

form of this most modern of naval weapons and points to its complete invisibility in action, its power of carrying armor if desired, its perfect liberty of movement under water and safety and certainty in placing its torpedo, as well as the comfort and safety of its own crew, as considerations that must inevitably ultimately give it the leading place in a naval establishment, and especially for one like that of the United States, planned mainly for defense.

THE commercial reporters of *Industries and Iron* state that Messrs. L. Lowe & Co., of Berlin, Germany, manufacturers of electric supplies, have ordered from the United States an Allis-engine of 900 h. p. to furnish light and power at their works. The Société des Railways économiques de Liège, Seraing et Extensions, and the Compagnie générale des Railways à Voie étroite, have sent to the United States for a complete electrical equipment of the Westinghouse Company's make. A large business has been secured by builders of heavy machinery in the United States, for delivery in Great Britain, and it now seems probable that they may find a profitable and an extensive market on the Continent of Europe. The manufacturers of Europe are, however, reported to have good business, and competition from this side of the ocean has not produced any sensible effect in the direction of transfer of trade to this country.

It will be remembered that the Paris International Meteorological Conference of 1896 appointed a permanent Committee on Terrestrial Magnetism and Atmospheric Electricity, and submitted to it a number of questions for report. In order that these questions may be well discussed, says *Nature*, it has been decided to hold an international conference on terrestrial magnetism and atmospheric electricity in connection with the forthcoming meeting of the British Association at Bristol, which will begin on September 7th. Letters of invitation are being sent out by the Committee; and all foreigners who propose to attend the conference may obtain tickets of membership of the British Association, free of charge, on application to the Assistant General Secretary of the Association. Among the subjects to be discussed are: The calculation of monthly means with and without taking dis-

turbed days into account; the publication of the monthly means of the components X, Y, Z, and the differences  $\Delta X$ ,  $\Delta Y$ ,  $\Delta Z$ , of the monthly means from the preceding means; the establishment of temporary observatories, especially in tropical countries; and the relative advantages of long and short magnets. The decisions of the conference upon these questions will be reported direct to the International Meteorological Conference. But though the first business of the conference will be to report upon the questions submitted to them, papers and communications on other subjects connected with terrestrial magnetism and atmospheric electricity are also invited. It is desired that such papers be sent to the Committee some time before the opening of the British Association meeting.

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#### UNIVERSITY AND EDUCATIONAL NEWS.

AT a meeting of the Board of Trustees of Cornell University on April 14th it was decided to establish a medical department to be located in New York City. The faculty will consist chiefly of the members of the faculty of the New York University Medical College who have been dissatisfied with the relations between the College and the University. The new medical college, like other departments of Cornell University, will be open to women on the same terms as to men, and students appointed to State scholarships by the Superintendent of Public Instruction may obtain free tuition from Cornell University in medicine hereafter, as they now obtain it in art, law, engineering, architecture, etc. It appears that Colonel Oliver H. Payne has given \$500,000 toward an endowment and that buildings will be erected at once. The College will be opened next year with Dr. W. M. Polk as Director.

AT the same meeting Dr. B. E. Fernow, Chief of the Division of Forestry, United States Department of Agriculture, was elected Director of the College of Forestry, recently established by an appropriation from the Legislature of the State of New York.

PROFESSOR EARL BARNES, lately professor of education in Stanford University, will, it is

said, on his return from Europe, occupy a chair in the newly-established School of Pedagogy in Cornell University, devoting himself chiefly to problems of child-study.

AT the meeting of the Board of Regents of the University of California on April 12th Mrs. Phœbe Hearst offered to construct and equip at her expense a building for the College of Mines.

MCGILL UNIVERSITY has suffered severe losses in the resignation of Professor Hugh L. Callendar, of the chair of physics, and Professor C. A. Carus-Wilson, of the chair of electrical engineering. Professor Callendar has been appointed to the chair of physics in University College, London, vacated by the resignation of Professor Carey Foster.

THE summer session of the University of Nebraska opens on June 6th and closes July 16th. It is to take the place of the University Summer School, hitherto maintained for from two to four weeks each year. Regular University work will be offered in eighteen departments and special work in six or seven more. It is the expectation of the University authorities ultimately to develop the summer session so as to afford opportunities for vacation work along nearly all lines of University study. The sciences now offered are botany, chemistry, entomology, geology, physics and zoology.

#### DISCUSSION AND CORRESPONDENCE.

##### ISOLATION AND SELECTION.

TO THE EDITOR OF SCIENCE: Will you permit me to use your pages for protesting against the indiscriminate use of the word 'Selection' by writers on Organic Evolution. Selection means the act of picking out certain objects from a number of others, and it implies that these objects are chosen for some reason or other. Now Selection, by itself, can never originate a new variety or a new species. To do this it must always act in conjunction with the isolation of the selected individuals.

'Artificial Selection,' by which breeders form new races of domesticated animals, consists of two distinct processes. The breeder first selects his animals and then isolates them from those which have not been selected. It is isolation of the individuals which produces the new race;

selection merely determines the direction the new race is to take. On the other hand, Isolation is capable of originating new species without the cooperation of Selection. For, if a few individuals of a species become isolated from the others by some physical agency, such as a flood, a drought or a hurricane, and happen to have some peculiarity or variation different from the average of the species, that variation will now have a special chance of being propagated and probably intensified, although the original parents were not selected in any way. The one factor common to all cases of organic evolution is Isolation, and consequently it must be considered as the most important factor.

I have summarized the different ways in which Isolation can be brought about in a paper in *Natural Science* for October, 1897, to which I may be allowed to refer any of your readers who are interested in the matter. Selection implies the action of a Selector outside of the individuals which are selected, whether that Selector be, or be not, conscious of what he is doing; this is the Artificial Selection of Darwin. Natural Selection is not truly selection, for the individuals can hardly be said to select themselves by their superior strength, cunning, or what not. Still the term has become so firmly established that it can well be allowed to pass, if used only in Darwin's sense of advantage gained in the struggle for existence, either by the individual or by the species. It is, certainly, quite as good a term as Organic Selection, and has the advantage of having been proposed by the founder of the doctrine of evolution.

I quite agree with Professor Mark Baldwin and others that Determinate Evolution is the only explanation of the main facts of organic progress. But alongside of this Determinate Evolution a large amount of Indeterminate Evolution has also been going on. For example, although Humming Birds and Diatoms, as groups, are the product of Determinate Evolution, I cannot believe that all the specific characters of the various Humming Birds, or the specific and generic characters of the various Diatoms, are due to the same agency, for they show no definite tendency in any direction, but merely variety.