THURSDAY, DECEMBER 8, 1887.

TECHNICAL EDUCATION IN MANCHESTER.

PROFESSOR HUXLEY could scarcely have anticipated the ready response Manchester has given to the challenge he threw down at the close of his most able address at the Town Hall on the 29th ult. In speaking of one of the great problems of the day, that of meeting ever-increasing competition and yet maintaining the proper social condition of the workers, he said :—"I have ventured to put this before you in a bare and almost cynical fashion because it will justify the strong appeal which I make to all concerned in this work of promoting industrial education to have a care at the same time that the conditions of industrial life remain those in which the physical energies of the population may be maintained at a proper level, in which their moral state may be cared for, in which there may be some days of hope and pleasure in their lives, and in which the sole prospect of a life of labour may not be an old age of penury. . . . I therefore confidently appeal to you to let those impulses have full sway, and not to rest until you have done something better and greater than has yet been done in this country in the direction in which we are now going."

Only a few hours before the utterance of these words the trustees of the late Sir Joseph Whitworth—who during his life-time did so much to encourage and promote the higher education of working engineers—made a munificent offer to the city of Manchester; an offer which was only made public by Mr. Darbishire after Prof. Huxley had finished his address, and which goes some way towards realizing what Prof. Huxley remarks may by some be looked upon as the Utopian dream of a student. The gift consists of a plot of land of about twenty-five acres in one of the best situations in the city, which the trustees have purchased for the sum of £47,000. They propose to offer the whole of this to the Corporation of Manchester upon trust, two-thirds to be maintained as a public park, and one-third as a site for the following institutions: (1) an appropriate Institute of Art, with galleries for paintings, for sculpture and moulded form, and for architectural illustration; (2) a comprehensive Museum of Commercial Materials and Products; (3) a Technical School on a complete scientific and practical scale. The necessary buildings are to be raised by the Corporation and by public-spirited inhabitants of the great district which owns Manchester as its metropolis; and the Whitworth Trustees add that, if this work be heartily undertaken, their own further contributions may be looked for.

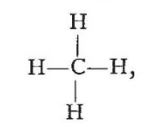
Such a result of the movement for the Extension of Technical Education and for the higher culture of our toiling thousands may indeed be welcomed, and the National Association, under whose auspices this meeting was held, may well be congratulated on this outcome of its autumn work. But this is not all, for it is not unlikely that the surplus, amounting, it is believed, to about £50,000, now placed at the disposal of the guarantors of the Jubilee Exhibition, may be applied to furthering this enterprise. Manchester has thus before it the prospect of showing England what can be done to promote educational progress in this direction, and to inaugurate a movement which ought to be followed by all the great cities in the country. Can we doubt that the sons of those whose energy and clear-sightedness have in times past placed Manchester in the van of the most important social movements of the day will prove themselves equal to the task which they have now a splendid opportunity of accomplishing? It is by caring thus for the well-being of our workers that the stable condition of society, referred to by Prof. Huxley, can be best secured; for truer words were never spoken than those in which he stated his belief that, in order to succeed in the competition which is every day becoming more keen, it is not sufficient that our people shall have the knowledge and the skill which are required, but that they must also have the will and energy and the honesty without which neither knowledge nor skill can be of any permanent avail. Mere technical instruction in handicraft or science must, in short, be based on a sound preliminary education. We need to train our workers to be not only clever artisans, but honest men who take pride in the quality no less than in the quantity of their work. It is because these were the views upheld by Sir Joseph Whitworth, and acted upon by him during his lifetime, that his trustees have felt that in no better way could they carry out the important ends for which he laboured than by starting a movement having for its object not merely the technical training of the artisan, but his moral, intellectual, and physical advancement. H. E. R.

TRIDIMENSIONAL FORMULÆ IN ORGANIC CHEMISTRY.

Dix Années dans l'Histoire d'une Théorie. Deuxième Édition de "La Chimie dans L'Espace." Par J. H. Van 't Hoff. (Rotterdam: P. M. Bazendijk, 1887.)

THIS interesting monograph gives an account, partly historical, partly expository, of what in our opinion is the most important theoretical contribution towards solving the problem of the constitution of organic compounds that has been made since the idea of a definite union of atoms within the molecule was first introduced into chemistry, of which idea, indeed, the new theory is an expansion. The work has the advantage of being written by one of the originators of the theory.

The linked-atom formulæ, which have so powerfully aided the development of organic chemistry, never professed to give any information as to the relative positions of the atoms in space. All that the "links" or "bonds" denoted was the existence of a closer relation of attraction (of a kind not further specified) between atoms represented as directly linked than between atoms represented as not directly linked. The question of the actual position of these atoms was left entirely open. If, therefore, anyone gathered from the graphic formula of methane,



for example, that the five atoms of this compound were necessarily situated in one plane, that person was merely