SCIENTIFIC RESEARCH WORK IN AMERICA.

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I THINK it quite necessary to point out some of the difficulties encountered in successfully undertaking any scientific research work in America. In the first place we, as a nation, are too practical and short-sighted to make thorough scientists. We are too much engrossed with the present to undertake anything which promises only a probable reward in the distant future. In the second place, we lack sufficient scientific training. Boast as we will, we must admit that Germany, France, England, and even Russia, are a long way in the lead in scholarship. From this lack of training we must content ourselves with going over the ground already gone over by European scholars. Nor is this because of our "infantile" condition. There is no plausible reason why the American mind should not be as ready of comprehension and understanding as any other. We have incipient philosophers who might become equal to or superior to any in the world. The great trouble is that they imagine themselves superior while they are yet in the embryo stage, and as a natural result become fossilized embryos. This is not always the case, but it is true in the majority of cases. Another great drawback is the uncertainty of holding a position when once taken. This deadens interest and absolute.y prevents the possibility of undertaking any work which must of necessity be long continued. In Germany the professor is almost certain of holding his position a life-time if he so desires. As far as his position is concerned he is almost an absolute monarch. The nature of his work is never inquired into by the laity. He is given a position because it is known from his preparation and training that he is fully competent. This enables him to begin a work which may require generations for its completion. Lastly the management and directorship of scientific laboratories and experiment stations is too often placed in the hands of men wholly incompetent, considered from a scholarly standpoint. They can not comprehend the nature of scientific research work nor understand the benefits that might be realized therefrom.

These, in brief, are some of the main difficulties which beset our scientific research work. It is not my purpose to belittle intentionally the work we do or have done. Nor do I believe the prospects for the future to be gloomy and hopeless. America is destined (in time) to lead the world in science and all other branches of learning.

LETTERS TO THE EDITOR.

***Correspondents are requested to be as brief as possible. The writer's name is in all cases required as a proof of good faith.

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

TEMPERATURE IN STORMS AND HIGH AREAS.

IN the August number of the *Meteorologische Zeitschrift*, p. 314, Dr. Hann complains that I have "obviously and wholly misunderstood" (*offenbar ganz missverstanden*) a table he has recently published. As I have copied a part of this table in *Science*, April 14, 1893, p. 204, I must ask indulgence to explain matters. My statement is "I give here the temperatures in both maxima andminima during the colder months," the original table indicates that these maxima and minima were at Sonnblick and not at the base. I take pleasure in adding this statement. It seems almost impossible to comprehend this position that Dr. Hann has taken. Are we to understand that these conditions are very different at 3100 m. from those at the same time at sea level? This is exactly what has been repeatedly shown, namely, that the temperature change is about a day ahead at the high station, and the pressure change about half a day behind, and for this reason it is impossible to directly compare pressure and temperature at high stations, but Dr. Hann has strongly combatted this.

However this may be, there is still one other point to be considered. Fortunately, in the original tables there are given the pressures at sea level at the exact times, at which these maxima and minima of pressure occured at Sonnblick. These are 774.5$^{mm.}$ and 754.2^{mm}, respectively, while the base temperatures are 2.°0 C and -0.°8 C., respectively, that is, during the prevalence of very high pressure at sea level the temperature is 2.88 C (5.°0F) higher than during pressures 20.3^{mm}. (0.80 in.) lower. This is contrary to the usual law over the whole temperate regions of the earth and shows a serious error in these investigations.

It seems to me this point is one of the easiest that can be settled in the whole science of meteorology. I hold my position strenuously right here, for this may be a key for solving one of the most serious puzzles that has been found in meteorology since it has made any pretense to being a science. The proposition seems very simple and, in fact, almost trivial, but it is in reality vital. If Dr. Hann insists that his studies are correct, then it devolves upon him to explain this serious contradiction. It would appear that he does see the difficulty and tries to explain it, but I submit, that, in doing so, he has not removed it at all.

H. A. HAZEN.

Washington, D. C., Sept. 11, 1893.

SHARKS IN FRESH WATER.

IN the issue of *Science* for August 25 is a question by Mr. C. H. Ames, which has not been answered. As the subject in question is one of quite general interest, I take pleasure in giving the desired information.

It is well known to ichthyologists that sharks do live in fresh water, and it is remarkable that such forms are representatives of a family whose species are to a large extent pelagic—the Galeids or Carchariids; they belong to a group very generally known as the genus *Carcharias*, but believed by others to be divisible into several genera. Numerous accounts have been published of the occurrence of members of this group in fresh water in various parts of the world; it is sufficient to refer to several readily accessible, viz.: *Nature*, V. 13, pp. 107, 167, 1875, and V. 29, pp. 452, 573, 1884. It is further noteworthy that a shark and a sawfish (*Pristis*) frequently reside together in fresh waters of widely distant regions, as in the Philippine Islands, Australia and Lake Nicaragua.

The existance of a shark in Nicaragua was recorded by Oviedo a few years after the discovery of that country and had frequently been referred to subsequently. It did not receive a published name, however, till 1877, when it was described as *Eulamia nicaraguensis* by Gill and Brantford (Proc. Acad. Nat. Sc. Phila., 1877, p. 191). A few years afterwards the species was again described and figured by Lütken (as *Carcharias nicaraguensis*), and it was stated that the name *Carcharias lacustris* had been proposed for it by Oersted as early as 1848, but never published. (See Vid. Meddelelser fra Naturhist. Forening, Copenhagen, 1879-80, p. 65, etc.)

Further details may be found in the works cited.

THEO. GILL.

Cosmos Club, Washington, Sept. 10.