sea floor; to present the cartographic details obtained from the sources used so as to distinguish between surveyed and unsurveyed areas; to express the most accurate information available as to location and status of political boundaries, position and population of towns, location and gauge of railways, location and character of roads, location of telegraph lines and stations; in a word, to furnish a map which will represent, as far as the conventions of the topographic-political map will permit, the results of a critical and exhaustive research into the cartography and human geography of the whole Hispanic-American realm.

To the scheme of the International Map have been added certain modifications considered essential to the thoroughly scientific presentation of the cartographic status of those parts of the world which are not covered by one type of survey. These modifications are a further development of that feature of the International Map which distinguishes between surveyed and unsurveyed rivers and contours by solid and broken lines. They consist of a relative reliability diagram, incorporated in the legend, which classifies by appropriate symbols the types of surveys used in the compilation, and a pamphlet accompanying each sheet which lists the sources used in the compilation of the sheet and discusses the manner in which they are organized with respect to each other. Thus each sheet sets forth both our cartographic knowledge and our cartographic ignorance. In addition, by means of the relative reliability diagram and pamphlet, it indicates to the consultant the character of the survey work which has been done in the area in which he is interested.

These maps will cover sections of Hispanic America that are of the greatest interest to the physiographer and the geologist, by virtue of their physiographical and geological make-up, of scarcely less interest to the meteorologist, the biologist and the student of political and economic geography.

Parallel with the work upon the cartography of Hispanic America we have compiled a catalogue of the maps of Hispanic America in scientific periodicals, sheet map collections, atlases and books contained in the libraries of the American Geographical Society, the New York Public Library, the Library of Congress, the Pan-American Union Library and the libraries of Columbia, Yale and Harvard Universities. Grouped and classified and accompanied by reliability maps and introductory articles on the general subject of Hispanic-American cartography, this catalogue will be published in six volumes.

ISAIAH BOWMAN
RAYE R. PLATT
AMERICAN GEOGRAPHICAL SOCIETY

CALVIN OLIN ESTERLY

THE subject of this article was born on August 1, 1879, at Fort Stockton, Texas, and died at La Jolla, California, on August 10, 1928. He received the degree of bachelor of arts from the University of California, in 1902, and that of doctor of philosophy from Harvard University, in 1907.

Soon after completing his formal education he became professor of zoology in Occidental College, Los Angeles, California. This position he held until his death, though the disease that proved fatal incapacitated him for college work during most of the last years of his life.

In 1910 Dr. Esterly joined the staff of the Scripps Institution of Oceanography at La Jolla, as a non-resident investigator in marine zoology. This position he likewise held to the end of his life, spending most of his vacations and leaves of absence from college duties at the institution. His college work was usually so adjusted as to enable him to devote some time to investigation during the college terms.

Thus "the short and simple annals of" a truly noble life of one type; for greater devotion to a worthy career worthily conceived is rare indeed.

The single sharply defined field of research to which Esterly set himself, and pursued for more than two decades without a moment of doubt about its worth, of swerving in purpose relative to it, or relaxation in pursuing it, brought results the significance of which reaches far beyond the narrow bounds of the specialized field of knowledge involved.

The group of crustaceans, the copepods, which furnished the subject for his doctor's thesis, furnished the main subject for his whole life of research.

These animals constitute the greatly dominant group of minute animal life of the open seas. Numerically they are to the ocean what flies and gnats are to the air. Economically they are even more than that, for they figure much more as food for their pelagic neighbors than do their aerial congeners for their neighbors. The almost illimitable numbers of the smaller pelagic fishes, as the anchovies, sardines and herring, to say nothing about various other groups, depend mainly on the copepods for food.

Any scientist who in the future gives attention to the copepod fauna of the northeastern Pacific will find that no one before Esterly had learned anything worth mentioning about these creatures in this region. But he will find that Esterly described so many dozens of species and did it so well that not much remains for anybody else to do on this aspect of the subject.

But extensive and excellent as were his labors on the taxonomy of the group, these labors were only

door-opening to other more important labors. Whoever, looking out over the Pacific, off the California coast, be the person professional scientist or layman, would like to picture in his imagination what a myriad animal population extending through cubic miles of the ocean water may be doing, as day and night follow each other, month after month and year after year, such doing consisting of the ceaseless activity of the animals in their "struggles for existence," has only to search Dr. Esterly's writings for material out of which to construct such a picture. What the creatures eat, how they catch their prey and how fast they digest it; by what creatures they in turn are preyed upon; when and how they propagate; how the different kinds respond, each largely in its own way, to the change of light from midday to midnight, back and forth, and from midsummer to midwinter, also back and forth; how far into the depths they descend—such are the items of information available for his picture, thanks to Esterly's perseverance and skill in catching, counting, computing statistics and experimenting. The history of marine biology does not furnish many instances of such a well-balanced combination of field, statistical work and laboratory experimentation as is furnished by the researches of Esterly on the Copepoda of the "San Diego area" of the Pacific.

But no account of the man's life, however brief, would do him justice that said nothing about him as a teacher. President Remsen du B. Bird, of Occidental College, with whom he worked hand-in-hand for many years, is especially fitted to speak of him in this capacity:

> Dr. Esterly was one of our great teachers. He had those qualities of personality which endeared him to everybody. He gave himself without stint to the college and his devotion carried him to all its activities. Particularly was he active as chairman of the Committee on Athletics, a position which he handled with tact and fairness and deep interest in student affairs.
>
> There was universal respect for him in the work of the classroom. His quietness, thoroughness and deep interest in all his students won from his colleagues and those who were in his classes the very highest praise. I do not see how a professor in a college such as Occidental could have been better fitted for his task in scholarship, progressive interest in his departmental affairs, wise counselling and fine loyalty than Dr Esterly.

Through the years of my association with Dr. Esterly at the Scripps Institution, I was impressed with his case as an example of the possibilities there are in the identification of teachers of science in non-research colleges and schools, with institutions devoted exclusively to research.

The loss which Dr. Esterly's personal friends and professional associates have suffered from his untimely death is unrecordable in printer's ink. Much less is so recordable the loss suffered by Ruth Orgren Esterly, the wife and vital companion of most of his adult life.

WM. E. RITTER
UNIVERSITY OF CALIFORNIA

SCIENTIFIC EVENTS

THE INTERNATIONAL TEMPERATURE SCALE

THE Seventh General Conference on Weights and Measures, at its meeting on October 4, 1927, adopted provisionally a temperature scale, including certain standard temperatures, interpolation formulae, and methods of measurement. This scale will be used by the Bureau of Standards and other national laboratories.

In addition to the melting and boiling points of water (0° and 100°), the standard temperatures adopted are:

(a) Boiling point of oxygen	−182.97° C.
(b) Boiling point of sulphur	444.60
(c) Melting point of silver	960.5
(d) Melting point of gold	1063

The platinum resistance thermometer is standard below 660° C., the platinum rhodium thermocouple between 660° C. and 1063° C. Above 1063° C., the temperature scale is based on the Wien-Planck equation with $c_2 = 1.432$ cm degrees. There is also included a series of temperatures for calibrating secondary measuring instruments, and details of experimental technique.

The complete text of the decisions of the conference will appear in the October number of the Bureau of Standards *Journal of Research*.

GEORGE K. BURGESS
NATIONAL BUREAU OF STANDARDS

THE NAVAL GRAVITY DETERMINATION SURVEY

LAST fall the International Geodetic and Geophysical Union communicated with the Navy Department on the subject of contributing to an oceanic gravity determination survey, but the initiation of such work without a background of technical experience and with no apparatus to start with presented such difficulties as necessitated a more or less indefinite postponement of any participation. Fortunately, however, Dr. William Bowie, chief of the division of geodesy of the U. S. Coast and Geodetic Survey, learned from Dr. F.