

SCIENCE.

FRIDAY, JANUARY 16, 1885.

COMMENT AND CRITICISM.

THE JOINT committee of the two houses of congress, appointed to consider the relations to each other of the different scientific bureaus of the government, not being ready to report when called upon last December, had its time extended to Jan. 15, and has meanwhile kept its deliberations and conclusions absolutely secret. All that is known is that it has taken a mass of testimony, and that the heads of bureaus concerned have had ample opportunity to render the committee all needful information, and to express their own views, most of which are well known. The committee, as our readers know, asked also the advice of the National academy of sciences (to which body one of its own members, Col. Lyman, belongs); and the text of the academy's report is published by us to-day on another page. We gave, some weeks ago, an intimation of its drift.

The report gives a brief account of the method in which such bureaus are organized in other countries; discusses at some length the character of the work done by the coast and geodetic and the geological surveys, especially in those points where their provinces are similar, pointing out that two distinct and independent trigonometric surveys of the United States are now in process of execution; distinguishes between the military and meteorological work of the signal-service, and recommends their complete separation; indicates the danger of duplication of work by the coast-survey and hydrographic office, but is not prepared to recommend that the latter be detached in any way from the control of the navy department, nor that the hydrographic work of the coast-survey, for over forty years conducted so satisfactorily, be separated from that organization, but

suggests the lines on which it thinks the coast-survey should work; lays down the principle that the government should not undertake any work which can be equally well done by the enterprise of individual investigators, and that such work should be confined to what will 'promote the general welfare' of the country; urges the importance of a proper extension of the trigonometrical survey of the United States; and, finally, recommends the establishment either of a department of science, or of a mixed commission of nine members, — two of them scientific civilians to be appointed by the president for six years, two scientific men from the army and navy similarly appointed, three heads of the principal scientific bureaus, together with the president of the national academy, and the secretary of the Smithsonian institution. To the department of science, or to the supervision of this commission, it would transfer the coast-survey, the geological survey, and the meteorological bureau, and, in establishing a physical laboratory, add to it a bureau of weights and measures, the functions of which are now performed by the coast-survey. The province of the proposed commission is amply defined.

No more important measure, affecting the interests of science in this country, has been proposed since the chartering of the National academy of sciences with the functions of an advisory board to government departments. Whether the joint committee, and after them congress, adopt the suggestions of the academy, improve upon them, or utterly discard them, the principle upon which the government should conduct the scientific bureaus which it must of necessity maintain — the principle of proper co-ordination — has been struck; and at some time, if not now, it will prevail. No one who has watched the extraordinary and yet healthy growth of the geological survey since its re-organization five years ago — a re-

organization based upon this same principle, resulting from a recommendation of the same academy — can for an instant doubt the importance of applying that principle to all government work of like character which admits of it. It is not simply that it is the most economical and the most rational, the only scientific principle; but, removing sources of political disturbance, it will allow the natural and healthiest development of our resources, and affect the material advancement of the nation. Ultimately there will be an autonomous and independent department, on a permanent footing, on a level with those of war, state, and treasury, into which will be gathered all the bureaus of original research, of the sciences and industries, and of education, that are not indissolubly connected with already existing departments; as, the mint with the treasury, the hydrographic bureau with the navy, etc. Then we shall wonder why this result was not sooner reached. As it is, each step now tends, directly or indirectly, to that end; and, whatever possible rebuff the principle of co-ordination may meet with at the present time, — and we look for none worse than its oversight through political jugglery, — we may feel confident that it will rise again to the surface.

THE PRECISE method of accomplishing the end desired, which the committee of the academy has proposed, — that of a mixed commission of superintendency, — has found a critic before the joint committee of congress in Major Powell, the head of the geological bureau, whose views were given at length before the committee, and are printed in full in this week's issue, though without the discussion to which they gave rise in the committee, this having not yet been made public. Major Powell lays before the committee two fundamental principles which we believe no unprejudiced person, reading his full statement, will be inclined to deny: 1°, that the scientific institutions of the government should be placed under one general management; and, 2°, that the several bureaus engaged in research should be left free

to prosecute such research in all its details, without dictation from superior authority in respect to the methods of research to be used. He objects, however, to a commission formed partly of civilians and partly of military men, as composed of incongruous elements, since military and civil methods of administration are entirely diverse, and proceed upon diametrically opposed theories. The military officer plans and commands: the civil officer hears, weighs, and decides. He makes a more forcible objection by showing how delicate the relations of a board composed largely of subordinate officials would be to the different heads of departments, since then the secretaries would simply become channels through which instructions to the very officials composing the board would be transmitted.

All must admit that at least the second of these exceptions is well taken, and it is therefore gratifying to find Major Powell constructive as well as destructive. He proposes that an already existing board should be invested with these new duties; one, too, which is excellently composed, and which would be in some respects more acceptable to the average congressman because chosen in large part by his suffrages, viz., the board of regents of the Smithsonian institution, — a board composed of the chief justice, the vice-president, three members of either house of congress chosen by the presiding officer, and six citizens chosen by joint resolution of congress. This plan would avoid the difficulties pointed out by Major Powell, and has the additional merit that the proposed co-ordination is then carried a step farther, since the institution itself would be under the same control. It would also render the further step to be taken (the creation of a department of science) much simpler, and less beset with difficulties, by removing one of the present chief difficulties in the way of any reform, — departmental jealousies. It is, however, too early yet to discuss this question fairly; for we have not yet before us the full development of Major Powell's proposition,

in the discussions which followed its presentation to the joint committee.

IN A RECENT number of the *Indian gazette*, Dr. Klein, who, with Dr. Gibbes, is now in India investigating the cholera, attempts to throw fresh discredit upon the theory of the specific nature of the comma bacillus of cholera. The grounds for his objections are these. He examined three houses in Calcutta where there had been a severe outbreak of cholera in November. He found the water-supply of all of them good. *Per contra*, at some distance from these houses, and never (?) used by their occupants, were three tanks of water which were swarming with the comma bacilli. The natives in the immediate neighborhood of these tanks used the water freely, and yet were practically free from the disease. Therefore Dr. Klein concludes against the specific nature of the comma bacillus. If this style of *post hoc ergo propter hoc* reasoning is what we are to expect from the English commission, confidence in their conclusions will not be readily given. Koch's position is simply that the cholera bacillus is a necessary condition to the occurrence of cholera, and this latest discovery of Dr. Klein proves nothing against it. It merely seems to show, what has already been granted, that the comma bacillus may be present without the occurrence of cholera. Circumstances favoring its development are, of course, necessary; and a receptive condition of the system must be established in order to its growth,—a fact which is true of all forms of bacteria, so far as they have been observed in relation to pathogenesis.

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.

Coal in the Chico group of California.

THE California geological survey reached the conclusion stated by Professor Whitney in the preface to the second volume on the paleontology of the state, p. xiii., that the Tejon group is the only coal-producing formation in California. In the Proceedings of the California academy of sciences, Mr. J. G. Cooper has recently published a number of notes on the coals of the state. After remarking (vol. v. p. 385) that the Vancouver coal, and others in that region, are undoubtedly of cretaceous age, he states

that "there is still some doubt as to those of California, which may be partly or entirely above the cretaceous strata."

Last summer, while engaged in the geological survey of the Cascade Range, a number of fossils were collected from the coal-bearing strata in northern California, eight miles north-east of Yreka, on the road to Linkville, Ore., and south of the cove at the Great Bend of Pit River, where considerable coal has been found. The fossils have been examined by Dr. C. A. White, who reports that they belong to the Chico group, and thus removes the doubt that some of the coal in northern California properly belongs to the cretaceous.

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Man in the stone age.

In a communication to *Science* (v. 3) Dr. Brinton charges me with having forgotten what I read in de Mortillet's 'Le préhistorique.' I am at a loss just how to characterize his quotations from that work, which, like

"The adventure of the Bear and Fiddle,
[Begin] but break off in the middle."

De Mortillet wrote (p. 248), "L'accumulation de caractères simiens dans la race de Néanderthal montre clairement que l'homme primitif se rattache aux singes. S'il ne se relie pas directement aux anthropoïdes actuels, c'est qu'il manque entre eux et lui des échelons. Certainement il descend d'une forme ou d'un type intermédiaire. *Nous nous retrouvons donc en présence de l'anthropopithèque, dont j'ai démontré l'existence* (p. 102). Il suffit d'ouvrir les yeux et de regarder pour le voir ! Les anthropopithèques se sont montrés, se sont développés et se sont éteints pendant le tertiaire. L'homme a apparu au commencement du quaternaire. Cet homme primitif constitue la race de Néanderthal." Of this Dr. Brinton has chosen to quote only what I have put in Italics. He quotes de Mortillet as saying (p. 339) that the epoch of Moustier 'was characterized by the race of anthropopitheci.' What he actually says is, "L'homme de cette époque devait en majeure partie appartenir à la race de Néanderthal." Again : he says for the epoch of Solutré, de Mortillet "leaves the question open, denying that any traces of man or anthropoid have been discovered (p. 392)." His real language is, "Il résulte de tout ce qui précède que nous n'avons aucun document ostéologique sur l'homme solutréen."

I cannot pretend to be so well informed as Dr. Brinton upon 'the language, religion, and social compacts' of paleolithic man, but I do claim to know something about his *works*; and it is not 'word-splitting' to insist that the magnificent lance-heads of Volgu, in the museum of Chalons-sur-Saône, are quite as much the work of *man, properly so called*, as any 'stemmed scrapers;' nevertheless these belong to the epoch of Solutré.

I am well aware, that, in 1881, de Mortillet chose to substitute the term *chelléen* for *acheuléenne*, which he had suggested nine years previously. But the phrase 'axe of the St. Acheul type,' for the implement peculiar to that epoch, has become too firmly fixed in the nomenclature of prehistoric science ever to be misunderstood; except, possibly, by one who could say that Robenhausen belongs to the 'first epoch of the appearance of man on the globe,' disregarding all the marvellous artistic works of the cave-dwellers of Aquitaine, who belong to the preceding epoch of La Madelaine.

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