line of studies hitherto spoken of, as it is awarded for obstetric medicine; only a high standard of excellence enables a student to win it. This gift was founded by subscription in testimony of Dr. Matthews Duncan's services to the hospital 1877-90.

St. Bartholomew's is fortunate in possessing a cast and chased gold medal (Figs. 13, 14) designed by Mr. Alfred Gilbert, R.A. It takes the place of one which had been in use since the foundation of the medal in 1873 (struck from a die), but of a type which it was considered did not render sufficient justice to Sir William Lawrence, Bart., F.R.S., the eminent surgeon and teacher, whose services to the hospital, covering the period 1824-1865, it was intended to commemorate. Consequently the present medal was founded in 1895 by Sir Trevor Lawrence, the Treasurer, and the Misses Lawrence, in memory of their father. The design was exhibited at the Royal Academy in 1897. The obverse portrays Lawrence facing us, and in so difficult a pose as this, the treatment must be admitted to be strikingly successful. The reverse presents an interesting allegorical composition. A nude youth stands facing, resting his forearms on shields, on which is inscribed in Greek capitals part of the line from Homer—"*αὐτὸν ἀριστεύειν*." Two women personify Wisdom and Science, and whisper words of counsel. This medal, which is associated with a scholarship, value £42, is the senior gift of the school, and very highly prized, while its award recognises quite a late stage in a student's studies. He is examined *vivâ voce*, and by written papers in medicine, midwifery, and surgery. We are told, in the words of a distinguished living surgeon, that Lawrence's face, "in its expression of intellectual calm, was one of the noblest ever worn by man."

GUY'S.

The medallic liberality of Guy's is almost equal to the foregoing, as it makes three gold awards (Figs. 12, 19, 20). The

reverse of the Treasurer's medal (Fig. 20) for clinical surgery (of which the same type, it should be noted, does duty for a clinical medicine gift) is of pictorial interest. A robed professor is seen encouraging a sick outcast to enter the adjacent hospital, while in the far corner two men are carrying a patient within on a stretcher. The obverse bears the arms of the hospital within a laurel wreath. The examination for this medal embraces operations on the dead subject. The Golding-Bird gold medal and scholarship for sanitary science was founded by Mrs. Golding-Bird in memory of her husband, who had been assistant-physician, 1843-54.

ST. GEORGE'S.

The effigy of John Hunter is appropriately adopted by St. George's for the obverse of the admirable silver-gilt medal, (Fig. 15, 16) established in 1850 by Mr. Serjeant Thompson, for many years treasurer of the hospital. It is given annually for the best clinical report of medical and surgical cases observed during the preceding twelve months, these to be accompanied by observations not exceeding twenty in each department. The bust on the obverse is after the celebrated picture by Sir Joshua Reynolds in the possession of the Royal College of Surgeons; the composition on the reverse depicts two men bearing a sick woman to the hospital.

KING'S COLLEGE.

King's College possesses medals struck from very clear dies (Figs. 7, 8, 10). The friends of the late Dr. Robert Todd, F.R.S., founded a bronze medal to his memory in 1863, to recall long and distinguished services to the College and Hospital. The arms of the College with crest, and supporters appear on the reverse. It is awarded annually in clinical medicine. Similarly, the friends of the Rev. R. W. Jelf, D.D., sometime principal of King's College, subscribed an endowment fund in 1868. A bronze medal is given in this case to the hospital pupil who stands second in order of merit in the award of what is known as the "senior scholarship." The study of botany in the medical curriculum is recognised by a gold medal founded by the late Mr. George Red-sull Carter in 1879. Matriculated students of other faculties may also compete for this.

CHARING CROSS.

In the Governors' clinical gold medal of Charing Cross Hospital we have the smallest award in point of size of any medical school. Students of the fifth winter session are examined in the subjects of certain clinical lectures, and on medical and surgical cases occurring in the wards of the hospital.

The Huxley bronze medal (Fig. 11), with a prize of £10, was founded upon the death and in memory of the late Professor Huxley, who, it may be recalled, received his early medical education at Charing Cross. The examination comprises anatomy and physiology. The design is that of an older and current class medal, to which suitable lettering is applied from time to time to meet the circumstances of the award. The obverse portrays the *façade* of the hospital at the date of its foundation; beneath, the staff of Aesculapius appears.

ST. MARY'S.

St. Mary's owns an admirable gold medal (Figs. 17, 18) in clinical medicine, recently instituted and permanently endowed by Dr. W. B. Cheadle, whose connection with the hospital is well known. In this instance an essay is made the ground of award, drawings and records of cases being included in its scope. It was given for the first time in 1898.

UNIVERSITY COLLEGE.

University College has four, the Liston (Fig. 21), Fellowes (Fig. 22) and Bruce gold medals, and the Tuke silver. With the exception of the Fellowes medal they are all memorial foundations. The qualification for the Liston is an essay in surgery or pathology containing original observations founded on cases in the practice of the hospital; for the Fellowes, clinical work; for the Bruce, founded by Mrs. Bruce in commemoration of her son, proficiency in pathology and surgery; and for the Tuke, pathology.

WESTMINSTER.

The examples awarded by Westminster, Middlesex, and University College, regarded from the point of view of medallist art, are not, it must be confessed, equal to some of those already mentioned, however closely they otherwise fulfil the requirements of modern science.

The Bird silver or bronze medal (Fig. 23) of Westminster Hospital is devoted in chief to obstetric medicine. It was endowed by subscription in memory of Dr. Frederick Bird, obstetric physician, 1861-74.

MIDDLESEX.

Middlesex awards the John Murray¹ gold medal (Fig. 24) triennially for medicine, surgery, and obstetrics, with a *viva voce* examination at the bedside in each department. It is a memorial gift founded in 1874, and connected with a scholarship. The Robert W. Lyell gold medal recognises surgical anatomy and practical surgery. The reverse shows the hospital. The medal was founded in 1882.

LONDON HOSPITAL.

Mention must be made that the London Hospital Medical College at one time had medals in its gift, but none have been given since 1868, this however being due to the fact that £20 prizes were substituted for various gold medals then open to competition. In this respect the College occupies a singular position among the schools.

A word may be said in conclusion regarding the artistic merits of the medallist examples. On the whole, the majority hardly fulfil any mission in this particular. There are exceptions readily apparent, but the lesson that a medal should, as far as possible, denote the purport of its foundation, or at any rate bear some relation to it, is frequently lost. Mere lettering will not in itself appeal successfully to the imagination, and it is certainly regrettable that better types have not long ago replaced weak designs or ill-executed specimens.

It is a pleasing duty to acknowledge the kind help extended by the wardens, deans, and other officials of the London hospitals in regard to the loan of gold, silver, or bronze medals for photographic reproduction.

Thanks are also due to the Misses Lawrence, Dr. Cheadle, Dr. T. J. Horder, Dr. Auden, Mr. Allan Wyon, F.S.A., Mr. J. Pinches, Mr. G. Rendle, and Mr. C. L. Todd, for particular favours.

THE HOUSING OF THE POOR.

SEVERAL questions arose at the last meeting of the London County Council before the Christmas recess involving the consideration of the best means of providing adequate house accommodation for weekly wage earners, and of preventing such as exists from falling into dilapidation and insanitariness.

The Public Health Committee has had its attention directed to the need of additional sanitary inspection in that exceptionally unsavoury area of Kensington known as Notting Dale. The report of Dr. Hamer, one of the assistant medical officers of the Council, fully confirmed the ill opinion of the area to be gathered from Dr. Dudfield's reports. Dr. Hamer emphasised the conspicuous contrast presented by rooms in common lodginghouses and tenements in houses let in lodgings, a contrast which is now even more marked than in 1896, when a special committee of the Vestry reported, "It is but right to say that the condition of those houses which are already registered as common lodginghouses is superior to those which are not, or cannot be so registered." The fact that common lodginghouses are subjected to weekly inspections by the Council's inspectors, while it is found impossible to make

a single thorough inspection of each of the tenements in the course of a year, is held to account for the difference.

Dr. Hamer refers to the opinion very commonly held among deputies and others interested in property of the furnished-room class that, having regard to the habits of the people for whom such rooms provide shelter, it is useless to attempt to maintain cleanliness, and while pointing out that much remains to be done in the way of promoting habits of personal cleanliness, he states that the condition of rooms such as those found in large numbers in Kensington, can by no means be excused on the ground of the uncleanly habits of the occupants. In his opinion the want of proper supervision and the neglect to enforce the by-laws regulating houses let in lodgings are the factors mainly responsible for the continued existence of these conditions. It is accordingly suggested that three additional male and one female sanitary inspector should be appointed forthwith, and the Vestry of Kensington has been invited to consider the report and suggestions made therein.

Another aspect of the housing question came under consideration upon a report from the Housing of the Working Classes Committee. It appears that in obedience to a widespread belief that the provision of house accommodation in the suburbs *plus* increased tramway facilities for transport would relieve the congested districts of central London, the Housing Committee has been seeking sites outside the county for the erection of dwellings. Sir Samuel Montagu munificently offered to present the Council with land at Edmonton for this purpose, but the Housing of the Working Classes Act unfortunately forbids the acquisition of land by a local authority outside of its own area. A proposal to amend the Act of 1890 by a general statute, for the introduction of which the aid of the Government is to be invited, met with universal approbation. Debate however arose upon an amendment which had in view the conferring upon the authority effecting the purchase the power to lease such land when acquired. This was defeated by 56 to 50 after a lively debate, in which the importance of "managing" the houses erected so as to secure reasonable rentals and good sanitary supervision was especially insisted upon.

A further report by the same Committee recommended the Council to acquire, under Part III of the Housing Acts, some 38½ acres of land at Tooting, at a cost of £44,500 (£1,150 an acre). On this site it is proposed to erect cottages so constructed as to provide for two families each. They will each consist of two self-contained tenements, one of two and one of three rooms. Separate gardens will be provided for each tenement, and on an average not less than thirty cottages will be built to the acre. The rent of the tenements would average about 7s. 6d. a week. There will, it is estimated, be no charge upon the county rate by this undertaking. Means of access to this site will be obtainable by the Council's line of tramways, as well as by railway to Tooting Junction and Balham.

By a series of questions directed to the Chairman of the Housing Committee, Lord Carrington elicited the names of the freeholders of the insanitary property in St. Pancras which has been of late the frequent subject of public criticism. It appears that the Committee are already in communication with the landlords with a view to their setting their houses in order. The County Council has been accused both of feverish activity and deplorable delay in carrying out its housing policy. These criticisms are mutually destructive, and having regard to the difficulties and magnitude of the problems involved, an attitude of forbearance and hopefulness would be not unbecoming, for everyone must be glad to see the Council tackling a question which, it becomes more and more clear, lies at the root of many of the more preventable evils, social and hygienic, under which the poorer inhabitants of London now labour.

THE NOTIFICATION OF MEASLES.—The Corporation of the County Borough of Wigan have agreed to the voluntary notification of the first case of measles in a household for a further period of three years, in consequence of the recommendation of the medical officer of health, Dr. Wm. Berry, to the Sanitary Committee. The medical officer reported that the experiment of voluntary notification had worked well, and in conjunction with aid rendered by the School Board officers, had been of much assistance during the recent epidemic.

¹ It will be remembered by some still living that Dr. John Murray, who died in October, 1873, at the early age of 29, from oedema of the larynx, was up to the time of his death Subeditor of the BRITISH MEDICAL JOURNAL. In the words of the obituary notice published at that date, he was "a gifted, energetic, and much beloved young physician," and his death was spoken of as "a public and professional loss." His remains were met at Euston Station—from whence they were sent to Aberdeen, the place of his birth—by an assemblage of the most distinguished members of the medical profession, besides many of his personal friends. This medal was instituted in his memory, and the necessary funds were soon subscribed by his admiring colleagues and friends.