

But by far the greater portion of the work at the central office, and that which is doubtless the most immediately effective, is done by commissioned officers of the army. While it is true that many of them have fairly earned distinction through their conscientious labors in the weather bureau, it cannot be claimed that the relation which they sustain to it, and which is no fault of theirs, is that which would be for the best interests of all concerned. Except the very few who have been promoted from observer sergeants, they have been ordered to the service from other occupations and other branches of the army. As a special training to fit them for the work, they have the year at Fort Meyer, during which the study of meteorology is not allowed to interfere materially with other occupations. They enter the central office at the close of this year, having had an experience of eight days in practical meteorology. When, after further study and practice, they become really useful, they are likely to be transferred to some other post and duty for which this training has in no way fitted them; for the policy of the army seems to be in the direction of frequent changes of location of its officers. But by far the worst feature of the case is that there is no particular incentive to induce them to devote themselves earnestly to the work. If, through interest and industry, one succeeds, he is probably retained in the office longer than he otherwise would be: if, through indifference and neglect, another fails, he is likely to be transferred to some other branch of the general service without loss of rank or reputation. It is also true that the meteorological work of the signal service is looked upon with disfavor by many army officers, as not being a legitimate addition to their duties. Under such conditions, and for many other reasons not necessary to mention, it does not seem possible for the weather service to reach that high degree of efficiency which is believed to be possible under a different organization; and it will require weightier arguments than those annually reprinted in the report of the chief signal officer to prove the contrary.

THE FRENCH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

ROUEN MEETING, AUG. 16-23, 1883.

THIS association has just held its twelfth annual session at Rouen, the ancient capital of Normandy, situated on the Seine, between Paris and Havre. It is, I believe, the youngest association of its kind, but is not, for that reason, the less worthy of study. Perhaps, to an American, its most striking feature is its resemblance, in its organization and proceedings, to its sister across the water. It has its permanent secretary to organize its business and give information to members, its daily programmes, its general meetings, its sectional meetings, and its excursions, all fulfilling the same objects as with us. It has even gone through the same process of evolution, and reached the same stage of development, in becoming a representative of popular and applied, rather than of very 'high,' science. Its members already complain, that, when one is elected a member of the Academy of sciences, he no longer affiliates with the association. I have recognized but two academicians at the meeting, and doubt if there are more. But it must not be inferred from this, that the members and their papers are unimportant: on the contrary, the number of eminent teachers, authors, and investigators, who read papers and take part in the proceedings, is decidedly greater than in the American association. If there are fewer academicians than with us, there are also fewer circle-squarers, essayists, and propounders of school-boy problems. On the list of papers presented, there is not one upon atoms, ether, the nebular hypothesis, or the origin of the present form of the universe.

The range and treatment of subjects are much wider than with us, and one is especially struck with the prominence assumed by social science and engineering. It would seem as if the blind passions, which are so apt to stir the laboring population of France and to lead them toward a policy of general social disintegration, had led the thinking and wealthy classes to give especial attention to the question of the welfare and pacification of the workingman. Not only is political economy one of the most prominent subjects, but discussions of plans for improving the condition of the laboring-class form a leading feature of the proceedings. The plan which seems to have met with most success is that of making the workmen in large establishments sharers in the profits. One speaker described, at length, the working of this plan in a great dyeing-establishment,

where it would seem to have proved a great success, although coupled with conditions which would hardly have been accepted by an American artisan. I do not know what interest our railway-companies take in the personal welfare of their employees; but the examination of what is done by the Western railway of France, as exhibited and explained to the association, is suggestive of a philanthropic as well as of a business institution. Bedrooms, baths, eating-rooms, medical attendance, savings bank, and life-insurance are among the privileges provided by the company, of which each and every employee may avail himself according to circumstances.

The prominence of engineering questions was due to a cause which shows that human nature is much the same through the civilized world. Rouen is engaged in river improvements, of which the object is to make it a great seaport; in fact, to make it to Paris what Liverpool is to London. Great pains were therefore taken to secure the attendance of distinguished engineers from abroad as well as from home; and harbor improvements, especially those of Rouen, formed the most prominent subjects of discussion in the section of engineering. How far the French association is ready to go beyond its fellows in this direction, is further shown by the fact that one of the prominent papers in the engineering section was devoted to the exposition of a scheme for a metropolitan railway in Paris, similar in its object to those of London and New York, which could be built at a cost of two hundred million francs. No one hinted that the subject was not germane to the objects of the society.

There is at least one custom of the meeting worthy of imitation by the American association; namely, evening lectures by members, on subjects of general scientific interest. These lectures are not gotten up at hap-hazard on the spot, but are arranged by the secretaries, long enough in advance of the meeting to admit of careful preparation. Those of the Rouen meeting were: The transit of Venus, by Mr. Hatt, chief of one of the French expeditions; and on the Transmission of energy, by Professor Comberousse. The general character of these lectures was the same so familiar to us at home; but it was noteworthy, that French science was almost exclusively considered. Occasional references to the works of other nationalities were rather to show that the speaker knew something about them, than to give full information respecting them.

In two points the French association makes

a decidedly more favorable showing than our own. One has already been mentioned,—the absence of the respectable gentleman who writes interminable essays on scientific subjects of which he knows nothing except from current literature. In the mathematical section, the papers read were of decidedly greater importance than those to which the American association is accustomed. The other is the financial condition of the society. In few respects does American science show to greater disadvantage, beside that of Europe, than in its power of raising money to promote its objects. The income of the French association for the current year was reported at 85,000 francs. It has already an invested capital of about 450,000 francs. It expended 39,000 francs in printing its proceedings, 20,000 in administrative expenses, and 14,000 in grants for researches of various kinds.

Let us compare this sum total with the income of the American association.

Income of French association	\$16,600
“ American “	8,943
Difference in favor of France	\$7,657

And we must remember that this is not a case in which the excess is due to greater age; for the French society is only one-fourth the age of the American. The comparison will afford us food for profitable reflection.

EVIDENCE FROM SOUTHERN NEW ENGLAND AGAINST THE ICEBERG THEORY OF THE DRIFT.¹

In presenting to the association evidence from southern New England with regard to the insufficiency of the iceberg theory of the drift, I shall have to say some things that have often been said before, and by various investigators. But I may claim for what is here brought forward, that it is, in my own mind, the fortified conclusion of long-continued investigation.

The arguments on the subject are derived from three sources,—

I. The scratches and groovings over the rocks.

II. The transported bowlders and other material.

III. The facts as to the relative level of the land and sea.

I. The scratches or grooves over the rocks.

Under this head there is, first, the old argument based on the universal distribution of the scratches over the region of all New England. These effects of abrasion are to be

¹ Read at the Minneapolis meeting of the American association for the advancement of science.