

ous natural cements, puzzolan, and plaster. Would it not be strange if among the materials used some would not be found to yield a cement of unusual strength? And if the setting process continued through the ages and conditions were such that weathering did not seriously attack it, the final product yielded would certainly be extremely hard. But in any case it is certain that the weaker cements have not come down to us but have been disintegrated long ago. The cement which is being made in enormous quantity to-day under scientific control will probably outlast any similar material which the world has seen.

But we may go a step farther in our inquiry after relegating the "lost arts" to the same mythological museum which holds the lost Atlantis. Not only is it unlikely that there are any "lost" chemical arts, but it is highly probable that ancient peoples were ignorant of many arts attributed to them, and which are well known at the present day. Such a misunderstanding could probably best be dispelled by a carefully compiled history of arts and manufactures, particularly ancient arts and manufactures. The production of such a book is a consummation devoutly to be wished.

I have an idea that it is not a difficult matter to gain a mental picture of conditions in ancient workshops. I believe that the mental attitude of artisans has not changed much during the lapse of hundreds or even thousands of years. Go into any small shop at the present day where a specialized art or craft is practised and I fancy that you will find the workers there in all essential respects, so far as their craft is concerned, like the craftsmen of distant ages. You will find there the same lack of organized knowledge, the same sort of unnecessarily detailed and elaborated

empirical knowledge, the same narrow conservatism and adherence to formulæ and rule-of-thumb methods. If you talk to the men you may learn how they learned their craft; of the most skilful members of the craft they have known; if you gain their confidence they may tell you of their past experiments (most of them foredoomed to failure) and of future experiments planned, when time permits or when they obtain material possessed of certain hypothetical properties. And you will be impressed by the way results are sometimes accomplished in spite of the use of the clumsiest mental and physical methods of experiment imaginable. A typical craftsman will experiment with all the materials he can lay hands on without the slightest scientific consideration of the case, in an effort to produce a certain result. These things are interesting and we must hope they will never be altogether lost. But our ideal for the present and the future must be a large and adequately organized industry, resting firmly on engineering skill and chemical investigation, operating with a full understanding of all its processes and with assurances of consistent and logical future development and expansion.

W. D. RICHARDSON

*THE ELIZABETH THOMPSON SCIENCE
FUND*

THE thirty-sixth meeting of the board of trustees was held in Boston, Mass., on February 10, 1911.

The following officers were elected:

President—Edward C. Pickering.

Treasurer—Charles S. Rackemann.

Secretary—Charles S. Minot.

Reports were received from the following holders of grants, and were accepted as reports of progress: Grant 98, J. Weinzirl; 109, A. Nicolas; 111, R. Hürthle; 119, J. P. McMurrich; 121, A. Debiegne; 123, E. C. Jeffrey; 131, F. W. Thyng; 133, J. F. Shepard; 137, C.

H. Eigenmann; 140, K. E. Guthe; 144, G. A. Hulett; 146, M. Nussbaum; 149, P. A. Guye; 150, C. A. Kofoid; 152, W. D. Hoyt; 154, J. P. Munson; 155, H. P. Hollnagel; 156, R. Thaxter; 157, L. Mercier; 158, H. V. Neal.

The secretary stated that during the past year no reports had been received from grants 22 and 27, awarded in 1889; 117 (1905); 124 (1905); 142 (1908), and 147 (1909). Grants 107 and 134 were withdrawn, since the recipients were unable to carry on the work for which the grants were awarded, and had repaid the total amount of the grant. It was voted to close the records of the following grants, since the work had been satisfactorily completed, and the results published: 138, Mme. P. Šafařík; 141, J. T. Patterson; 148, C. C. Nutting; 159, B. M. Davis; 160, L. J. Henderson, and to close upon receipt of publications the following: 136, H. Z. Kipp; 161, O. von Fürth. The secretary reported that additional publications had been received from W. Doberck (Grant 153), and from J. Koenigsberger (Grant 139), making a total of six publications aided by this grant.

An unusually large number of applications was received, and the trustees regretted that they were obliged to decline several which were highly deserving of aid.

It was voted to make the following new grants:

162. \$200 to Superintendent O. H. Tittmann, Coast and Geodetic Survey, Washington, D. C., for observing variations of latitude by means of a photographic zenith tube.

163. \$200 to Professor R. L. Moodie, University of Kansas, for phylogenetic studies of Amphibia.

164. \$200 to Professor J. M. Aldrich, University of Idaho, for a study of invertebrates, especially insects, found in and about the western salt and alkaline lakes.

165. \$150 to Professor M. E. Haggerty, Indiana University, for the study of instinctive reactions in newly born dogs of various breeds, and of the inheritance of these reactions.

166. \$200 to Professors F. C. Blake and C. Sheard, Ohio State University, for verification of the Kirchhoff-Abraham generalization of the Thomson formula for the discharge of a condenser.

167. \$150 to Dr. E. Rohde, Heidelberg, Germany, for studies of the metabolism of the mammalian heart.

168. \$125 to Dr. H. Freundlich, Leipzig, Germany, for a study of the kinetics of the transformation of aliphatic to aromatic compounds.

169. \$150 to Professor G. A. Hulett, Princeton University, for further studies of the electrochemical equivalent (in continuation of Grant 144).

It was voted that grants shall not be made for the purchase of books or ordinary laboratory apparatus, or for living expenses, or for appointments essentially similar to scholarships or fellowships. It was voted to request, but not to require, that all applications shall be type-written.

CHARLES S. MINOT,
Secretary

HARVARD EXCHANGE OF TEACHERS WITH COLLEGES IN THE MIDDLE WEST

HARVARD UNIVERSITY has arranged an annual exchange of teachers with four of the colleges in the middle west—Colorado College, of Colorado Springs, Colo.; Grinnell College, formerly Iowa College, of Grinnell, Ia.; Knox College, of Galesburg, Ill., and Beloit College, of Beloit, Wis. Every year, until the arrangement is terminated, Harvard University is to send a professor who will spend an equal portion of half an academic year with each of the four colleges mentioned above, and during that time will give to the students of these institutions such regular instruction in their courses as may be arranged by their faculties. The salary of this professor will be paid by Harvard University. His traveling expenses will be borne by the four colleges already referred to, and each of them will provide his maintenance while he is in residence. The professor will be selected every year by Harvard University, with the approval of the co-operating colleges, and he will go in the first or second half-year, as may be agreed. In return, each of the four colleges is expected to send to Harvard University each year one of its younger instructors for half a year, and during that time he will be appointed an assistant in some Harvard course; he will teach