

air of which is kept in circulation by the plunging up and down of half a dozen elevators, the visitor is lifted at a speed of 500 feet a minute, past floor after floor, crowded with the offices of financiers, managers and promoters of traffic and of trade, lawyers, chemists, contractors, manufacturers, to the headquarters of the controlling genius of the whole organism, the civil engineer. For he it is to whom all the members of this microcosm must apply for aid and advice in the successful operation of their respective occupations. It is not his to mechanically transform elements into matter, or matter into other forms, or to show how energy may be produced, but to direct the application of energy to the various forms of matter, original or produced, in such way as to bring about the most satisfactory results in the most speedy and economical manner.

He has grown with the growth of the nineteenth century, and is, so far as the relations between man and matter are concerned, its most striking product. And so, while the definition given in the "American Edition of the Encyclopædia," which appeared at the beginning of the century, that "Civil engineers are a denomination which comprises an order or profession of persons highly respectable for their talents and scientific attainments and eminently useful under this appellation," is still true, it is hardly probable that the compiler of the Twentieth Century Encyclopædia will be content to let it stand without further explanation.

But the end is not yet: there are still many problems of Nature unsolved. The experience of every day shows that there are sources of power not yet fully developed and we cannot but say with the great poet:

"I doubt not through the ages one increasing purpose runs,
And the thoughts of men are widened with the process of the suns."

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

A GOOD estimate of the character of the work of a College or University can be obtained from the investigations carried on by its staff and students. The following statement of research work done in the laboratories of the McGill College, Montreal, last session, published in the Annual Calendar of the College and University for the session 1901-1902, furnishes excellent evidence of sound instruction and scientific activity:—The effect of cold on the physical properties of iron and steel; the influence of bending on the torsional strength of metals; the properties of iron and steel as affected by annealing at moderate temperatures; experiments on frictional losses in $1\frac{1}{2}$ -inch pipes and bends under varying velocities of flow; experiments on the determination of the "Miner's Inch"; the separation and concentration of chromite, blende, nickeliferous pyrrhotite and certain other minerals by combined gravimetric and magnetic methods; the crushing and sizing of rocks by means of different types of apparatus; the treatment of Nova Scotia mispickel concentrates by cyanide, bromocyanide and chlorination methods; conditions affecting the wave form of alternators; and the effect of change of wave form in alternators on induction and synchronous motors: induction motors used as frequency changers.

THE Massachusetts Institute of Technology has lately introduced the degree of Doctor of Philosophy to supersede the former degree of Doctor of Science. The following statement of the requirements for the new degree is of interest as showing the tendency of technical education in the United States:—"The degree of Doctor of Philosophy certifies to high attainments of a grade which qualifies the recipient as a scientific investigator and teacher. The course of study leading to this degree is mainly one of experiment and research, accompanied by such other theoretical subjects as may be useful adjuncts to the main scheme of work. The candidate must pursue his studies and researches under the direction and oversight of the Faculty for at least two school years, furnishing from time to time such evidences of progress as the Faculty may require. His attendance must be continuous, except in cases of absence previously approved by the Faculty for the purpose of conducting researches and investigations in the field. He must present a thesis embracing the results of an extended original investigation, and must pass such final examinations as the Faculty may require."

NO. 1661, VOL. 64]

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, August 19.—M. Fouqué in the chair.—The chairman announced the death of two members of the Academy, Admiral de Jonquières and Baron de Nordenskiöld, and added a short account of their life-work.—The relations of psoriasis with neurasthenia: treatment by injections of orchitin, by M. F. Bouffé. Psoriasis is a trophonevrosis having its seat in the nervous centres and especially in the great sympathetic. It presents a great analogy with neurasthenia in its origin; in both diseases there is constantly a diminution in nervous activity, characterised by a fall in the urographic line of phosphoric acid. The treatment of both should consist in the invigoration without stimulation of the nervous system by injections of orchitin, the average dose being from 10 to 12 c.c. three times a week.—On a problem of d'Alembert, by M. F. Stacci.—On a particular critical point of the solution of the equations of elasticity, in the case where the forces on the boundaries are given, by MM. Eugène and Francois Cosserat.—On the general principles of mechanisms, by M. G. Koenigs.—On the absolute value of the potential in isolated nets of conductors having a capacity, by M. Ch. Eug. Guye.—Researches on the mechanism of etherification in plants, by MM. E. Charabot and A. Hébert. Etherification in plants is produced by the direct action of the acid upon the alcohol, the action being favoured by a particular substance playing the part of a dehydrating agent, the latter being a diastase the dehydrating action of which is exercised in a chlorophyll medium.—Littoral deposits and movements of the soil during the secondary era in the Quercy and western Rouergue strata, by M. Armand Thevenin.—On the origins of the source of the Loue, by M. André Berthelot. Through the accident of a fire at an absinthe factory and the consequent liberation of a large quantity of absinthe, it became evident that the Loue represents a subterranean arm of the Doubs.—Observations of M. Berthelot on the preceding communication.—Influence of colour upon the production of the sexes, by M. C. Flammarion. A study of the effect of light of various colours upon the development of silkworms.

CONTENTS.

	PAGE
The History of Physiology. By E. A. S.	417
Filtration of Water	421
Intelligence as the Soul of the Universe	422
Our Book Shelf:—	
Herbertson: "The Distribution of Rainfall over the Land"	423
Seeliger: "Tierleben der Tiefsee."—W. A. H.	423
"A Guide to the Shell and Star-fish Galleries in the British Museum (Nat. Hist.)"	423
Comstock: "A Text-book of Astronomy"	424
Taylor: "An Introduction to the Practical Use of Logarithms"	424
Letter to the Editor:—	
The Moon and Wet Days. (With Diagram.)—Alex. B. MacDowall	424
North American Folklore	425
Some Scientific Centres. II. The Laboratory of Wilhelm Ostwald. (Illustrated.) By F. H. N.	428
The Development of Chemical Research	430
International Engineering Congress	431
Notes	431
Our Astronomical Column:—	
Astronomical Occurrences in September	436
New Elements of Comet 1901 (I.)	436
Brightness of the Solar Corona, January 22, 1898	436
The Spectroscopic Binary "Mizar"	437
Nova Persei	437
The Future of Electric Traction	437
Prize-Subjects in Applied Science	438
Progress of Civil Engineering. By J. J. R. Croes	438
University and Educational Intelligence	440
Societies and Academies	440