tent and in height, and now there is room for three hundred and seventy-five inmates. The workrooms had little light and little air, and these defects were quickly remedied by opening great windows. The water was far from good; and this evil was met by the erection of a conduit which comes directly from the mountains, serves for all domestic purposes, and at the same times carries into the lakes all the soil from the buildings; so that now there is a full supply of water, of fresh air, and of all that an establishment requires for health.

The cells are 1.97 *mètre* broad, 3.15 *mètres* long, and 2.80 high; so that every felon, when in his sleeping-cell, has a supply of 17.50 cubic *mètres* of air for the night.

The felons' food consists of brown bread, very nearly equal in quality to that of the private soldier, 750 *grammes* in weight; and two messes a day, one of rice, the other of macaroni, mixed with greens and beans, and weighing about 500 *grammes*, seasoned with butter, lard, and salt. Twice a week—viz., Thursday and Sunday—one of these messes has the addition made to it of 1½ *kilogramme* (about 5 ounces) of boiled meat, cut into little pieces. Besides this, the prisoners can spend in extra provisions two-tenths of what they earn, to buy milk, small portions of meat and vegetables, cheese, sausages, fruit, fish, and the like. Another one-tenth of their earnings goes to the maximum seven-tenths which the management retains to defray the expenses, and is handed over to the prisoners when set free. There are two hundred weavers, forty shoemakers, thirty printers of coloured stuffs, and a few tailors. The rest make shuttles, and perform duties of the house and of the workrooms, or are invalided, or in solitary confinement as a punishment or for other reasons. The management pays 78 *centimes* a day for every prisoner, including the keep of the warders (twenty-nine in number); and as, on an average, 25 *centimes* are earned by work, each prisoner costs about 53 *centimes* a day. The pay, however, of the *employés* and warders, which amounts to about 25,000 *francs* a year, is not included in this estimate.

Notes on the Sanitary Condition of the Prison during the last thirteen years.—In 1857 were observed a case of epilepsy with monomania, two cases of monomania, and three of hypochondriasis.

1858. The cold this year was remarkable, and the amount of atmospheric variation, which gave rise to a large increase in deaths from cachexiæ. The same diseases and the same causes predominated, but the latter with less intensity, on account of the wholesome effect of certain sanitary works which were then brought to completion. There were registered and cured four cases of monomania; one of monomania with ophthalmia, and one of epilepsy with monomania succumbed; one of hypochondriasis recovered.

1859. This year was favourable as regards the number of patients and of deaths. The disease which had proved most fatal in former years—viz., broncho-pneumonia with tubercles—only made its appearance in one instance in 1859. The predominant disorders were gastro-enteritic, almost all of catarrhal character. These were followed by monomanias, and with these, cerebro-spinal affections frequently occurred. There were thirteen cases of monomania, of which ten were subdued by therapeutic treatment, and three remained under observation at the end of the year. Onanism and the intense heat of the summer in this year contributed to the development of mental alienation, which, according to the sanitary official, was promoted by the penitentiary system. The hygienic improvements introduced into the establishment by the lowering of the surrounding walls, and by other works tending to increase the circulation of air, accounted for the happy sanitary results of 1859.

1860. It is to be remarked that the disorders which prevailed in 1860 proved to be for the most part of a lingering character. Diseases of "slow course" were of frequent occurrence, too, because we had to regret the introduction into the prison of subjects affected by marasmus and other mischiefs, which then affected our infirmary to such a degree as to threaten us with heavy mortality in the coming clinical year. As the prevailing diseases were still broncho-catarrhal, intestinal, diathetic, and those of the glandulo-lymphatic system, which, in a cold damp air like this, are wont to make havoc, we must remark on the necessity of continually improving the hygienic conditions, either by promoting drainage-works as much as possible, or by modifying the alimentary régime. In the year, six cases of monomania and two of hypochondriasis were cured, including the three remaining under treatment at the close of 1859.

1861. The forebodings of the sanitary officer were justified. The mortality of the year was greater than that of 1860, owing to the causes already specified. Besides, speaking generally, the same diseases prevailed in increased degree, with proportional increase of the same causes, both internal and external, tending to produce them. Only one case of monomania was observed, and one of hypochondriasis. Both yielded to treatment in the course of the year.

1862. There were great drought and excessive heat this year, followed by long continued winter-rains. Typhoid fever became prevalent in the neighbourhood, and manifested itself with some fatality in the establishment. Among the deaths was that of a prisoner killed by a sentinel.

1863. As usual, gastro-enteritic disorders predominated. Four cases of epilepsy were verified. The typhoid fever which made its appearance last year attacked three inmates, one of whom succumbed.

1864. Again, gastro-enteritic diseases were the most prevalent, complicated with typhoid fever. Diseases of the respiratory system, and scrofulous and tuberculous cachexy, were above the average. It is well to remark that in this year the establishment was enlarged; and the new population came almost entirely from the southern provinces, and in the depth of winter; so that nostalgia and change of climate were most potent causes of the increase of disease and death.

1865 and 1866 call for no special remark. The causes at work were the same as in the preceding years. Nostalgia and the difference of climate told upon the natives of the South, and caused two suicides, as well as two attempts at suicide, the victims of which died afterwards from the effects.

1867. The southern inmates begin to become acclimatised, and were no longer irritated by nostalgia. Among the deaths were to be noted a suicide, a murder, and a case of fulminant apoplexy. In the month of September there were attacks of cholera, causing three deaths.

1868. Thanks to the removal to other prisons of the more chronic cases and scrofulous patients, the mortality somewhat fell off. Among the deaths, moreover, a suicide is included. The population was again increased, and the maximum was reached which the building can contain.

1869. Nothing extraordinary was noticed.

Statistics in Tabular Form of Diseases and Mortality occurring between 1857 and 1869.

Year.	Population of the establishment.	Sick.	Cured.	Deaths.	Proportion per cent.	
					Sick.	Deaths.
1857	245	166	128	19	67.75	7.755
1858	269	169	145	30	69.50	11.152
1859	249	133	127	4	58.63	1.606
1860	247	149	148	6	66.40	2.429
1861	255	179	149	19	72.45	7.450
1862	252	155	143	13	61.51	5.158
1863	262	147	138	7	56.48	2.672
1864	399	221	192	18	55.39	4.511
1865	441	290	247	45	65.75	10.204
1866	417	275	239	43	65.94	10.341
1867	408	296	255	34	72.54	8.333
1868	452	222	209	19	49.11	4.203
1869	468	208	194	24	44.44	5.128
	4364	2606	2314	281		

THE EXHAUSTING NEEDLE-TROCAR: A MEANS FOR THE DIAGNOSIS AND TREATMENT OF TUMOURS AND EFFUSIONS.*

By PROTHEROE SMITH, M.D.,

Physician to the Hospital for Women, etc.

As our knowledge of disease increases, so does also the demand for aids both for diagnosis and for treatment. On the other hand, we often add to our knowledge of pathology and means of cure by the use of such aids. In accordance with this principle, since the experience of three years has proved the value of my exhausting needle-trocars, I have thought it desirable once more to bring them, together with some important improvements, before the notice of this Association.

Fine exploring trocars have been long in use, but, from their inability to evacuate viscid fluids, they have failed to accomplish the end intended, and, from their size, to be employed with impunity for puncturing deep structures. To attain these desired objects, I adapted needle-trocars to an exhausting air-pump or glass-syringe. The instrument can now be used without danger or difficulty, wherever acupuncture can be employed, for the purpose of diagnosing, evacuating, and treating tumours

* Read before the Surgical Section at the Annual Meeting of the British Medical Association in Newcastle-upon-Tyne, August 1870.

and effusions of all kinds, whether of joints or cysts containing viscid fluid or otherwise, whether declared by fluctuation or only by the history of the case pointing to this probable issue; in abscess or in abnormal effusion in any of the serous cavities, and in extreme cases of retention of urine, without injury to the bladder. It is also equally efficacious in disengaging excessive collections of flatus, which often prove so distressing in tympanitic distensions of the intestines as to defy all other modes of relief. In the same way, without removing the instrument, remedies can be injected into cysts, abscesses, etc., without any risk of the admission of air. Only a few days since I operated at the Hospital for Women on two cases of ovarian cysts containing respectively ten pints and ten pints and three ounces of viscid fluid; also on a case of ascites, from which I withdrew sixteen pints and a half in less than half-an-hour, with complete relief, yet with no more pain than that of the prick of a pin, and leaving only the mark of the needle on the skin, and therefore requiring no after-treatment.

Three years and a half ago, Messrs. Mayer and Meltzer made me a set of these exploring needle-trocars, with exhausting glass-syringe attached, which I exhibited in August 1867, at the annual meeting of this Association in Dublin; at Oxford in 1868; and at Leeds in 1869; I also showed them to several eminent physicians in Paris in 1868, as well as to M. Robert, the instrument-maker, and successor of M. Charrière.

The instrument consists of very fine hollow steel needles, gilt, adjusted to a powerful exhausting glass air-syringe; or, as it has since been called in Paris, *aspirateur sous-cutané*, or "pneumatic aspirator". The syringe, by means of a double-action tap at its distal end, and a spring

Fig. 1.—A. Screw for fixing the suction-valve to the pedestal. B. Tap on the suction-valve. C. The button, on pressing which, the catch D., used to convert the suction-pump into an exhausted cylinder, is disengaged. E. The needle-trocar. F. The waste-pipe.

stop on the piston-rod, forms an air-pump, and in action becomes an exhausted receiver, which enables the operator easily to withdraw or inject fluids. Finding, however, in cases when large quantities of fluid, as in ovarian cysts, psoas abscesses, etc., have to be evacuated, that there was some difficulty in manipulation and great labour in pumping, I suggested the important alterations which I now have the honour to exhibit. This, in place of the exhausting syringe, supplies a glass cylinder of one, two, or three quarts, or more, exhausted by a powerful air-pump, which, by a contrivance in its piston, has a double action of either expiration or inspiration, by which it readily imbibes or expels the evacuated fluid. By means of a long flexible gum-tube attached to the

receiver, and terminating, to the extent of three inches, in glass tubing, the cylinder is connected with the exploring-needle. This can now be used with perfect ease and at some distance from the receiver. There being stopcocks at each end of the glass-tube and trocar, as well as at the other end of the elastic tube, the nature of the fluid imbibed is at once detected by the glass portion, which also enables the operator to see the colour and character of the fluid as it rushes past to fill the cylinder. In like manner a small as well as a large quantity of fluid can be easily and rapidly evacuated, without distress to the patient or fatigue to the operator.

In conclusion, I have only to notice the extreme delicacy of the needle-trocars—some almost like bristles—to show the necessity of great caution in their use. They should be introduced—as the needles in acupuncture—by rotating them between the thumb and finger, and holding them as near as possible to their point.

Since reading the above paper at Newcastle, I have found that the large receiver with double-action cylinder, which I there exhibited, though useful in hospital practice, was too cumbersome for general use. I have therefore substituted a double-action glass syringe, which, by the ordinary process of pumping, affords an all-sufficient power, alternately of suction and of expulsion, by which means any amount of fluid may be readily withdrawn. It consists of the exhausting syringe before described; but, in place of a double action tap at its distal extremity, there are two valves placed one on each side. By one of these, when the piston is drawn out, the fluid is imbibed; and by the other, when the piston is depressed, it is as effectually expelled. On the inspiration or suction-valve is a tap, which, when turned off, converts the cylinder into an exhausted receiver, as required for the purposes of exploration and diagnosis. When, however, it is necessary only to evacuate fluid deposits and formations, the contents of a distended bladder, or the flatus of tympanitis, it is sufficient to use only the syringe as an ordinary pump. Further, to facilitate its use in withdrawing large quantities of fluid, a pedestal of thick wire, with stirrup-base for the foot, is supplied, which

Fig. 2 shows the manner of using the instrument when it is attached to the pedestal.

can be easily attached to the syringe, so that, by its help, the operator can steadily hold and work the instrument, when necessary, without the aid of an assistant.

The extreme simplicity of management and portable size of this instrument, as well as the ease with which it may be used in explora-

tion for diagnosis or for the evacuation and injection of fluids, give it a claim to superiority of design and construction which heretofore has never been attained.

REVIEWS AND NOTICES.

ROBERT KNOX, THE ANATOMIST.*

IT is not yet ten years since Robert Knox expired, poor, and hardly recognised in a suburban district of London. Had the death of this remarkable man occurred some thirty years before, when he was in the zenith of his fame, whether for good or for evil, it would have created no small sensation throughout the whole country. As a lecturer on anatomy, no one, either before or since, enjoyed the popularity accorded to him in Edinburgh; as a member of society, Knox was courted in the Scottish capital; as a man of science, he was respected, though rarely loved, by his fellow-labourers. Knox was a self-made man; he fought his way up to the pinnacle of fame by good hard work. For ten or fifteen years he distanced all competitors; and then, long ere he had reached the age when most men court repose, he sank mysteriously out of sight; he left the city wherein he had won his honours; and for the last twenty years of his life he was, more or less, a wanderer on the earth. He is fortunate, at least, in a biographer exceptionally eloquent and sympathetic, and of great skill in the literary craft. We confess, however, to a little disappointment in Dr. LONSDALE's excellent biography; for we have searched in vain through its pages for the causes of Knox's downfall. Knox was never an idle man: from his first appearance in Edinburgh till the day of his death in London, he was ever at work. He was a temperate, healthy, and active man; he was idolised by his students; he had wondrous powers of language as a speaker; his lectures were not mere dry details, like the dreary discourses of the third Monro, but lively and attractive dissertations, not on anatomy alone, but on the cognate branches of our science.

Dr. Lonsdale seems to ascribe the downfall of his hero almost entirely to the Burke and Hare murders of the year 1828. He gives an excellent and a truthful picture of the terrible difficulties thrown in the way of the anatomical teachers of that day, by stupid legislation; how, on the one hand, the licensing bodies insisted on practical anatomy as part of the student's course, while yet the Government took no steps to facilitate the obtaining of bodies for dissection, but allowed the old law, rendering all such traffic illegal, to remain in full force. Hence arose the necessity of "body-snatching," as it was termed, where ruffians, the very dregs of society, must be dealt with by the lecturers to obtain the necessary supplies. We remember the time when we paid fifty shillings for the privilege of dissecting the arm and shoulder, and when each part of the body had to be purchased at a similar rate. In 1828 Knox's class, which was then very large, received an excellent supply of very fresh bodies. It was not often, indeed, then, that a perfectly fresh corpse was seen in a dissecting-room. The students themselves had little or nothing to do with the supply, except a daring few, who, for the sake of mere adventure, occasionally joined the resurrectionists in their midnight raids on the churchyards. We can safely assert, too, that the lecturers, and above all Knox himself, were perfectly free from any share in these transactions; they were generally attended to by the porter of the establishment. It may be said that more care ought to have been taken to find out how the bodies were procured, but we remember well that the general feeling was that, if any searching questions were asked, the supply would probably be cut off. No thought of foul play was ever entertained, of that we are certain; and hence we have no difficulty whatsoever in acquitting Knox absolutely of all blame in this terrible affair. Then came the awful discovery that Knox's rooms had, during the whole year of 1828, been supplied, in a great measure, with bodies obtained by the foulest murder. Poor Knox from that day was a marked man: he was banished from the good society of the Scottish capital. We remember at the time to have heard an Englishman of rank say: "Knox was a most charming companion; his stories at the dinner-table were wonderful; we listened delighted to his conversation, even if we did not believe what he said. But now," added he, with a significant shake of the head, "he is, of course, no longer admissible." Knox, who loved society, felt deeply the total estrangement of his old friends. It soured his temper towards the world, though to his death he retained his kind heart towards a few medical friends who had adhered to him; and from this time his tongue, never very guarded, was loosened against all who differed from him. Still, the students rallied heartily around him, and his joy was henceforth entirely in his lecture-room.

"He seemed to live to lecture, and enjoyed it more as a recreation than anything else. No charm in rural life, even the incense-breathing morn, was half so exhilarating to the mind of Knox as the air of his own amphitheatre, where a rapturous welcome hailed his presence. As the folding closed in upon the anatomist in his magic circle, all external Satanic influence was shut out, and with the passing hour all seemed serene in the lecturer's mind. Too often, however, the whole heaven of the man himself would ferment and rise up in hasty judgment upon his compeers and the world at large. It cannot be gainsaid by his most fervent admirers, that Knox was at times highly injudicious in holding up society to the glare of his bull's-eye lantern, and construing the professed verities of English life into worldly shams and hypocrisies; and, when disposed to be personal, stigmatising men of public character as readily as he would issue a philippic against his private foe" (p. 152).

Knox had other still more serious faults, of which his enemies took advantage. Dr. Lonsdale confesses—"That on matters of business involving a *bona fide* principle, Knox was prone to be evasive; while on matters of fact he was not always considered trustworthy. His prevarication at times was without any ostensible ground; at other times it seemed dictated by selfish motives; but under no circumstances whatever could it be held excusable; it bore upon personalities more than worldly affairs; but, oddly enough, looseness of statement was not manifested by him in his scientific walk. In that direction, to the best of my knowledge, he sought after truth" (p. 233).

Worse than all, perhaps, for himself, Knox did not even spare the dignitaries of the Scottish Kirk, and who that knows the state of the "religious world" in Scotland can imagine a more dangerous position? He "sate under no preacher," as it is termed, he scoffed at their bigotry and narrow-mindedness, and the godly ministers heaped curses on his recreant head. The ultra-religious party in Scotland contributed not a little to Knox's ruin. Their influence in the country parishes was unbounded; they, we suspect, prevented many a well-disposed youth from attending the excommunicated lecturer; they denounced him as a murderer, and we, more than once, have heard quoted as a serious truth the story which Knox used to tell in his playful moods, that when in Caffaria he never lacked a subject for his anatomical researches, as he could always take his gun and shoot down the first Kaffir that came before him!

It is natural that many parents objected to placing their sons under the tuition of a man on whose character there rested such grave imputations, while at the same time the enthusiasm of the students for Knox gradually cooled as the Burke and Hare excitement passed away. Another lecturer at this very time entered the field, who soon became eminently popular with the students. Many of these young men were only in straitened circumstances; their object in coming to Edinburgh was not to cultivate science, but to be qualified for practice as soon as possible. To such as these Alexander Jardine Lizars, a pure anatomical teacher, a fair speaker and an admirable draughtsman, proved a great attraction. Poor Knox used to sneer at Lizars as the Professor of the Pictorial School of Anatomy; but, though he drew beautifully on the board before the class, Lizars was most attentive likewise in the dissecting-room. From 1835 to 1840 the Edinburgh medical classes fell off terribly, probably in consequence of the rise of the London and provincial schools. Knox's class dwindled gradually away; he left Edinburgh; he sought employment in Glasgow and elsewhere. Scotland would not listen to him; and he crossed the border to seek his fortunes in the English metropolis.

Here, in Hackney, Knox closed his sorrowful but active life in 1862. As a teacher, we doubt if any ever equalled him; as a man, let us be blind to his faults, when we remember what he did for science. No one can read this most pleasing biography of his quondam pupil and colleague, Dr. Lonsdale, without feeling that in Knox were combined rare qualities of both mind and body; that he was a thoroughly scientific anatomist, and, in many respects, far in advance of his age.

NEW BOOKS AND NEW EDITIONS.

A GREAT deal of angry feeling has been excited by the tone given to the discussion on the Contagious Diseases Acts. These Acts, which have been supported as defensible and beneficial on moral and physical grounds by some of the most eminent dignitaries of the Church and most thoughtful of Christian theologians, are now denounced as loathsome, atrocious, and beyond description infamous. The advocates of the Act have hitherto for the most part maintained an attitude of moderation, which might be expected from men of education and professional training, under whatever provocation. We regret, therefore, to see a good deal of clear and sensible statement of fact in a statement *On the*

* *Life of Robert Knox, the Anatomist.* By Henry Lonsdale, M.D. London: Macmillan and Co. 1870.