be to have them filed alphabetically by authors.

In some essentials this procedure is already followed by the *Archives de zoologie expérimental et général*, by the Royal Society in its *Transactions*, by the Museum of Comparative Zoology, and by the University of California *Publications*. My suggestion, however, involves an important additional element. Society subscriptions continuing as at present, it would be a simple matter to have each member receive a certain number of published papers, more or less equivalent in total bulk to the journals now obtained. But it would be possible for the subscriber to select, through the Advance Abstract Bibliographic Cards, those papers specifically desired. Additional papers, not regularly obtained in this way or from the authors, could then be purchased at small extra outlay. The American Anatomical Memoirs and the few special reprints issued by the Wistar Institute have made a beginning in this direction.

The actual working of this plan would perhaps require that at, say quarterly, intervals there be issued Bibliographic Cards carrying the serial numbers assigned to the individual papers about to be printed. An accompanying order blank, by which articles desired could be requested by number, would give a simple, quick method of indicating one's needs. It would at the same time serve to show the printer the size of the issue to be prepared, after allowance had been made for reserve stock and for blanket subscriptions. The three-months' period mentioned is sufficiently long. The experience of the *Journal of General Physiology* shows that with efficient management it is possible to print accepted articles within less than that time, even under present conditions.

Authors should by this scheme be in some degree relieved from the expense of purchasing separata for extensive private distribution. One's library shelves, moreover, would no longer be encumbered with journal numbers which must be bound at ruinous expense or else remain unsightly.

Any working plan of this type must be conceived as applying chiefly to contributions of the character and average length now appearing in the journals. Incidentally, this scheme may show the way out of the difficulties sometimes made in connection with the rather arbitrary rule now enforced by the journals as to the maximal length of acceptable contributions. Although sometimes abrogated for reasons obscure, it has tended to be avoided by authors splitting the material of an essentially unitary piece of work into a number of articles. While the length rule has perhaps acted to restrain some wordiness, it is hardly a rational rule; one could wish it supplanted by editorial persuasion!

It may be suspected, as a conceivable result of the plan outlined, that the quality of the papers might be automatically improved. A paper which from the first is to "stand alone," rather than be supported fore and aft by comfortable neighbors, is likely to be more carefully written, perhaps even more carefully thought out.

There will remain, however, distinct and obvious need for the continuance of the journal form for the publication of short notes; perhaps also for periodicals in which the general results of investigation may be summarized and discussed; and certainly for at least one periodical such as the *Proceedings of the National Academy of Sciences*. It is my belief that under the operation of the plan I have suggested such journals would have a distinctly higher value than at present.

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CHARLES W. WAIDNER

DR. CHARLES W. WAIDNER, chief physicist and head of the Division of Heat and Thermometry of the Bureau of Standards, who died on March 10, 1922, is the fourth leader this bureau has lost by death since last May. The others are E. B. Rosa, chief of the Electrical Division; L. A. Fischer, chief of Division of Weights and Measures, and S. S. Voorhees, engineer-chemist. Waidner, Rosa and Fischer were of the original group gathered together in 1901 at the time the Bureau of Standards

was founded, and to its development each devoted his life.

Born on a farm in the suburbs of Baltimore, March 6, 1873, Waidner received his early training in the public and private schools of that city. He attended Johns Hopkins University where he graduated in 1896, and continuing in the graduate school, in which he was a pupil of Rowland, he received the degree of Ph. D. in physics in 1898. The subject of his thesis, "A comparison of mercury and resistence thermometers and an adjustment of Rowland's value of the mechanical equivalent of heat," in collaboration with F. Mallory, is the one to which Waidner devoted practically his entire professional career, namely, the determination of fundamental constants and standards relating to heat, and he became the first authority in the country on thermometry and heat measurements.

He served as instructor in physics at the Hopkins and also at Williams College, going to the Bureau of Standards on August 1, 1901, one month after its establishment. In 1903, he organized the Division of Heat and Thermometry, of which he was appointed chief, a position which he held until his death. It is characteristic of him to note that the first books he ordered at the bureau were a set of Regnault's works.

It is perhaps not without interest to recall the chaotic state existing in 1901 in this country with respect to thermometric data. Clinical thermometers were being certified to a scale one-tenth degree in error; manufacturers of thermometric instruments of precision each had his own "standards," usually of nebulous or ambiguous origin; for pyrometric data, one had to go to Germany; the temperature scale in the fundamental range 0° to 100°C of the International Bureau was available with difficulty and delay through French-made thermometers; there was practically no national or international agreement relating to heat measurements.

Waidner took up and successfully solved, in collaboration with his associates, each of these problems. Starting with the scale and methods of testing of clinical thermometers, calorimetric thermometry and the substitution of the electrical resistance method as standard in this range as for a portion of the higher and lower temperature ranges, this work included also exhaustive studies of the limitations of mercury-in-glass thermometers, and the introduction and development of optical and thermoelectric methods in pyrometric measurements. In the course of this work it was necessary to devise many new designs of apparatus and Waidner was exceptionally skillful in this field, and his designs have been used as models by many others.

He also saw the necessity of improving calorimetric methods to secure greater precision and his work, for example, on methods of measuring heating values of gases is recognized as fundamental for gas testing. He was responsible for the establishment of the distribution of materials of determined calorific value for calorimetric standards on which the testing of fuels depends; and also of pyrometric material standards of certified melting point, permitting the calibration of pyrometers by the user.

The investigations carried out by him or under his supervision on high temperature measurments were started when the subject was comparatively unknown in this country. This work provided pyrometric standards and methods of control for American manufacturers of pyrometers, and was of fundamental importance in the development of an industry which now finds application in many branches of manufacture.

As the bureau expanded, Waidner was able to devote less time to actual experimental work, but to the last was very active in the initiation and direction of the problems in heat, and many of the more recent papers from the bureau on such subjects, although they do not bear his name are nevertheless largely his product. During the past few years his interest centered mainly about several groups of engineering problems, one relating to the determination of constants of importance especially to the refrigerating industry; another concerned with the extensive investigations on the fire-resisting properties of structural materials; and a third, dealing with the methods of testing petroleum products.

During the war he had charge of the execution of many lines of research, including the elaborate work done by the bureau on aviation engines, the atmospheric conditions which are encountered at heights up to thirty thousand feet being produced for the first time in a specially designed altitude chamber. This work was of importance in many ways, such as in fixing specifications for gasoline for aviation engines, and determining their performance with variations in design.

His contributions to knowledge appear almost exclusively as a long series of papers in the scientific and technologic series of the Bureau of Standards. His work was most painstaking and thorough and was always thoughtfully planned and skillfully executed. He was a delightful and inspiring companion to work with, as I can testify from an almost daily association extending over twenty years.

Dr. Waidner was a man of wide acquaintance, a member of the Washington Academy of Sciences, the Philosophical Society of Washington, the Cosmos Club, the American Society for Testing Materials and a fellow of the American Physical Society and the American Association for the Advancement of Science.

In addition to his scientific position, Waidner naturally had at the bureau many important administrative and advisory functions to perform, some of them bringing him into close contact with his fellows. Thus, as a member of the editorial committee, continuously from its formation in 1903, he is largely responsible for the policy and standard of the bureau's publications. This position, as well as that of the chairman of the personnel committee, he filled with consummate tact and devoted conscientiousness. He had the saving grace of wit and common sense, and broke many a deadlock with a happy thrust that left no sting.

His associates will remember him not only for his high standard of work but for his ever ready kindly advice, some times given to good effect when not asked for, his sterling character, genial personality, intense loyalty to his friends and to the institution of which he was a dominating mind, and above all, during the past few years, for his grit and cheerfulness in combating the disease that finally took him off.

S. W. STRATTON

BUREAU OF STANDARDS

SCIENTIFIC EVENTS

VIENNA INSTITUTE FOR ICE AGE RESEARCH

SCARCELY any department of scientific research is of more general interest than that which concerns prehistoric man, his development during the Ice Age and the changes then taking place in the conformation of land and sea. Yet, with the exception of the Institute of Human Paleontology in Paris, generously endowed by Prince Albert of Monaco, there has hitherto been no special center for the investigation of this period.

A public institution for study of the Ice Age has now been established in Vienna in connection with the Natural History Museum of the Austrian Republic, and every effort will be made to investigate the phenomena of the Ice Age on a broad scientific basis.

The geographical position of Vienna renders it well adapted for this purpose, since the land structures associated with the glaciation can be studied in the vicinity and observed in their ancient relations to the environment of prehistoric man. Lower Austria is well known to have furnished a rich store of ancient stone implements and weapons.

The Vienna Institute is under the leadership of Dr. T. Bayer, director of the anthropological and ethnographical collections. Dr. Bayer's papers in which he demonstrates the existence of no more than two distinct periods of glacial conditions may be said to have created a new basis for this field of research. He is assisted by a group of colleagues and it is hoped to extend the circle of workers to include those in other countries who are devoting themselves to this period of research. They are invited to enter into communication with Dr. Bayer at the Natural History Museum, Vienna, who will be pleased to give fuller information as to the present activities of the institute.

JULIUS PIA

VIENNA, MARCH 16