

economy it is urged that salt water will keep the roads and sewers much cleaner and more wholesome.

THE French Admiralty and a large number of railways and other corporations have adopted the metric system of screw threads recommended by *La Société d'Encouragement pour l'Industrie Nationale*, of Paris. It is proposed to consider the subject at an international conference at Berne, where it is probable that the new system will be adopted, and in this case the Whitworth system would soon be superseded.

The British Medical Journal states that a water famine is threatened in London. In 1895 the total amount of rain measured at the Royal Observatory, Greenwich, was only 19.73 inches, against an average of 25.06 inches. This deficiency is still in progress in the present year. In February the total rainfall at Greenwich was only 23 per cent. of the average for the month, and at Paris only 16 per cent. During January and February together the value was as low as 65 per cent. short of the mean at Paris, while in London the deficiency was 68 per cent. The rainfall of 1896 in London has so far, in fact, amounted to less than one-third of the average.

In a paper presented before the Paris Academy on March 23d, MM. le Prince Galitzine and A. le Carnojitzky claim that they have been able to polarize the X-rays by means of tourmalines. Lord Blythswood reported to the Royal Society on March 19th that he had been able to reflect the rays. The most perfect photographs hitherto taken by means of the Röntgen rays are produced in recent issues of the *British Medical Journal* and the *Lancet*, one of a monkey and one of an infant three months old; not only is the skeleton of a child shown with great distinctness, but some of the soft parts are clearly outlined.

PROF. J. C. EWART, of the University of Edinburgh, has undertaken an extended series of experiments upon telegony. He has a mare in foal by a zebra and a zebra mare in foal by a zebra stallion, and has arranged a number of other crosses in which the paternal and maternal characteristics are strong but less easily recog-

nizable than in the above cases. Breeders thoroughly believe in telegony, or the transmission of the influence of a previous sire. A number of apparently authentic cases have been cited besides the famous one of Lord Morton's mare, but none that fully satisfy the most critical. The matter of transmission of characteristics from a previous sire in such an important one that it requires fresh verification, and Prof. Ewart's experiments will be watched with interest.

In an editorial comment entitled 'The Taming of the Shrews' on the recent monographs by Dr. Merriam and Mr. Miller, *Natural Science* remarks: "In looking through these publications the conviction is forced upon one that 'they know how to do things in America,' and one wonders what work will be left for the poor fellows of the next generation. So far as North America is concerned, at any rate, there will be no new species to discover nor any work to be done in unravelling synonymy, for this is all done so thoroughly by the writers of these monographs. They know, too, how to print books in America; in this, as in their other government publications, both the paper and type are all that can be desired, and might well be commended to the notice of the 'Printers to the Queen's most excellent Majesty.' "

Appleton's Popular Science Monthly for April contains the Presidential address by Surgeon-General George M. Sternberg before the Biological Society of Washington on the 'Practical Results of Bacteriological Researches,' an article on the X-rays by Prof. Trowbridge, a continuation of the articles by Mr. Herbert Spencer, Prof. Ripley and Prof. Newbold, and other articles of interest, including a sketch of Benjamin Smith Barton, with a portrait.

UNIVERSITY AND EDUCATIONAL NEWS.

THE Calendar of the University of Michigan for 1896-97 shows the following attendance :

Department of Literature, Science and the Arts	1204
“ of Engineering.....	331
“ of Medicine and Surgery.....	452
“ of Law.....	675
School of Pharmacy	83

Homœopathic Medical College.....	27
College of Dental Surgery.....	189
	2961
Deduct for students enrolled in more than one department.....	44
	2917
Students in Summer School, 1895.....	97
Total.....	3014

The number of instructors is 160. The average annual fees (including laboratory fees) are about \$50.00 per student.

MR. JOSEPH FIELD has given Mount Holyoke College \$6,000 to found a scholarship in memory of his mother. The Catholic University of Washington has received \$5,000 by the will of Mr. Bryant Lawrence.

DR. H. F. REID, late professor in the Case School of Applied Sciences, at Cleveland, O., has been made associate professor of geological physics in Johns Hopkins University.

THE accounts of the Cambridge University chest, as distinguished from the general University fund for the year 1895, shows that the total receipts were £39,681, 18s. 11d., and the total expenditures, £40,067, 6s. 8d. This sum includes £670 for the Observatory, £1,024, 7s. 7d. for the Botanic Garden, £4,550 for museums and lecture-room maintenance and £4,000 for the library.

THE French Chamber of Deputies has passed unanimously a bill giving the various French faculties the titles and privileges of universities. This would establish universities at the following places: Paris, Dijon, Lyons, Bordeaux, Montpellier, Lille, Toulouse, Nancy, Rennes, Aix, Poitiers, Caen and Grenoble. It is stated that there are now 24,000 students attending these faculties and that they receive annual subsidies from the government amounting to about \$2,800,000.

THE Electro-technical Institute of Darmstadt has received about \$100,000 from the government for the purchase of new ground and for the enlargement of the buildings.

WE learn from the *Naturwissenschaftliche Rundschau* that Dr. Julius Bauschinger, of the observatory at Munich, has been appointed as full professor of astronomy in the University

of Berlin. Dr. H. W. Bakhuys Rosebom has been made professor of chemistry at the University of Amsterdam, and Dr. A. Bistrzycki has been called to the professorship of analytical and technical chemistry in the University of Freiburg, in Switzerland.

DISCUSSION AND CORRESPONDENCE.

CERTITUDES AND ILLUSIONS.

EDITOR OF SCIENCE: Your correspondent in the last number of SCIENCE (pages 513-514), in making comments about my last article on 'Certitudes and Illusions' (pages 426-433), asks four pertinent questions, all of which were definitely answered in the article, but which are worthy of restatement in other terms. These questions are as follows:

First.—What is motion?

Motion is change of position. In the change of position two elements are involved, the speed of the change of position and the path of the change of position. We may reason about the speed or we may reason about the path, but these two elements must not be confounded, lest they lead to illusion. This is a concrete world, and there is no speed without path and no path without speed; we may reason abstractly, but the abstraction must be complete.

Second.—What is rest?

Rest is a mode of motion. I have defined the use of the terms particle and body, and the definitions need not here be repeated. In nature the ultimate particle is combined in a hierarchy of bodies, the atom is probably combined of particles, the molecule is known to be combined of particles, the molecules are combined into molar bodies, the molar bodies are combined in the earth, the earth is combined in the solar system. The particle has the motion of all of these bodies. If any body has a motion differentiated from the motion of any other body in the same rank of the hierarchy in such manner that the body as a unit has a motion distinct from the bodily motion of the next higher unit, that motion may be accelerated positively or negatively, but this can be done only by deflecting its motions in all other bodies of the hierarchy. Let us take the case of molar motion. The molar body partakes of the motion of the earth and the solar system,