

SCIENCE.

FRIDAY, JANUARY 8, 1886.

COMMENT AND CRITICISM.

THAT ADDICTION TO THE USE of opium is very much more common than is generally supposed, and that it is on the increase, is shown by a recently published brochure of Dr. Meylert ('Notes on the opium habit,' New York, *Putnam*); and that there is a wide-spread interest in the subject, not confined to the medical profession, is evinced by the fact that this pamphlet has now reached its fourth edition, and that other treatises more pretentious have recently been published, and attained a circulation more or less extensive. Dr. Meylert attributes many deaths of patients in hospitals and asylums, and of soldiers on the march, to the sudden deprivation of opium to which they have been accustomed; and on this, and the suffering which habitués experience in their efforts to discontinue at once the use of the drug, he makes his plea for the abandonment of the 'rack-and-thumbscrew' treatment, and the adoption in its place of more humane methods. The basis of the author's method of cure is, that the opium habit is not an indulgence to be humored, nor a vice to be punished, but a disease which must be treated as other diseases are, by appropriate remedies. Atropia, which has become a favorite remedy with those who advertise rapid cure, does not stand the tests of experience. Coca and Avena sativa are not of any special value. The bromides of potassium and sodium, quinine, Cannabis indica, strychnia, hydrocyanic acid, chloroform, hyoscyamus, and phosphorus are the remedies in which the greatest reliance is placed; the one or the other, or combinations of them, being prescribed according to the special indication in each case. The moral treatment is not neglected in Dr. Meylert's plan, and the necessity for implicit trust and reliance in the physician by the patient is not overlooked. After all, 'the best test of success is success;' and whether the methods here advocated are adapted to bring about the desired results can only be ascertained by careful and patient study of a long series of cases. We shall watch with interest for these results, which should as soon as obtained be pub-

lished, whether they speak for or against the methods advocated.

IN A PAPER recently read before the American institute of mining engineers, Mr. A. E. Lehman describes some of the methods of construction and the uses of topographic models or relief-maps. Their use for educational and economic as well as scientific purposes is rapidly increasing, as the belief in the importance of representing quantitatively the vertical element of topography gains strength. The value of the relief-map for all purposes, and especially for educational uses, is seriously impaired by exaggeration of the vertical scale. This should be avoided whenever possible, and in other cases should be reduced to a minimum. While Mr. Lehman advises exaggeration, the appearance of his model of the Cumberland valley, wherein the exaggeration is four and five-sevenths, is a strong argument against it. An even stronger argument is furnished in the form of an ambitious relief-map of the United States, by Mr. F. H. King, and mentioned by Mr. Lehman. In this model the vertical scale is exaggerated over the horizontal sixty-eight and a half times; and the effect, especially in an abrupt mountain region, can be easily imagined. This map has other faults, which will probably limit its sphere of usefulness. Another notable example of the distortion produced by the exaggeration of the vertical scale is the well-known model of the Atlantic and Gulf coasts, made by the U. S. coast and geodetic survey. That effective models can be made, even of extensive areas, without exaggeration of the vertical scale, is abundantly shown by the relief-maps in the national museum.

THE RECENT MEETING of the society of naturalists in Boston was a successful one, as such meetings go. The attendance was fair, considering the eccentric position of the place of meeting, and the papers were in nearly every case of distinct value and interest. But in spite of full attendance at the sessions, and at the dinner that closed the first day of meeting, there was not sufficient acquaintance among the members; and during the sessions the silence of formality settled down

so heavily, that nearly all conversational questioning of the speakers was extinguished. The more experienced in such occasions maintained a certain amount of discussion by well-determined efforts to speak as often as possible; but the greater number felt the difference between speaking and talking, and said nothing. Inasmuch as it is generally agreed that the increase of personal acquaintance, and the pleasure of personal conversation, are the best results brought about by such meetings, we believe it will be worth the while of the naturalists' executive committee to make definite preparation for the accomplishment of these ends at Philadelphia a year hence.

WE HAVE BEFORE US the tenth annual report of President Gilman to the trustees of the Johns Hopkins university. It is a brief but eminently perspicuous and comprehensive document. It is with no little satisfaction that the president marshals in the appendices of his report the swelling lists of professors, associates, lecturers, instructors, fellows, and graduates; and the record of the work done during the year, as given in appendix D, is worthy of the strong force of workers. Perhaps the most notable event in the year was the delivery of a course of twenty lectures by Sir William Thomson of the University of Glasgow. No man living has made to physical science such valuable contributions as Sir William; and his visit and lectures, therefore, were most welcome. The only part of the president's report which seems to call for particular comment is what he terms 'the group system of undergraduate studies.' The discussion refers particularly to the department of undergraduates in the university. With respect to them the president speaks as follows: "In place of a single curriculum, and instead of no curriculum, several parallel curricula have been arranged, which are assumed to be equally honorable, liberal, and difficult, and which therefore lead to the same degree of bachelor of arts. They all include the study of (a) language and literature, (b) mathematics and other exact sciences, (c) historical and moral science; but the proportions of the different studies vary. Seven schedules are announced upon the register, one of which must be chosen by every undergraduate who wishes to proceed to the bachelor's degree. Certain studies are common to all these courses, that is to say, must be taken up by every undergraduate." The seven

courses of study are enumerated as the classical, the mathematical-physical, the chemical-biological, the physical-chemical, the Latin-mathematical, the historical-political, and modern languages. No one can question, that, assuming a good entrance preparation, any one of these seven courses may be made the medium of a solid liberal education. This arrangement presents a practical solution of the question of elective studies for college undergraduates. It presents to the young student several lines of study, any one of which may be elected and pursued to the bachelor's degree. It reserves for the university stage of studentship the more free selection of studies which may safely be left to the maturer judgment of those who have reached it.

IN ITS LAST ANNUAL REPORT, the Philadelphia Academy of natural sciences gives a statement of its growth and needs, that, it is hoped, will receive the attention it merits. There is urgent need of more extensive accommodations for the rapidly growing collections, many of which, such as the large series of rocks and fossils of the Pennsylvania geological survey, yet remain unpacked or inaccessible. The present resources of the society are insufficient to meet the rapidly growing demands of modern science. It is earnestly hoped that the contemplated extension of the present building may be realized, that this, one of the oldest, as well as most honored of our scientific societies, may keep pace with the activity elsewhere displayed in American science.

IN CONNECTION with the recent attempts to prevent the further weathering and decay of the obelisk, it will not be without interest to state that Dr. Stelzner of Freiburg early prophesied the injurious effects of our climatic agencies. In his report upon the microscopical characters of the rock, undertaken at the request of Dr. Frazer of Philadelphia, he wrote an earnest plea for the preservation of the obelisk, predicting, that, were no preventive means adopted, it would crumble within a few years. In support of this prediction, he cited the experience with the St. Petersburg obelisk and the press comments on the one in London. This warning, however, owing to the objections of Lieutenant-Commander Gorringer, did not appear in the published report.

ON THE OCCASION of introducing his course of lectures at the Sorbonne, M. Ribot reviewed the history and aims of psychology. England, Germany, France, Italy, and the United States, by instituting collegiate and university chairs in this department, and by publishing journals, books, and researches devoted to it, all show an increasing activity in this direction. According to M. Ribot, a psychologist is a naturalist: his subject is a part of biology, and is to be treated by precisely as scientific and as exact methods. It is not a metaphysics in any sense, and is no more called upon to speculate on the nature of the soul than physics to lead us into the essence of matter. It is not a psychology with any religious, moral, or any other tendency, but is a science founded on objective facts, true for all men alike. There are no systems of psychology: there is one psychology, as there is one chemistry.

This psychology, however, was possible only after physiology had been brought to a high state of culture. The physiology of the nervous system, and especially of the brain, is the necessary basis for a scientific study of mind. Psychology also borrows from pathology, because nature prepares experiments which no man would venture to perform. It owes a debt to anthropology, to the social sciences, to culture and history. It takes a broad point of view, having already adopted the methods suggested by comparative biology and the evolutionary movement. The field is already so broad that specialists are necessary, although the whole development is not fifty years old. M. Ribot has given expression to a conviction which is now everywhere current, and which seems destined to play an important rôle in the science of the future, in this country as well as elsewhere.

GENERAL ABBOTT'S REPORT ON THE FLOOD ROCK EXPLOSION.

THE advance sheets of General Abbott's report to the chief of engineers on the 'Earth-wave at the destruction of Flood Rock' have been kindly sent to *Science*, and form the basis of the following account:—

As to the destruction of the rock itself, 48,537 pounds of dynamite No. 1, and 240,399 pounds of rackarock, equivalent in all to about one hundred and fifty tons of dynamite, were stowed away in the galleries within the rock, and simply a touch

on a telegraphic key by little Miss Mary Newton set the whole mass into instant explosion. Photographs taken by three cameras, all exposed before the mass of water lifted by the blast had reached its greatest height, indicate that all parts of the mine were fired at practically the same instant; and, by means of electric recording apparatus, this instant was recorded to be 11^h 13^m 50^s.2, eastern standard time. It should have been at eleven o'clock precisely, and readers of *Science* are aware already that observations of the earth-wave were lost at several stations by this delay of nearly fourteen minutes. Concerning this, General Abbott says that if these volunteer observers who have criticised the delay in an unfriendly spirit had known how seriously it endangered the success of the official work intrusted to him, they would doubtless have taken a more charitable view of the matter. It was without question unavoidable, and is much regretted; but, if a similar opportunity ever occur again to make earth-wave experiments on so large a scale, it will be well, on the one hand, for those in charge to give official notice of possible delay when the appointed time is announced, and, on the other, for the detached observers to watch their instruments steadily until a message is sent them that the shock is over.

One of the photographs caught the first sight of the earthquake produced by the explosion. The cameras were eleven hundred and thirty feet from the rock, and the first exposure was made about two-tenths of a second after closing the mine circuit. The view shows that the camera was then still steady; the disturbance had not quite reached it, but was only about one hundred and seventy-five feet away. The second picture was taken four-tenths of a second later, and by this time the more violent portion of the wave had passed. To measure the velocity of progression over greater distances, members of the engineer corps and other officers of the army were stationed at four points on Long Island and at West Point; and, besides the successful observations from these places, General Abbott gives records from Goat Island (the torpedo station at Newport, R. I.), Hamilton and Harvard colleges; and to these we may add Princeton. Accounts of the observations made at the latter two points have already been given in *Science*. At all these stations the observers watched a surface of mercury in which the reflection of some small, well-defined object could be seen. The arrival of the disturbance shook the mercury, and caused the reflected images to disappear. The reports generally agree that the maximum of disturbance was very quickly or immediately reached, and none of them express serious doubt of the accuracy of their determi-