field of discolored water, in patches, each patch being about one hundred yards long and two hundred yards wide. The water had an appearance similar to that over a shoal. That night the sea was remarkably phosphorescent, and the ship was evidently passing through the same kind of water.

— Capt. H. Parsell of the R. M. S. 'Britannic,' reports, that on April 12, at about 8 h. 17 m. 43 s., A.M., he observed a comet bearing east (true). The altitude of the nucleus was 15° 20′ 20″; eye, 33 feet; latitude 4° 24′ north; longitude, 68° 14′ west. He continued to observe it every night until he arrived at Queenstown. What was also probably the same comet is reported by Capt. E. W. Owens of the British steamship 'Iowa' as having been observed April 9 at 3 o'clock A.M. He was in latitude 40° 30′ north, longitude 36° west. The comet was seen bearing east, with its tail in a southerly direction. Its altitude was 15°. Local time was used.

— The proposed transfer of the Coast Survey from the Treasury Department to the Navy will probably be provided for at the present session of Congress. The Senate committee has already made a favorable report; and the sub-committee of the House Committee on Naval Affairs, to whom the subject has been referred, is understood to be favorable to it.

— The Senate, on Monday, passed a bill appropriating $17,500 for making the west end of the Smithsonian Institution building fire-proof. A citizen of the United States, who has long resided abroad, proposes to give to the Smithsonian Institution a large collection of armor from the middle ages, — some of it connected with most famous historical names, — including horse-armor, helmets, swords, and all the paraphernalia of ancient warfare. These objects, numbering about five thousand, have been collected at great expense, and the collection is one of the most valuable of the kind in the world. The condition of the presentation is that the Smithsonian Institution furnish a fire-proof building for its protection.

— Prof. Alexander Graham Bell will sail for Europe June 2. He has been invited to appear before the British Royal Commission now engaged in making an inquiry into the best methods of caring for and educating deaf-mutes. It may be remembered that several years ago Professor Bell presented a paper, at a meeting of the National Academy of Sciences, on the formation, through the intermarriage of deaf-mutes, of a deaf variety of the human race, and gave some important statistics to show that a much larger percentage of the children of deaf parents are deaf than of those whose parents possess the sense of hearing. This paper attracted wide attention, and gave rise to very interesting discussions both here and abroad. The Royal Commission has requested Professor Bell especially to give to it the results of his subsequent investigations and studies upon this branch of the subject, and he has devoted much time to the preparation of facts and figures in regard to it. He will also give the commission the result of his studies of other divisions of the subject.

— The summer session of the Chautauqua College meets at Chautauqua July 6. The college has two departments, — the summer session, at which only special work is done; and the correspondence department, which has a full college course, and works during the college term. The present session of the latter is just closing with four hundred and twenty students.

— At the meeting of the American Philosophical Society, May 4, Prof. C. V. Riley, the entomologist, called attention to some grave errors in the published minutes of the earlier meetings of the society. He remarked that the public, as well as the most competent authors, had always believed that the Hessian-fly — that pest of wheat-culture — was introduced during the Revolution by Hessian troops. Dr. H. A. Hagen of Cambridge has argued against this belief, and, further, that the species was not imported from Europe; one of his most potent arguments being that based on the early minutes of the Philosophical Society, which, as communicated to him (Hagen) by one of the secretaries, Mr. H. Phillips, jun., and as published, make mention of the Hessian-fly in 1768, or before any Hessian troops landed. The statement of the secretary, as also the published minutes, turn out to be absolutely erroneous on these points, as, upon consulting the original records, Professor Riley found no mention of the Hessian-fly prior to 1791. In all previous cases 'the fly,' or 'the fly in wheat,' or 'the fly-weevil,' are the terms used; and it is susceptible of positive proof that these terms referred to totally distinct insects, belonging to a different order, and still called the weevil, viz., *Sitophilus granaria* and *S. oryzæ*. It is a most interesting illustration of grave and misleading error, resulting from carelessness in what appear to be trifles.

— The thirteenth session of the Sauveur College of Languages will be held at the University of Vermont, Burlington, Vt., commencing July 9, and continuing six weeks. After the close of the last session of the Sauveur Summer College of Languages in Oswego, N.Y., it was resolved to hold the thirteenth session this year at Burlington, where they spent the summers of 1884 and 1885. The want of accommodations, which caused the college to leave there in 1885, has been supplied. Oswego treated the college in the most friendly manner from the first to the last day of their stay there. Yet there was missed something which Oswego, with its commercial bustle and activity, could not give; namely, the quiet, rural character of the former home at the foot of the Green Mountains.

— The Prince of Monaco is about to publish the scientific results of the cruises of the 'Hirondelle' in the Atlantic Ocean in a magnificent illustrated volume in folio. The work will be edited by the prince and Jules de Guerne, zoölogist of the expedition, while specialists have charge of the various departments. The prince invited correspondence with scientific societies and institutes for exchanging periodicals and marine or fresh-water specimens.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

Twenty copies of the number containing his communication will be furnished free to any correspondent on request.

The editor will be glad to publish any queries consonant with the character of the journal.

Experiments in Vision again.

MR. HYSLOP, in his interesting letter on this subject (*Science*, No. 274, p. 217), asks for verification of his results. In my case, when his two circles are combined by convergence, there is not the least alternation of images, but, on the contrary, a complete combination and a single horizontal ellipse, whatever be the degree of inclination of the planes of the circles to one another, provided the inclination to the median plane be the same. But the binocular ellipse will seem inclined to one side or the other if there be the least want of symmetry in the inclination of the two planes. This is obviously the necessary result of the law of corresponding points.

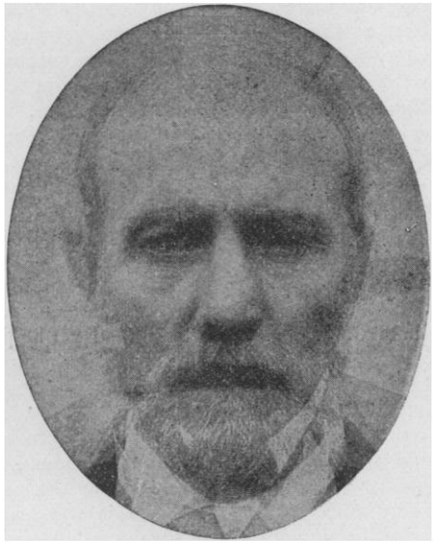
I cannot think, however, that so good an observer and so skilful an experimenter as Mr. Hyslop could mistake this for alternation of the two images. I therefore suppose that his eyes are more independent of one another than mine. JOSEPH LECONTE.

Berkeley, Cal., May 14.

Composite Portraiture of the Insane.

WITHIN the last year considerable advances have been made in composite photography; and especially Professor Stoddard, by his articles in *The Century*, has done much to give us new types. Most studies in composites have been confined, up to this time, to normal individuals, and, so far as the present writer is aware, no attempts have been made to secure composite types of insanity. The accompanying composites were made by the Notman Photographic Company of Boston, from negatives taken by the writer in November, 1887. The composite of general paresis is made from the portraits of eight patients, — three females, and five males. General paresis, being an organic brain-disease (softening of the brain), furnishes an unusually good field for the study of the decay of the mental faculties; and the patients making up this composite were all in the second stage of the disease, when it was beginning to destroy the finer lines of facial expression. A comparison of the composite of paresis with that of melancholia — eight subjects, all men — will show the characteristic differences between the two diseases. The eyes of the composite of paresis have a fixed and staring look, showing clearly a diminution of intelligence, and differing entirely from the expression of the other composite, where

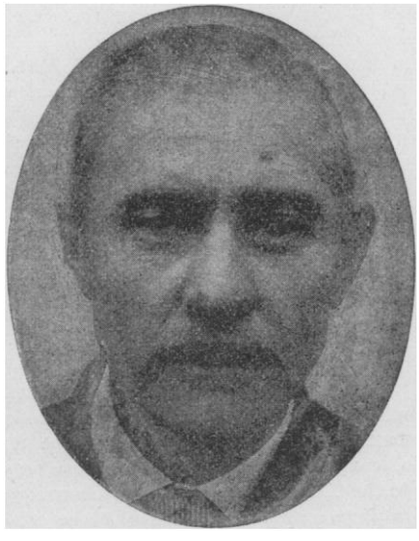
the expression is sad and thoughtful, but by no means lacking in intelligence. Of the patients suffering from paresis, one of the women and three of the men had had apoplectiform seizures; and the average duration of the disease at the time of photographing, was, in the women, two and one-third years, and in the men one and three-fourths years. The average duration of paresis, before it terminates fatally, is usually stated to be between three and four years. Of the patients making up the composite of paresis, all, with the exception of one woman, were in good general physical



COMPOSITE OF EIGHT PATIENTS SUFFERING FROM MELANCHOLIA.

condition, and able to go out walking, and join in the usual round of asylum-life: and this one woman was still able to go out walking on pleasant days, but was not so vigorous as the others.

The composites seem fairly to represent the physiognomy of the two diseases; and that of paresis has been spoken of by several alienists as being a typically characteristic face. The well-known look of easy-going complacency of paresis is strongly shown in the portrait.



COMPOSITE OF EIGHT PATIENTS SUFFERING FROM PARESIS.

Mental diseases offer an excellent field for the study of types, and it is to be hoped that further work in this line may give a more just conception of the typical expression in the different forms of mental disease than has hitherto been obtained from portraits of individual cases. The portraits were first published in the *Journal of Nervous and Mental Disease*, and are reproduced here in the hope that they will prove of interest to others than the medical profession.

WILLIAM NOYES, M.D.

New York, April 13.

The Significance of 'Variety' and 'Species.'

THERE is no question in biology more significant, or more difficult to answer, than what constitutes a species. Upon the answer hinges the question of evolution, and more particularly the theories of Darwin. In spite of an immense amount of discussion, no answer has ever been given to the question which is in any degree satisfactory. Certain it is that no definite amount of difference can be regarded as enough or as too much to constitute a difference between two species. The term 'species' is compatible with a great amount of unlikeness on the part of varieties, or equally compatible with extremely small differences between species. Our pigeons form an example of the first class; and many species of insects, of the second. In the former we find within the limits of a single species an immense variety, the differences between the varieties sometimes surpassing that between different families in a state of nature. In the latter we have many species so closely like each other as to require an expert to see any differences at all. It is plain to every student that the term 'species' is a variable one, and its limits cannot be found in any definite amount of anatomical variation. And yet, after all has been said concerning the indefiniteness of the term, every one will recognize that the word 'species' does mean something, and expresses some fact in nature; that even though, according to Darwinism, a species is merely an exaggerated variety, yet there is a difference between a species with many varieties and a genus with many species. The latter indicates, as every naturalist feels, a more fundamental difference of some sort, even though to all appearances the differences may be less. Darwin did not regard the various pigeons as forming different species, in spite of their unlikeness.

This is not the place for a discussion of this matter, which would involve the whole work of Darwin and his followers. There is one suggestion, however, brought first prominently into notice by Romanes (*Nature*, August, 1886), which has not received the attention it deserves, at least in this country. The suggestion is briefly this: that differences between species are due to the accumulation of differences in the sexual organs, entirely independent of anatomical differences. This idea does not belong exclusively to Romanes, for it was independently suggested by at least three others prior to the publication of the paper of Romanes (CATCHPOLE, *Nature*, xxxi. p. 4; BELT, *Naturalist in Nicaragua*; and myself, *Evolution of To-day*, p. 41). Romanes alone, however, expanded the view, and took upon himself to defend it against the criticisms which were abundantly offered. In so doing he referred to the principle of natural selection in such a way as to rouse the enmity of many who revered Darwin's name and work, by claiming that Darwin did not explain the origin of species at all, but only the origin of adaptation. In thus seemingly attempting to belittle Darwin's discovery and relegate it to a very subordinate position, Romanes called upon himself a severe criticism from many who refused to see in his 'Physiological Selection' any thing new or important. These criticisms, though certainly showing that Romanes had overrated the value of his principle in removing the difficulties in the way of the production of new species, did not by any means show that this principle was not an important factor. The idea is certainly new to literature; and, although it may have been hinted at by others, no one before Romanes formulated it so as to draw a clear distinction between anatomical and sexual variations. Whether or not the idea be regarded simply as a particular application of the principle of natural selection, as some of the critics claim, is entirely immaterial to the value of the conception. There is nothing in Darwin's writings to indicate that he had entertained the thought that species are due to the selection of sexual variations, while varieties are due to the selection of differences not necessarily sexual. This idea, whether we regard it as an instance of natural selection or not, certainly deserves careful study as promising to help in the solution of the puzzling problem of species.

There is no fact which has given rise to more discussion, or has seemed to offer such difficulties in the way of Darwin, as the alleged sterility of species when crossed. Many were the experiments, and vast the amount of evidence collected, by Darwin for the purpose of showing that the sterility of hybrids is not a law; and he did conclusively show that there is no absolute bar thus