SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

FRIDAY, DECEMBER 20, 1901.

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MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

THE NAVAL OBSERVATORY REPORT.

No excuse is necessary for devoting the space we do to this important paper in our present number. We include with it only such portions of the reports of departments as seem to be of general interest. Among these is the very business-like report of the National Almanac Office.

Readers who have followed the discussions of the organization of the observatory which have appeared in our columns during the past year will be interested in this branch of the subject. We trust they will bear with us if we describe the spirit in which we have endeavored to carry on the discussion. We have taken as a fundamental principle that our remarks should be based on official publications and that no heed should be given either to gossip about the interior affairs of the observatory, which circulates so freely, or to supposed leaks through unofficial channels.

The case as thus presented has seemed to us too serious to admit of our indulging in carping, fault-finding or minor criticisms, even had we been disposed to do so. As presented in the report of the board of visitors for 1900 it took the following form: Our government has for more than half

a century been supporting a great national observatory for the promotion of astronomical science. During the last few years this has been done at a cost exceeding that of any other observatory, public or private, in the world. Even the great observatories of Greenwich and Paris, which the two governments have supported in friendly rivalry, do not approach ours in the matter of outlay.

The latter has, at various times during the past twenty years, been reported upon, officially and unofficially, by the highest scientific authorities in the land. Only one voice is heard in these reports. The work of our observatory, considered as a whole, does not come up to any standard of which our country can be proud. The Greenwich and Paris observatories are the pride of their respective nations; ours can inspire no such sentiment. On the cause of this failure the expressions are also unanimous. No reflection is ever heard upon the staff of the institution, which has always been and still is of the ablest. But this alone does not fulfil all the requirements of success. The best instruments and a well-arranged plan of work are also necessary. Above all, the work must be directed with that familiarity with the multifarious details of modern astronomy which our own good sense, as well as the experience and practice of all other nations, show to be necessary to success.

Secretaries of the navy have joined their voices with those of the scientific authorities in calling attention to this want, and asking that it be supplied. But Congress has never made provision for a director of the observatory, and the work has suffered, and still suffers, in consequence.

Desirous of seeing to what extent the observatory had replied to all these criticisms, we made a careful study of its reports during the last ten years. It required no knowledge of technical astronomy to see that the most serious strictures seemed to be amply justified by them. Especially striking was the defense of the observatory in the report for 1900. A number of alleged weak points were pointed out in the report of the board of visitors, but the serious criticism was ignored, unless an implied denunciation of the whole body of astronomers of established reputation as men 'whose prejudices and animosities were mature and confirmed' could be regarded as a reply.

In our issue of January 4 last, we set forth the main points of the case against the observatory and earnestly invited their consideration by official authority. Our readers will be gratified to see that the head of the observatory has not thought them unworthy of attention. Desiring, as we do, in the interest of fairness and justice, to give the greatest publicity possible to every official defense of the scientific character of the institution, we invite attention to the following passages of the report, premising that we do not imply that this is or is intended to be the best that the author of the passages might say on the subject:

> Critics who are in no way responsible for results, and who probably would not carry out their own suggestions if they were, have had a standing grievance against the observatory because it has not put its clocks underground. In point of fact very few

observatories do put their clocks underground. The notable exception is Pulkova.

I invite the attention of the Bureau to Mr. Hill's report, as evidence of the spirit in which the observatory has been (and still is) criticized by outside astronomers. Malice has dictated these criticisms, to my knowledge, for thirty years. In this instance ignorance becomes a valuable accessory.

Leniency in criticism of the quality of the work thus issued is not asked nor expected. Scientific work must stand or fall on its merits. But it would be an encouragement, little to be expected, if the scientific world of this country could appreciate or acknowledge the efforts to bring up to date work long in arrears. Appreciation from abroad is not wanting, and has been gratefully acknowledged.

The passage alluded to in the second extract is the following:

Before proceeding to report upon the observations secured with the instruments I desire to invite the attention of the superintendent to the following extract from SCIENCE for January 11, 1901, page 42:

We find, also, that the total number of separate observations with the prime vertical transit was 164, less than one-half the number of nights in the year, while those with the altazimuth, used as a zenith telescope, numbered a little more than the days in the year. At the international geodetic stations the observers are expected to make about 16 double observations on every clear night.

Attention is also invited to this extract from the same publication, but of the date of January 4, 1901, page 4:

There are also intimations that something is wrong with the prime vertical transit, and altogether the impression made on the reader is that, after seven years of effort to equip the observatory with the best instruments, it is doubtful whether a single one of real importance, except the great telescope, is in order for first-class work.

The writer of these editorials in SCIENCE clearly indicates that his conceptions of the amount of astronomical observing to be obtained with an instrument in the prime vertical are absurd.

This betrays a misconception so singular that we must correct it. In our strictures of want of continuity we expressly excepted the work with the prime vertical transit, which has been pursued with rare zeal and diligence. The passage first quoted from our columns was intended only to show the difficulty that readers might feel in reconciling it with the following striking statement in the report for 1900, which was given a place of honor both there and in the report of the Bureau:

All the astronomical instruments of the observatory have been steadily and continuously in use during the year on every clear night and day.

In energetically showing that the instrument was out of use from April till June, Mr. Hill only impugns the accuracy of this statement, not the correctness of our remarks, which were mere condensations from the observatory report.

The intimations of our second extract comprised allusions to 'a systematic error whose origin still remains a mystery,' and reported efforts to locate this error found in the publications and reports of the observatory. Our 'grave doubts' may be justified by the facts now reported that three other instruments have been undergoing alterations and repairs since we wrote.

A statement has appeared in the public prints that the head of the observatory will reply to the board of visitors. If this is done SCIENCE will be glad, in the interest of fairness and justice, to bring into prominence whatever he can say in defense of his position.

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*REPORT OF THE SUPERINTENDENT OF THE NAVAL OBSERVATORY.**

THE 26-INCH EQUATORIAL TELESCOPE.

THIS instrument has been in charge of Professor T. J. J. See during the whole year. Owing to the death of Mr. George

* Condensed by omitting passages of less general interest than the rest.—EDITOR.