

adduced the photographs as he interprets their features as corroborating his own observations, forgetting that this implies that he sees the originals only a fraction as well as he should.

Yet even so the photographs have surpassed our hopes, for they disclose more than one could have ventured to imagine. An eye versed in photographic perception and interpretation will easily see in them the canals as lines and the little spots, the oases, at their junctions. Indeed, the camera has shown itself capable of rising beyond the confirmatory into the discovery stage; for one of the plates of the writer was instrumental in the detection of a new canal. A stranger appeared on the plate which when searched for visually in consequence proved to be there. At the next opposition, with our newly devised improvements and with the planet so much nearer the zenith for northern observers, it is confidently to be expected that we shall do still more.

PERCIVAL LOWELL.

HYDROLOGY IN THE UNITED STATES.

IN some of the more recent reports on the hydrology of the United States, the book is prefaced by a general statement as to the intention and scope of the surveys that are being carried out by the geological department of the Government relating to the water resources of the country.

Water supply is regarded as one of the principal national assets, and of more importance to the life and pursuits of the people than any other natural resource. In the arid States the limit of agricultural development is determined by the amount of water available for irrigation. In other States, where the rainfall is greater and more evenly distributed throughout the year, the lack of rain at the proper season often reduces a crop to one-half what it would have been with one additional wetting at the time most needed. Storage, providing water for use when most wanted, will in such a case be as beneficial as where irrigation has to be depended on exclusively. This is especially the case in those districts where market gardening is one of the most profitable agricultural pursuits. Here irrigation is a necessity for making the business profitable.

The increase in the population of cities and towns makes necessary additional water supplies for domestic and industrial uses, in procuring which both the quantity and quality of the water that can be obtained must be considered.

The location of manufacturing plants may depend largely on the water-power facilities and the character of the water. Electric transmission of power has led to the utilisation of water-power for the operation of manufacturing establishments and lighting plants. Water-power is also largely used in some States for log driving, lumbering, and saw-mills, and also for the manufacture of paper from wood pulp and straw.

For all or any of these purposes a knowledge of the flow of the streams and of the conditions affecting that flow, based on trustworthy data, and of the underground resources is essential. For the want of this many schemes for water supply have ended in failure, the plans being made without sufficiently trustworthy information.

The United States Geological Survey has therefore, by means of appropriations by Congress, for several years systematically been engaged in obtaining records of stream flow, the number of stations at which streams were under observation in 1906 being 700. Records are also obtained in regard to floods, precipitation, the relation of the rainfall to run-off of water, evaporation, water pollution, the flow of underground streams, the use of artesian and surface wells, and generally all matters relating to water supply.

The reports relating to the above matters, and also as to the water resources of different States and districts, are issued from time to time, upwards of 200 reports having already been issued.

Notices of these reports, directing attention especially to those papers which are of general interest, have appeared in NATURE at various times.

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The most recent reports of which we have received copies,¹ eleven in number, relate to the water resources of Georgia, New England, and other districts, the information contained in them being principally of local interest, except Paper No. 201, which has an introduction dealing with the system followed in obtaining the discharge of streams.

THE TESTING OF MATERIALS.

THE official report of the proceedings of the fourth Congress of the International Association for the Testing of Materials was recently issued. The congress was held at Brussels in September, 1906, and the report contains a condensed account of the reports presented and a summary of the discussions upon the reports and papers. The congress met in three sections, one dealing with papers on metals, another with papers on cement and artificial stones, and the third dealing with miscellaneous investigations, such as protection of metals against rust, testing of timbers, rubber, &c. Before the sections began their proceedings, Prof. Schüle delivered an address dealing with the life and work of the late president and founder of the association, Ludwig von Tetmajer.

One of the most important matters discussed in the metal section was the method of testing notched bars; after a lengthy discussion the congress eventually adopted the following resolution:—"The congress recognises that the method of testing notched bars appears capable of giving extremely interesting results." The congress did not, however, adopt a resolution which was moved to the effect that the method should be experimentally introduced into certain specifications.

In regard to the subject of ball-pressure tests, the congress eventually adopted the following resolution:—"The present congress desires that in the acceptance of metallic materials tests of tenacity should be supplemented as often as possible by a determination of the Brinell hardness number, the latter test being performed for the object of collecting information."

During the meeting of the association a metal-testing laboratory was installed at Brussels in order to show in action the various modern processes employed in the testing of materials. The tests made were micrographic, determination of the critical points, impact tests on notched bars, Brinell ball tests, and shearing tests. The congress has published a small illustrated pamphlet descriptive of the various testing appliances which were at work in this metal laboratory, with a brief note on the results obtained.

T. H. B.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The Vice-Chancellor gives notice that the election of a professor of agricultural botany will take place on Monday, March 16. Candidates for this professorship are requested to communicate with the Vice-Chancellor on or before Wednesday, March 11.

Sir Ernest M. Satow, G.C.M.G., has been appointed to the office of reader on Sir Robert Rede's foundation for the present year. The lecture will be given in the Senate house on Saturday, June 13.

LONDON.—In connection with the supplementary vote of 6000*l.* for the Imperial College of Science and Technology at South Kensington, being part of the annual Government subvention of 20,000*l.* to the college, Sir Philip Magnus inquired last Friday in the House of Commons whether the 20,000*l.* was in excess of the cost of maintenance of the Royal College of Science and the Royal School of Mines, which had been incorporated in the Imperial College. In reply, Mr. Lough explained that the grant of 20,000*l.* was arranged by the Board of Education under the late Government; in addition, the Imperial College would have the fees paid by students, including fees paid by the Board of Education for scholars nominated by the Board. In reply to a further inquiry by Sir Philip

¹ Water Supply and Irrigation Papers. (Washington: Government Printing Office.)