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COMMENT AND CRITICISM.

THE 'sundry civil bill,' which is still under discussion by congress, provides $501,470 for the coast-survey; $244,500 for the fish-commission; $500,000 for the participation by the government departments in the industrial exposition at New Orleans, of which sum one-fifth is given to the Smithsonian institution, including the national museum and the fish-commission; $40,000 for the protection and improvement of the Yellowstone national park; $467,700 for the geological survey; $10,000 for the census of 1880, providing for its close in November next; $149,500 for the national museum; $55,000 for the Smithsonian institution (construction); and $868,038.60 for the signal-service.

It also disposes, for the time, of the question raised concerning the coast-survey, by providing for a joint commission of three senators and three representatives, to "consider the present organizations of the signal-service, geological survey, coast and geodetic survey, and the hydrographic office of the navy department, with the view to secure greater efficiency and economy of administration of the public service in said bureaus," and to report next December. It further appropriates seven hundred dollars for a commission of scientific men, to be appointed by the president, "to inquire into the organization, work, expenses, and reconstruction of the naval observatory, and to report to congress the best system for its future management."

We shall look with deep interest and concern for the reports of these commissions. On the one hand, we are to have a commission of men of affairs, called to consider the mutual standing of several different government bureaus, whose work is more or less inter-related; on the other, a scientific commission, dealing with a purely scientific bureau under naval control, but the vitality and usefulness of which has come, with rare exceptions, from men drawn from the ranks of civil life. Let us hope for good appointments, that these often-recurring and unseemly antagonisms between different departments may be put to rest by excellent reports and wise adjustments. To the question of the relations of the army and navy to science, we may again recur. We may here only regret that it was not arranged that the scientific commission should be taken from names recommended to the president by the National academy.

With this exception, we have no fault to find with another provision of the bill, by which, as we hoped last week would be the case, the appointment of two additional members to the meridian conference is provided for, and an appropriation of two thousand dollars made for the expenses of the commission; nor with a similar provision for a national conference of electricians, in connection with the international electrical exhibition at Philadelphia, for which a meagre five thousand dollars is appropriated, and a scientific commission authorized. The more closely the government can identify the National academy with its scientific undertakings and appointments, the more confident we shall feel that neither science nor our country will be belittled.

THE use of the comma as an instrument for assisting or impeding a reader's comprehen-

sion of an author's meaning is neither a very important nor a very scientific subject of discussion. But many English writers of scientific text-books try one's patience so sorely and so wantonly on this point, that it seems proper something should be said about it. The evil to which we refer usually takes the shape of the insertion of superfluous commas, which in the least obnoxious cases are annoying, and in many cases seriously interfere with the sense. These violations of the literary code of minor morals are so abundant in any work which is seriously subject to them at all, that it is not necessary to go outside the book which happens to be before us at the moment for as long a list of examples as might be desired. The following sentence contains three unpardonable commas, the fourth alone being rightly used: "Thus we shall suppose that the external cause of the cooling determines always the state of the very thin envelope, in such a manner that the value of $\frac{dv}{dx}$ which results from this state, is proportional to the value of v, corresponding to $x = X$, and that the constant ratio of the two quantities is $-\frac{h}{K}$." And before we have finished a page, we come upon this: "It consists in finding the value of v, by means of the general condition, and the two special conditions to which it is subject." Here the insertion of the first comma seems to us bad enough, but this may possibly be regarded as a matter of taste; that of the second is an inexcusable error.

The September meeting of the mechanical section (D) of the American association for the advancement of science, at Philadelphia, promises well. It is under the leadership of a chairman whose name will go far to insure success; and Professor Thurston's opening address is confidently expected to be a paper of much interest. The circular of invitation, issued by the committee, has been sent to a large number of engineers, representing the most of the American societies; and it has also been laid before them officially through their secretaries, besides being published in a number of prominent technical journals. The work is now going forward of interesting the foreign engineering public directly, and through their societies and journals; and it is believed that a large foreign attendance may be expected. The programme is also being made up, and contains the announcement of several important papers.

After an existence of eight years, the New-York state survey is brought to a close by the will of one man. Like nearly all scientific work done in this country under state patronage, the life of the survey hung by the thread of an annual appropriation. The usual appropriation of $15,800 was made by the legislature; but the item was vetoed by the governor, who thinks, that, "after an expenditure of a sum considerably in excess of a hundred thousand dollars, very little seems to have been done of practical benefit to the people," and who says that he is "not able to appreciate the importance of the elaborate, slow, and expensive survey of the state which this appropriation is intended to continue."

As Gov. Cleveland is commonly reported to give his reasons for official action with perfect frankness, it is evident that this unfortunate close of the survey is due to his ignorance of the value and of the cost of geodetic work. Had he urged that the work was one which should be undertaken by the general government rather than by the state, he would have found many to agree with him, and, at most, the question would have been one of policy; but, when he declares that he is "of the opinion that a sufficiently correct and exact location of boundary-lines and monuments to answer every useful purpose could be conducted . . . at a comparatively small expense," it is plain that his 'opinion' on such a topic is not of weight. Even on economic grounds, it would not be difficult to show that the exact location of bases for local surveys would, in time, save its cost in diminished boundary litigation.

COMMENCEMENT at Harvard last year was enlivened by the vigorous speech of Charles Francis Adams, initiating what may almost be called a national discussion of the Greek question. This year the subject of 'academic degrees' is brought into prominence by a paper, published in the July *Century*, from the pen of Dr. Woolsey. It will not surprise us if a discussion of this subject, begun by one who has held with honor the post of president of Yale college, and is still a member of the degree-giving board, should run for the next twelve months, and draw out opinions as diverse as those lately printed on the comparative value of classical and scientific studies. Most of Dr. Woolsey's article is historical, with incidental references to his own opinions. Toward the close, however, he makes some suggestions with respect to the bestowal of honorary degrees which are worth consideration. He is heartily opposed to the random methods now in vogue of complimenting men who are accidentally brought forward. He does not object to the guarded admission of meritorious students to the lower academic degrees *causâ honoris*, when they have been prevented by illness or poverty from attaining their diplomas in a regular way; and in cases of rare and distinguished merit he would admit to the same honors "discoverers of important principles in science, who had had, perhaps, no public education whatever."

But in respect to what are now bestowed as honorary titles (the degrees of LL.D. and D.D.), he would allow any graduate to prepare, by the study of years, for the highest degree within his reach, whether he resides within the college or not. The proficiency of each candidate should be tested by rigid examinations. Thus a student of law or theology might first take a baccalaureate degree in either of these faculties, — say, four years after taking his B.A. degree, — and eight years still later he might offer himself as a candidate for the degree of doctor of laws or theology. As a protection against the confounding of titles honorably won with those bestowed by careless or feeble institutions, Dr. Woolsey suggests that the indication of a degree shall be followed by the name of the place where it was won. We imagine that it will amuse some readers, and amaze some others, when they read the melancholy statement, made by one who for nearly forty years has been annually creating honorary doctors, that "these honorary degrees are bestowed on no evidence of thorough learning in theology or in law, and thus are in no way certificates of deserving the honors, saving, that, for some reason or other, the corporation of a college regards the person thus honored as a man worthy of notice beyond most of his fellows."

ABOUT two months ago we urged the Massachusetts legislature to be slow in rejecting the offer of the U. S. geological survey to prepare at divided cost a topographical map of the state. We are glad to state that the committee on expenditures, in whose hands the matter was placed, reported favorably; both houses passed the resolve submitted; and the governor has now made the excellent choice, as commissioners, of Pres. Francis A. Walker of the Massachusetts institute of technology, Mr. Henry L. Whiting of Tisbury, and Prof. N. S. Shaler of Harvard college. The resolve appropriates forty thousand dollars, to be extended over at least three years. The names of the commissioners are a guaranty that the interests of the state will be well administered, and that the suggestions made in our columns will not be lost sight of.

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.*

Radiant heat.

IT is much to be regretted that a mathematical physicist of the standing of Mr. Fitzgerald should, in his letter published in your issue of May 16, confine himself to *ex cathedra* deliverances upon the question at issue between us, instead of attempting some direct demonstration upon the points involved, as I had suggested would be desirable. Had he done so, he would not, I am sure, have fallen into the curious mistakes which he emphasizes so strongly. In default of the desired investigation of the question by Mr. Fitzgerald, I hope that the following reasoning