

THURSDAY, MAY 25, 1871

## THE SMALLER LECTURESHIPS AT THE LONDON MEDICAL SCHOOLS

## II.—THE TRUE FUNCTIONS OF THE SMALLER SCHOOLS

IN a recent article\* we pointed out the prodigious waste of time and energy that results from the existence of no less than eleven medical schools in the metropolis, with from thirteen to twenty-one lectureships attached to each, and called attention to a scheme by which it is proposed that an amalgamation should take place between several of them.

It is maintained by those who have proposed this scheme that by its means a reduced number of central institutions would be created in which the preliminary subjects of medical education, such as natural philosophy, mechanics, rudimentary chemistry, and botany, could be taught in a much more satisfactory manner than at present, since the increased value of the lectureships would enable the lecturer to devote more time to their preparation, and to supply much greater wealth of illustration, whilst the larger number of students in attendance would correspondingly stimulate his zeal. At the same time the smaller hospitals and schools might still fulfil a very important rôle as supplying the means for the practical or clinical study of disease—certain lectureships still remaining attached to them.

The importance of good preliminary education in natural philosophy, taking it in its widest sense, for the medical practitioner, seems to us to be by no means sufficiently recognised. Up to a very recent time it has been almost entirely ignored. It is only within the last few years that any steps in the right direction have been taken by the great examining boards. Fifteen years ago the College of Surgeons required little more than a good knowledge of anatomy and the principles of surgery in those they admitted as members, and even now the acquaintance with preliminary subjects they demand is of a very rudimentary nature, as may be gathered from the fact that it includes only writing from dictation, arithmetic, algebra, geography, English history, the first two books of Euclid, and a little Latin translation, with one optional subject, which may be either Greek, French, German, mechanics, chemistry, botany, or zoology. We cannot but think that this programme might be advantageously extended.

Does it not stand to reason that the lad who is about to enter upon the study of Anatomy and Physiology ought to possess a competent knowledge of the principal facts of Natural Philosophy? How is he to comprehend the contraction of muscles, the action of the valves of the heart, the phenomena of respiration, the construction of the eye and ear, unless he is well grounded in Mechanics, already understands the lever and the pulley, and knows the principles of Hydraulics and Pæumatics, the laws of refraction of light, and the conduction of sound? Nor can it be said that such knowledge is of temporary value only. The surgeon and physician must daily and hourly see cases which can only be treated properly by reference to such knowledge.

If we might venture to suggest a scheme for the

education of the student intended for the medical profession, we should recommend it to be commenced while he is still at school, at the age of sixteen, by passing the matriculation examination of the University of London. The following year should be devoted to the study of Natural Philosophy, rudimentary Chemistry, and Botany; and there could be no doubt that these subjects could be admirably taught at all the larger and better appointed schools through the country. But these are precisely the subjects that might be taught to large classes in a most superior manner in the four or five institutions with which it is proposed that the smaller schools should be amalgamated. The preliminary examination, in which considerable knowledge should be demanded, might take place at the age of seventeen. In the following winter session the student, now thoroughly grounded, should begin the study of Anatomy and Physiology, and the following summer might be employed in pursuing Chemistry in its application to Medicine; Botany in the same relations; and the recently introduced subject of Practical Physiology; the first embracing such subjects as the chemistry of the excretions and secretions, &c.; the second, the orders containing medicinal plants, and the composition and formation of the vegetable alkaloids, &c.; and the last, such points as the action of the valves of the heart, the processes of respiration and digestion, &c. The second winter session should be taken up in completing the knowledge of Anatomy and Physiology; and at the expiration of this session the first examination should take place, comprehending the subjects of Anatomy, Physiology, Chemistry, and Botany, the two latter points being at present almost wholly neglected. The second summer session might be occupied with the so-called *Materia Medica*, formerly merely consisting of the drier of all possible discourses on the composition and form of the various drugs, but with which our student is already perfectly familiar, and which might now be advantageously replaced by an account that could, in the hands of an efficient lecturer, be made deeply interesting, on the physiological action of drugs, and the effects of remedies on man and animals.

Up to the present time the whole work of the student could be conducted at one of the central institutions. From henceforward he might with great advantage be allowed to elect whether he would remain at this central institution, or go to one of the amalgamated schools. These might be made most serviceable as means of instruction in chemical medicine, surgery, and midwifery; and lectureships on these subjects, to avoid the loss of time to the students that would otherwise be involved in going to and fro, might be retained at the smaller schools. The instruction on these subjects would extend over the third and fourth winter sessions, at the end of which the final examination should take place. Thus it appears to us a vast improvement in the education of the medical student might be effected. He would enter the portals of his profession with a good general knowledge of the subjects he is about to study. The first years would be spent under circumstances in which he would obtain the best education on preliminary subjects the kingdom can afford, whilst the last two years would be spent under conditions in which the great field for clinical instruction possessed by the smaller hospitals could be

\* See NATURE, vol. iv. p. 1.

utilised to the utmost. This is, indeed, the special field which we look to the smaller hospitals to occupy in the future. Clinical instruction is pursued to a far greater advantage with a smaller than with a larger number of pupils.

### M. TAINÉ ON INTELLIGENCE

*On Intelligence.* By H. Taine. Translated from the French by T. D. Haye, and revised by the Author. Part I. (London: Reeve and Co., 1871).

IN a notice, some months ago\* in these columns, of M. Ribot's clever exposition of English psychology, mention was made of M. Taine's work, *De l'Intelligence*, then newly come forth, as a striking evidence of the revival of French interest in the scientific investigation of mind. The first part of the work is now put before English readers in a translation satisfactory on the whole, and the second part is announced as soon to follow.

The first part, as readers of the original must be aware, easily admits of being published separately. This happens because M. Taine's exposition, while presenting in the detail all the best qualities of his admirable style, is in its main lines laid out with a strict regard to principles of logical method. It falls into two sharply marked divisions, an analytic and a synthetic. No explanation of the different heads of knowledge making up our intelligence is attempted, until, by an analysis expressly performed, the ultimate elements of human cognition are come at. Often our English works on psychology, while they pass for, or claim to be, analytic, and do contain many cases of special analysis, are, in strictness, synthetic; the foregone general analysis being kept out of sight, and its sufficiency being left to appear from the character of the explanation which its results, as brought forward, may be made to yield. Of this description are the works of Prof. Bain, and even James Mill's professed "Analysis." M. Taine, on the other hand, prefers to do his analysis not in the secret laboratory of his own mind but under the eye of the reader; and the operation takes up the whole of his first part here translated.

Obviously, when the phenomena are so complex and manifold as in the case of mind or intelligence, the analysis, if it is thus to be exhibited, and if it is to be brought to anything like a definite issue, must be of facts carefully selected for their illustrative or representative character; and this M. Taine well apprehends. Nor does he less clearly see that normal facts or events of consciousness no more suffice for psychological science than can everyday observation take the place of artificial experiment in physical science. At different stages, therefore, he looks about him for cases either of what may be called artificial mental action, as in the ingenious processes resorted to by mathematicians, or of abnormal mental action, such as the phenomena of madness, hallucination, &c., which are a sort of nature's experiments on a field where, for moral reasons, the freedom of experimenting is greatly limited. So, at the stage of the senses where experiment becomes perfectly feasible, he effectively turns to account the most advanced results got out in late years by psychologists or physiologists; and, again, at the last stage of the analytic sounding, when he strikes upon a bottom of bare physio-

logy, he makes apt selection from the most recent experimental work.

He begins by resolving thoughts, or (in the strict philosophical sense of the term) ideas, into images, on principles of thorough-going nominalism. Ideas the least general are shown to be impossible as mental experiences, and to need representation by particular signs, and ideas the most general and abstruse are shown to come within the mental grasp still by signs or symbols. There is the difference that in the case of natural objects, like tree or dog, the substituted sign, generally a name, is the direct expression of a mental "tendency" arising under actual impressions, varied at the same time that they are similar; while to conceptions like those of mathematical science there may correspond no distinct impressions, and the sign is struck out according to an elaborate system of indirect substitution—substitutions upon substitutions. But always some definite image is present to the mind. The question, then, is to investigate the nature of particular images; and, by a very instructive muster of normal and abnormal instances, the laws of their retention out of consciousness and revival in consciousness are brought out, with the result that the image is itself seen to be a substitute of sensation below it. Must the analysis then end in a mere description of the kinds of sensation, with account taken of physical conditions? M. Taine thinks it need not, and wisely selects for special inquiry the sensations of sound—wisely, not merely because Helmholtz's classical investigations lie ready to the psychologist's hand, but also because no other set of sensations is at once so varied in character and so free from admixture with extraneous elements. The result thence obtained, confirmed more or less from the senses of sight, smell, and taste, and not contradicted by the sense of touch, is that all qualitative differences of consciousness within each sense are explicable as different compounds of an elementary sensation not conscious; such elementary sensations, different in the different senses, being further conceivable as themselves developed by composition out of a single infinitesimal "event," of course imperceptible to consciousness, the truly ultimate element of all that appears as mind. But in relation with this there will stand a molecular displacement in nerve; for, as the physiological analysis, taken up when the psychological reaches its term, finds in the sensory ganglia the seat of crude sensation, and in the cerebral lobes with their cortical layer a "repeating and multiplying organ" through which sensations are associated and revived as images, and thus become knowledge, so it may see in the reflex action of lower nerve-centres the physical correlate of the simple unconscious "events" or elements of sensation. And thus the complete analysis of intelligence discloses two worlds, the moral and the physical, in mutual correspondence down to the lowest depths of human nature, and, by analogy, to the very foot of the zoological scale.

Save that M. Taine's method of procedure is his own, and his expression is always striking, there is little thus far in which he has not been anticipated by one psychologist or another among ourselves, notably by Mr. Spencer in the resolution of sensation. Nor in breaking up, in the last chapter of this part of his work, the metaphysical entities self and matter, regarded either as substances or as systems of faculties and forces, does he do more than

\* See NATURE, vol. ii. p. 331.