# SCIENCE

FRIDAY, FEBRUARY 17, 1888.

FOR MONTHS PAST the attention of university men throughout the country has been centred in the Princeton College Board of Trustees, who were deliberating as to the successor of Dr. M'Cosh in the presidency of that institution. On Thursday, Feb. 9, the fruit of those deliberations was seen in the unanimous election of Francis L. Patton, D.D., to the vacant post. This choice is on all grounds to be warmly commended. Dr. Patton is still a young man, being but forty-five years of age, and has yet to put forth to their fullest extent his marvellous intellectual powers. We seriously question whether any college has a president of so high an intellectual stamp as Dr. Patton. His theological and philosophical learning is vast in extent, and rich in quality. Both with tongue and pen he is clear and incisive. His critical ability is unrivalled, and in his new position he will have ample opportunity to show whether or not he is equally strong in constructive and administrative power. To follow Dr. M'Cosh is a trying test for any one, but we feel sure that Dr. Patton will confer honor and credit both upon Princeton and upon himself in his administration. That it may be long and prosperous, and that Dr. M'Cosh may long be spared to witness the carrying-on of the work that he has so wisely planned, is the hearty wish of every friend of higher education in this country.

## SCIENCE IN ELEMENTARY SCHOOLS.

IN the report of the council of education (England and Wales) for 1887, there are some excellent remarks about elementary science-teaching which are reproduced in a recent number of *Nature*. The judgment is passed that nothing could be more unsatisfactory than the present position of the knowledge and teaching of science in the elementary schools. Notwithstanding all the advantages that have been offered pupil-teachers for the study of science, as a body they appear to be in a most deplorable state in this respect. The inspector who reports on training-colleges finds the ordinary pupil-teacher deficient even in mathematics. It is in doubt whether this deficiency should be ascribed to poor teaching or defective early training. Mr. Fitch, who reports on female training-colleges, finds things no better there. At the admission examination the work in the arithmetic is satisfactory in point of accuracy, but it displays want of method, failure to appreciate the meaning of the question asked, and ignorance of principles. Thus very few of the candidates were able to give an intelligent explanation of simple arithmetical processes, such as subtraction or division. With them, as with the male pupil-teachers, book-work and memory are wholly relied on, and little attention is paid to the intelligent application of principles. "Scarcely three per cent are able to do much more in the teaching of arithmetic than work sums more or less correctly on the blackboard."

With such material to work on, it is not surprising that the results of the work at the colleges are not what they otherwise might be. Those who are below the average at admission rarely succeed very well in the array of subjects to be learned in two years' training. With regard to the male students, the reports at the close of the first year's training record that the answering of the questions set on the first book of Euclid was disappointing. The students appear to have learned their propositions by rote, and to have displayed great want of neatness and accuracy. Though the riders were joined to the propositions on which their solution depended and though all these riders were easy, very few of the papers were satisfactory. This inability to solve the easiest geometrical deductions is commented on again and again, and proves beyond doubt that either the students are negligently taught, or that they commit the book-work to memory without understanding it, and consequently are quite incapable of applying their knowledge to solve the simplest riders.

In summing up his impressions of the male training-colleges, the inspector gives it as his opinion that the students are over-lectured at some of the colleges, and that the lectures are mechanically reproduced, and transferred as closely as possible to the examination papers. This, of course, is due to the defective early training of the students, and to lectures injudiciously delivered on subjects about which students know absolutely nothing. For instance: one lecturer delivered a very excellent discourse on the corrupt form of Latin used by the Roman soldiers in Britain, its causes and its effects, to a class of which few, if any, of the members knew any thing whatever of Latin.

In the female colleges, even in arithmetic, questions on theory and principles are not well done, long problems are inaccurately done, and, as a whole, it is seen that there is yet much that remains before it can be said that the present system is satisfactory as regards the knowledge given and the methods adopted. There appears to be among the students a very narrow view of their future work, a desire to regard the obtaining of their certificates as the goal and aim of their existence. The views on science, of one of these maidens, are worth recording: "If I am successful in obtaining my certificate, I intend (D.V.) going in for two sciences. At the same time I propose attending a tonic-sol-fa class to get my advanced certificate. Should the two sciences 'sound, light, and heat,' and 'electricity and magnetism,' prove a success, I shall probably take up the science of hygiene." If the training-colleges tend to remove the impression that the technical qualification is the end of the pupil-teacher's work, if they awaken a spirit of emulation among the students, and enable them to teach more thoroughly and intelligently, then they will have fulfilled a large portion of their duties.

With such products as are thus indicated, as teachers, it is easy to predict what the schools that are under their care will be like. With masters, the majority of whom know little or nothing of even the elements of science, the pupils cannot be expected to pass well in these subjects. Thus it is seen, in the return of the number of pupils sent up on 'specific subjects' (most of which are scientific), that only 16.51 of those eligible for examination have been so examined, and of these nearly one-half were from the London School Board District. One-half of the passes were in algebra and animal physiology.

The inspectors in all parts of the Kingdom agree, that, with the exception of some of the cities and large towns, throughout the elementary schools science is untaught. This we can well imagine, when we have seen that the average teacher is completely ignorant of any of its branches, and it is the average teacher who is sent to the country schools. The explanation of some of the inspectors, that in the country for a great portion of the year the attendance of the children who are fit to be taught these subjects is very irregular, does not meet the question; for, even were the children most regular in their attendance, the subjects could not at present be taught, and, until the average elementary teacher is altered, they will not be taught.

The brightest spot of all appears to be Nottingham, and there 2,526 children were examined in specific subjects, of whom four-fifths passed. "Mechanics for boys, and domestic economy for girls, are the subjects principally taken by the Nottingham Board Schools, and are taught by a specially qualified science demonstrator and assistant, who visit the various schools in turns, bringing the apparatus with them in a specially constructed hand-cart. The lectures given on these occasions are afterwards gone through again by the teachers of the schools, from notes taken at the time. These lectures are simple and interesting, and are given with great