officers of health, and in other countries, Quetelet(¹), Pettenkofer(^m), Michel Lévy(ⁿ), Hammond(^o), Bowditch and Derby(^p), and other persons, there has been amassed so much valuable matter, that the time is come when selection and abridgment are indispensable for the guidance of the student.

I must apologise for the length to which these simple thoughts have led me. They are uttered now because the time is certainly come when we must all endeavour, in our yearnings for the material improvement of our people, thoroughly to comprehend the fundamental and combined laws of physiological and social science on which our nature rests. Their complexity depends chiefly on the mutual action or reaction of matter and of mind in individuals, together with some superadded perturbation of civilised life, from which the savage is exempt. (See Ruggles, *op. cit.*, Letter I). The laws of our material nature are as absolute as those of the unreasoning brutes. But, in some particulars, they are entirely subject to our will, which is not the case with any other creatures. It cannot be said, indeed, of the past life of the human race,—

"Old age and experience, hand in hand,
Lead it to death, and make it understand,
After a season so painful and so long,
That all our life we have been in the wrong."

but this nevertheless is true, that historical and political experience, combined with the intercommunication of ideas by telegraph, and of persons by steam, is changing the conception, the conditions, and future of humanity, whether for good or for evil, with wholly unprecedented rapidity; and this is so, not in one country, but surely and steadily through the whole world. It is quite certain that education, acting with political causes, will modify the structure of old countries. It is quite certain that education, if possible without due attention to the material conditions of the people, will add mental suffering to physical. The modifications in the material state of man will be happily effected, in proportion as they coincide with the laws of the universe, or run athwart them. Every attempted rebellion against their spiritual or material conditions will necessarily end in certain and deep disaster to the rebellious race. Our sanitary regulations must be based on a right comprehension of these laws; on a conviction that material advantages, though essential for man, are not all; that material comforts will not remedy the results of immorality; and that, widely devised sanitary arrangements, the attainment of which, even by compulsion, has not yet been achieved, would in all probability be spontaneously carried out by an educated, free, and God-fearing people.

RECOLLECTIONS OF THE MEDICAL SCHOOL OF BERLIN.

By H. ROSBOROUGH SWANZY, M.B. Dub.,

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III.

THE necropsies of all cases which die in the Charité are conducted at the Pathological Institution either by Virchow or by one of his two assistants. If the case have been one of more than ordinary interest, the physician or surgeon under whose care it has been is usually present with his class to see the diagnosis confirmed, or the reverse. The examination is made with a view to the greatest accuracy and in a most methodical way; the different organs being investigated in the same rotation in every instance, and their appearances dictated to a junior assistant and noted down by him in a book kept for the purpose. Those viscera or other parts which demand a microscopical examination are laid aside. Once a week Virchow performs a necropsy, for the purpose of demonstrating his mode of making these all-important examinations, and on these occasions it is indeed a sight well worth seeing. The elegance with which Virchow makes a *post mortem* examination is not excelled by any other operative proceeding with which the writer is acquainted. His clearness in bringing out all the important points, his accuracy of language and powers of description, mingled with gleams of brilliant wit and sarcasm, all tend to make the *séance* most charming and instructive. Virchow delivers three courses. One of these is

very celebrated, and is popularly known as the "Railway Course". It is that one to which the professor himself gives most attention, and which, for this and other reasons, is the most profitable to foreigners. Here all the interesting preparations which have been obtained in the *post mortem* room are brought under the more special notice of the student. The room in which the lectures are held is provided with a fixed table about two feet in width, running in a zigzag direction from one end of it to the other; on this a miniature railway is laid down for the conveyance of microscopes on little trucks from one part of the class to another. (I believe a somewhat similar arrangement to this exists at St. Bartholomew's Hospital). Virchow describes in their turn the microscopical appearances of the various diseased organs which may be on the table, and then sends round microscopical preparations for observation. The lecture, which lasts two hours, is listened to with breathless attention, and at its conclusion the lecturer is besieged by a number of his listeners, who desire to have certain points cleared up. To these the professor gives willing answers, provided only the inquiries be pertinent. There is no one more approachable than Virchow, and he has a wonderful power of divining what the difficulty experienced is, although the student himself may often find it not easy to convey what it is that he wants. At the second course the student chooses whatever specimen he wishes from those on the table; and, when he has made a microscopical section of it, and investigated it to the best of his ability, the professor comes round to him in turn and demonstrates any points concerning the object about which he may have doubts. With such a tutor this is a most profitable exercise, and it is only to be regretted that Virchow does not attend to it with more regularity. The third course is also very interesting, being usually devoted to the pathology of some one or two organs, which receive a thorough sifting from the professor.

As a member of Parliament, much of Virchow's time, during those years which I spent in Berlin, was occupied with politics; and often did he appear late in the lecture-room, with the excuse that he had just been delivering a speech in the house (for there they have only morning sittings) in defence of some fresh liberal principle. Besides being in the house, Virchow is a town councillor, and takes an active part in the hygienic arrangements of Berlin. He is also an accomplished archaeologist, and spends his vacations in investigating those ancient remains with which North Germany abounds. There is some hope that medical science will now have the benefit of more of his time than has of late years been the case, as, in consequence of the ascendancy which Bismarck and his party have gained through the late war, Virchow is said to have declared that he will retire from political life, seeing no hope for the Liberal cause in Prussia for years to come. We may then look forward to the completion of that wonderful book on tumours, and to the issuing of a new edition of his *Cellular Pathology*, which is much wanted and which has long been promised.

The pathological laboratory is intended for those who wish to attain a practical knowledge of microscopical pathology, or to make original investigations. Microscopes, reagents, etc., are supplied, and a place in the laboratory is allotted to each student, for which no charge is made. The opportunity is here given of still further pursuing the investigation of those specimens which have been first seen in the *post mortem* room, and then lectured upon by Virchow. Virchow himself and his assistants are ready to give any reasonable amount of aid to those studying in the laboratory, although as no fee is charged discretion on the part of the student in this respect is necessary. In each session the senior assistant delivers several courses, of six weeks' duration each, on microscopical histology, with practical demonstrations.

The laboratory for physiological chemistry is under the direction of Professor Virchow's special assistant for this purpose, the post being at present filled by Dr. Oscar Liebreich, whose name has been made famous by the discovery of chloral. Dr. Liebreich is most assiduous in his attention to all those who place themselves under him. The chemistry of all the tissues, secretions, and excretions, both normal and pathological, may be studied here most satisfactorily; and indeed I am not aware of any laboratory of the kind which affords similar advantages.

The physiological laboratory is in the University buildings. It is very much frequented in consequence of the splendid instruction afforded by Professor Rosenthal (coadjutor of Professor du Bois Reymond), and on account of his great amiability. The laboratory is provided with all the appliances for experimentation, as Professor Rosenthal pays special attention to this branch. I regret to say that Englishmen are rarely found among those studying in this laboratory, although most other nations are constantly represented. Whether this is to be accounted for by our countrymen taking less interest in this subject, or by their ignorance of the existence of such a place and its advantages, I cannot say. I feel assured, however, that if some of them would give Professor Rosenthal and the physiological laboratory a trial, they would highly

¹ Quetelet, A., "Physique sociale, ou essai sur le développement des facultés de l'homme," 2 vols. (Bruxelles, 1869.) "Anthropométrie ou mesure des différentes facultés de l'homme." (Bruxelles, 1870.)

^m Pettenkofer, M., "Die Cholera und die Bodenbeschaffenheit in der k.k. österreichischen Provinz Krain." (München, 1861.)

ⁿ Michel Lévy, "Traité d'hygiène publique et privée," 5th edit. (Paris, 1869.)

^o Hammond, W. A., "A Treatise on Hygiene, with special reference to the Military Service." (Philadelphia, 1863.)

^p Bowditch and Derby, "Reports of the State Board of Health of Massachusetts."

Many of these authors have contributed far more than is here named.

appreciate the place, and that it would before long become a favourite resort for study. A most accomplished teacher of microscopy is to be found in the assistant of this laboratory, Dr. Boll.

There is a branch of medicine which rarely forms part of the education of medical men, but of which they are still supposed to be masters; namely, psychiatric medicine. For this there are not only superior advantages in Berlin, but it is moreover a subject which can be pursued at few other schools. The late Griesinger it was who won so great a reputation for Berlin in this respect. He died about three years ago, and was succeeded by his assistant, Professor Westphal. There is a lunatic asylum in connection with the Charité, and a special department for nervous diseases (paralysis, chorea, epilepsy, etc.) The cloak of his predecessor seems to have fallen on Professor Westphal, for he maintains his department in all its former glory and efficiency. Here, too, an Englishman is rarely seen; and I can only repeat the opinion expressed with regard to the physiological laboratory, that the psychological department in Berlin need only be known and tried to be appreciated by our countrymen.

There are two medical societies in Berlin. The chief one is the Berlin Medical Society, which meets once a week in winter and once a fortnight in summer, for the discussion of every branch of medicine. It thus takes the place of our clinical, surgical, and pathological societies. Nearly all the medical men of Berlin belong to it, and many most valuable original papers are read at its meetings. The Society concerns itself also about medico-political matters, and has much weight with the Government and the Parliament. Von Graefe was the originator of this Society, and continued to be its President until his death.

The Physiological Society is the other medical society of Berlin. It contains few but junior members of the profession. It meets once a fortnight for the reading of original papers on physiological subjects, being the results of the investigations made by the assistants of the different professors, and by those working in the various laboratories above mentioned. In connection with this Society is a circulating library, containing however nothing but the medical periodicals of the day. Every Saturday a new batch of all the principal French, German, English, and Italian, medical periodicals are left at each subscriber's rooms in exchange for those of the former week; and thus no one can have an excuse for not being *au courant* with everything going on in the profession, in all its branches, and in every land. The subscription to this Society (including the circulating library) is only one *thaler* (3s.) per month.

In conclusion, I think Berlin and Vienna to be equally good for the study of clinical surgery, ophthalmic surgery (since the death of Von Graefe), physiology, and histology. I think that Berlin has the advantage in operative surgery, clinical medicine (since the death of Oppolzer), physiological chemistry, pathology, and psychiatric medicine; while Vienna excels in diseases of the skin, syphilis, laryngoscopy, and obstetric medicine.

MECHANICAL DISTORTIONS OF THE SPINE.

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So much has been said and written upon the pathology and treatment of curvature of the spine by those who have devoted themselves to the study and relief of such deformities, that I feel diffident, with my limited experience, in making a further contribution to its etiology. Having recently met with a case of curvature of the spine dependent upon an inequality in the length of the lower extremities, and associated with a peculiar enlargement of the right patella, I was led to make a further inquiry into the relation of these two deformities the one to the other. In books on orthopædic surgery such an association has undoubtedly been recognised, but it appears to me that there has been a tendency, in the more recent works on this subject, to make such deformities dependent upon a cachexia, and thus to undervalue the effects of purely mechanical pressure in constrained positions as in many cases the approximate cause of such distortions. An authority on curvatures of the spine writes as follows:—"The causes of scoliosis are various. They are general and local debility, rickets, thoracic disease, obliquity of the pelvis, etc." (p. 34.) "Debility alone does not usually give rise to lateral curvature of the spine; but there must be superadded bad habits of standing or sitting which shall occasion obliquity of the pelvis and a primary lumbar curve. These habits to which I have alluded depend on debility however; and therefore it is right to speak of debility as the cause of these distortions." (p. 38.)

In the case now under consideration, a young man aged 20 was admitted into the surgical ward of St. Thomas's Hospital on account of

an osseous tumour developed in the right patella, with a remarkable elongation of the bones of the same leg without any apparent alteration in their general contour. The comparative measurements of the two limbs showed a difference of two and a half inches in the length of the two femora, and there was a corresponding difference in the length of the other bones, as will be seen by the table on next page. I have taken measurements of the right femur in young men of the same age, and find that the average length is seventeen inches, or two inches less than that of the case under consideration. The natural result of such inequality must be distortion either of the spine or of the pelvis. That the pelvis is not easily distorted, has been proved by the large number of cases of advanced lateral curvature of the spine, with considerable rotation of the bodies of the vertebrae, without any deformity of pelvis. Sir Charles Bell and others have shown that, independently of rickets or caries, the pelvis usually maintains its natural form. Where the distortion of the spine is mechanical, the primary curve is in the lumbar region, and corresponds to the tilting up of the pelvis on the affected side. The secondary curve in the dorsal region is for the purpose of restoring the balance of equilibrium and maintaining the centre of gravity as much as possible in the mesial plane. The peculiar construction of the spine and the arrangement of its processes, to secure great mobility of the whole with limited movement between individual vertebrae, renders it peculiarly liable to the effects of long continued unbalanced pressure. The bodies of the vertebrae being for the most part made up of cancellated structure, they more readily yield to the effects of pressure than bones having a larger proportion of the earthy constituents. Those are most prone to suffer from distortion of the spine, in whose osseous system generally there is a deficiency of phosphate of lime. Young children, especially girls, are very liable to deformities of the spine, from being too early put out to service, before their bones have become properly matured.

Such is the elasticity of the intervertebral cartilage, that an adult male of middle stature loses about an inch in height after having been in the erect posture for twelve hours. He will not regain that which has been lost until he has been in the recumbent posture for at least eight hours. If the trunk be inclined to one side, the intervertebral cartilages become compressed on that side, but on the opposite side the transverse processes of adjacent vertebrae are separated; so that, if this posture be maintained, the cartilages will become wedge-shaped, *i. e.*, thinned off towards the compressed side. Various trades are well known to originate such deformities, especially where there is a latent predisposition for the bones or cartilages to yield to the effect of unbalanced pressure.

The habitual use of a wooden leg frequently gives rise to distortion of the spine. The wooden leg being fixed and incapable of movement like that of an artificial leg, the gait of the person is altered to accommodate the body to the restricted movements of the limb and to maintain equilibrium during progression. For this purpose all the muscles on the sound side of the body are developed to an unusual extent, because it is from this side that the movements are principally made. In walking with a wooden leg, the person suddenly and momentarily throws the weight of his body on to the stump, and raising the sound limb carries the body forward, the wooden leg acting as a prop on which the body is for the time being supported. This undue amount of work given to one side of the body too often entails, sooner or later, compensating curvature of the spine.

In the same way, if the awkward habit which children sometimes have of supporting the body on one or other leg be constantly indulged in, the spine will become bent. The muscles on the opposite side, being less used, commence to atrophy, so that the relief to the child is greater as the habit is more indulged in; and the deformity will rapidly increase, unless early checked. Bedridden patients, especially those with disease of the hip, very frequently have deformity of the spine or contraction of the joints, from keeping the body in constrained positions.

When the lateral halves of the body are unequally balanced, as in the loss of an arm by amputation, the shoulder of the arm which remains becomes elevated, whilst that on the opposite side is depressed; and a lateral curvature of the spine is the result.

The particulars of the case above referred to were as follows.

J. B., aged 20, a gold-beater by trade, of robust constitution, was admitted into the surgical ward of St. Thomas's Hospital for enlargement of the right patella and hypertrophy of the bones of the leg. At the age of five, he fell from a height of about nine feet on to the floor of a passage, but does not seem to have injured himself much; nor had he had any serious illness. In March 1857, or three years after the receipt of the above mentioned injury, he was admitted into Guy's Hospital. The right leg was then longer, and the patella distinctly larger, than the left; but there was no mention of curvature of the spine. He was again admitted in May 1858; and the proportionate difference in