

SCIENCE:

A WEEKLY NEWSPAPER OF ALL THE ARTS AND SCIENCES.

PUBLISHED BY

N. D. C. HODGES,

47 LAFAYETTE PLACE, NEW YORK.

SUBSCRIPTIONS.—United States and Canada..... \$3.50 a year.

Great Britain and Europe..... 4.50 a year.

Communications will be welcomed from any quarter. Abstracts of scientific papers are solicited, and twenty copies of the issue containing such will be mailed the author on request in advance. Rejected manuscripts will be returned to the authors only when the requisite amount of postage accompanies the manuscript. Whatever is intended for insertion must be authenticated by the name and address of the writer; not necessarily for publication, but as a guaranty of good faith. We do not hold ourselves responsible for any view or opinions expressed in the communications of our correspondents.

Attention is called to the "Wants" column. All are invited to use it in soliciting information or seeking new positions. The name and address of applicants should be given in full, so that answers will go direct to them. The "Exchange" column is likewise open.

VOL. XVI. NEW YORK, AUGUST 29, 1890. No. 395.

CONTENTS:

THE TIME-RELATIONS OF MENTAL PHENOMENA. <i>Joseph Jastrow</i> 113	EACH OTHER AND TO THE GE- OLOGISTS OF THE COUNTRY
PROFESSOR A. GRAHAM BELL'S STUDIES ON THE DEAF	<i>J. C. Branner</i> 120
<i>W. G. Jenkins</i> 117	ON CERTAIN PHENOMENA OF GROW- ING OLD. <i>C. H. Minot</i> 123
NOTES AND NEWS..... 119	AMONG THE PUBLISHERS..... 124
THE RELATIONS OF THE STATE AND NATIONAL SURVEYS TO	

THE RELATIONS OF THE STATE AND NATIONAL GEOLOGICAL SURVEYS TO EACH OTHER AND TO THE GEOLOGISTS OF THE COUNTRY.¹

INVESTIGATIONS undertaken in the course of instruction are often carried on in college laboratories, but it is rarely that individuals or institutions, other than the State and National surveys, have undertaken extensive and expensive geological operations. We must except, of course, in this statement those of an economic nature.

The reason of this is that individuals seldom, and commercial organizations never, devote their means to purely scientific investigations; and inasmuch as these investigations require large sums of money, and as they are conducted largely with a view to increasing human knowledge, the expense of them must be borne by the public treasury.

With our official organizations, most of the working geologists of the country, excepting those called consulting geologists, are connected either as salaried assistants, permanent or temporary, or as volunteers. But these organizations carry on their work independent of each other, indeed, without any regard to one another's existence, while individual investigators go each his own way, pretty much as if he had the whole world of geology to himself.

¹ Abstract of an address before the Section of Geology and Geography of the American Association for the Advancement of Science, at Indianapolis, Ind., on Aug. 20, 1890, by John C. Branner, vice-president of the section.

Practically the United States Geological Survey has *carte blanche* to carry on geologic investigations over the whole territory of the United States, and in every branch of scientific work directly related to geology, such as geography, topography, paleontology, physics, chemistry, and statistics.

Now, over this same area, though limited to the States carrying them on, we have our several State geological surveys; while private individuals, educational institutions, scientific societies, and commercial corporations are at liberty to carry on such investigations as they see fit, and all regardless of each other.

In the earlier work carried on by the Federal Government, however, the various Territories were the specified areas to which the National surveys were confined, and now that the whole area of the United States is open to this work a broad-minded and co-operative direction seeks to aid and strengthen the State organizations instead of antagonizing or annihilating them.

But I wish to emphasize the fact that the classification of the geologists of the country, the work within the domain of the National survey, the work within the domain of the State surveys, and that which can be or will be accomplished by private institutions, corporations, or individuals, demand that there should be some definite and better organized co-operation or co-ordination in all this work and among all these men.

The statement has been made that the United States Survey does co-operate with nearly every State survey in the country, but the fact is that the National survey does not know what the State surveys are doing except in a very general way, and that the State surveys know but little or nothing of what the National survey is doing, except, perhaps, as it may happen to be picked up in private conversations and in private correspondence between personal friends.

Please bear in mind that this is not intended as reflecting upon the Director of the United States Survey; co-operation can only exist by the common consent of all the parties concerned, and it is quite as much the fault of the State surveys that there is no such co-operation as it is that of the United States Survey.

What I have to say, however, refers to the internal arrangements and the working of geologists as affected by our own bearing toward the official surveys, toward each other, and toward the science, rather than toward official relations and toward legislation. For these are not matters to be fixed by laws: laws would interfere with that freedom of movement that gives health, vigor, and activity to our scientific bodies and to our scientific men; they can only be determined by common consent and by usage.

The United States Geological Survey stands at the official head of all our surveys and of all our geological work. National work encourages and stimulates State work, and State work re-acts in favor of national work, and both stimulate private enterprise and investigation. The return from all this no man can measure, for it is both material and intellectual, and in both these senses it is felt in every nook and corner of the land.

The National survey is thus doing a work that no other institution can do, and it is able to maintain an organization of geologists that no other institution could maintain. For nowhere, in no country, is there, and at no time has there been, a corps of working geologists superior to that of our present National survey—a body of geologists of which every scientific man, and, indeed, every citizen of this country, may well be proud.

Having no connection with that organization, either present or prospective, I feel at liberty to express this a frank, disinterested and independent judgment.

With its splendid equipment of men and means, what can the National survey best do, and best leave to State surveys and to private enterprise? The question is not asked as implying that the officers of that body are not perfectly competent to decide these matters, but because we feel that a more effectual co-operation can be brought about to the great advantage of every one concerned. So long as more than one organization must occupy the same field, some understanding can certainly be arrived at that will prevent the duplication of work and the waste of energy and of funds. The appliances, libraries, laboratories, equipments, and the large number of special assistants required by a National survey, are quite beyond the means of our modest State surveys.