young of the Chinook salmon, *Oncorhynchus tschawytscha*. The fishes were taken from the hatchery, their age and size were recorded, the conditions under which the experiments were conducted were under perfect control, all sudden changes of temperature were avoided, and specific gravity and temperature readings were taken each morning.

Professor G. J. Peirce reported further studies on crystallizations in brines taken from the Bay of San Francisco. As observed under high magnification, particles of foreign matter come to be incorporated into the growing crystal. If unicellular algae are thus entrapped, they will demonstrate the pressure developed in the growing crystal, for their pear-shaped cells will be pressed into slender spindles. These spindles do not resume their original shape when the crystal containing them is dissolved, which indicates that a very considerable force attended their compression. On the other hand, grains of starch, droplets of oil and other bodies of relatively simple chemical compound are not deformed, showing that their mechanical strength is greater than that of protoplasm, which is composed of several or many compounds.

The "Distribution of Nudibranchiate Mollusca" was discussed by Professor F. M. MacFarland, whose extensive studies on this problem are conclusive in showing that the more uniform conditions of Arctic seas permit the wide distribution of a single or small number of species of each genus, which, extending southward, has become split up into an increasingly larger number of species in response to the diversified environmental conditions met with. More temperate and tropical waters contain forms whose affinities indicate utilization of former marine connections across Central America and between the Mediterranean and the Indo-Pacific seas.

Following are the officers of the Pacific Division American Association for the Advancement of Science for 1927–1928, elected at the Reno meeting:

President: C. A. Kofoid, professor of zoology, University of California.

Vice-president: Ernest G. Martin, professor of physiology, Stanford University.

Secretary-Treasurer: A. G. Vestal, Stanford University, California (to take effect October 1, 1927).

EXECUTIVE COMMITTEE OF THE PACIFIC DIVISION

Ernest G. Martin, *chairman*, professor of physiology, Stanford University, California.

C. A. Kofoid, professor of zoology, University of California, Berkeley.

Walter S. Adams, director, Mount Wilson Observatory, Pasadena (1928).

Bernard Benfield, consulting engineer, Kohl Building, San Francisco (1929).

Joel H. Hildebrand, professor of chemistry, University of California, Berkeley (1929).

Leonard B. Loeb, associate professor of physics, University of California, Berkeley (1931).

Emmet Rixford, professor of surgery, Stanford University, 1795 California Street, San Francisco (1928).

J. O. Snyder, professor of zoology, Stanford University (1930).

O. F. Stafford, professor of chemistry, University of Oregon, Eugene (1930).

W. W. SARGEANT,
Secretary.

SCIENTIFIC EVENTS

THE MEDICAL SCHOOLS OF THE UNITED STATES

THE Secretary of the Council on Medical Education and Hospitals of the American Medical Association, Dr. N. P. Colwell, in a statement made public on July 11 by the Bureau of Education, Department of the Interior, reports that during the past two years changes made in medical schools in the United States have been chiefly in the erection of new buildings, improvement of teaching staffs, the rearrangement of subjects in the curriculum, and closer affiliations with hospitals, with increased opportunities for students personally to study diseases at the bedside in dispensaries and hospitals.

The number of medical schools fluctuated from 80 in 1923 to 79 in 1924, when the General Medical College of Chicago was discontinued, and back to 80 in 1925, when the University of Rochester School of Medicine and Dentistry was added. In 1926 the charter of the Kansas City College of Medicine and Surgery was revoked, but a new institution was promptly chartered to take its place under the name of the American Medical University of Kansas City.

During the past two years the number of medical students has continued to increase. Instead of only 12,930 in 1919, the number increased to 17,728 in 1924; to 18,200 in 1925; to 18,840 in 1926; and to 19,532 (estimate) in the session of 1926–27.

The number of graduates also increased from 2,529 in 1922 to 3,562 in 1924 and to 3,974 in 1925, but decreased to 3,962 in 1926. Although the number of medical schools has remained at about 80 since 1920, the numbers of both students and graduates have increased.

At the beginning of the reorganization of medical schools in 1906 the 162 medical schools then existing enrolled 25,204 students, an average of 156, and turned out 5,364 graduates, an average of 33. Last year (1926), however, the 79 medical colleges in the United States enrolled 18,840 students, an average

of 238, and turned out 3,962 graduates, an average of 50. During the past few years, indeed, the medical schools rated in Class A have been filled almost to capacity.

The movement toward the building of larger teaching plants, including both medical schools and hospitals, continues. During 1925 and 1926 such enlarged plants have been established and partially completed at the Universities of Colorado, Columbia, Illinois, Ohio, Rochester (N. Y.), Vanderbilt, Western Reserve, Wisconsin, and Meharry Medical College. Those which are nearing completion or are partly occupied are of the Universities of Chicago, Northwestern, Tennessee, and the Detroit Medical College. Medical centers with more modern buildings erected nearer to teaching hospitals are being established by the medical schools of George Washington, Georgetown, and Howard Universities at Washington, D. C., and also by Temple University at Philadelphia.

Since 1912 most of the medical schools have limited their enrolments to the numbers which could be given a satisfactory training in medicine, depending on their varying space, equipment and hospital relations. This limitation of enrolments has reduced the attendance in few of the colleges formerly having unduly large enrolments. The capacity of all others remains the same or shows an increase.

The United States still has more physicians in proportion to its population than any other country. In 1925 there was one physician to every 753 people, while Great Britain reports (1921) one physician to every 1,087; Switzerland and Japan reported (1925) one, respectively, to every 1,290 and 1,359; Germany (1912) one to every 1,940; Austria (1912) one to every 2,120; Sweden (1925) one to every 3,500.

In the United States, as in other countries, there has been a tendency during recent years for physicians to locate in cities rather than in rural districts. There is not, however, a shortage of physicians, the problem being one of distribution.

SURVEY LINES OF THE U. S. COAST AND GEODETIC SURVEY

THE records of the Coast and Geodetic Survey show that the distance between its two surveying stations on Mt. Shasta and Mt. Helena, both in California, is 192 miles. This line was used in a survey extended along the 39th parallel to join the surveys and charts of the Atlantic with those of the Pacific coasts of the United States. The system of triangulation involved the measurement of a few lines across country with extreme accuracy by means of metal tapes or base bars. Each of these lines form the side of a triangle, the other sides are computed from this measured line by means of the angles of the triangles observed with high grade theodolites.

The line between Mt. Shasta and Mt. Helena could be used by reason of the employment of very large mirrors in the form of heliographs mounted on each of the stations. By means of the telescope of a theodolite the observer at one station could see, through his instrument, the reflected sunlight as a very dim star on the other peak.

Another long line in the survey across the country by the United States Coast and Geodetic Survey was between Mt. Ellen, Utah, and Uncompahgre Peak, Colorado, the distance being 182.7 miles. There are many lines in the surveys of the Coast and Geodetic Survey which are more than 100 miles in length between stations.

It has been found, in recent years, to be more efficient to use electric signal lamps in the place of heliographs. An ordinary auto headlight with an especially constructed bulb, with contracted filament, has been so effective as to enable the observer to see its light with the unaided eye for distances as great as 150 miles. The electric current used is supplied by ordinary dry cells, such as is used to ring door bells. It was only when the atmosphere was as clear as crystal that the visibility was so perfect. Ordinarily the atmosphere has some haze in it and then the lights do not appear so bright.

The distance that one can see from one part of the earth to another depends on the heights of the mountain peaks and the configuration of the intervening ground. The curvature of the earth is so great that at a very few miles it would be impossible for a man standing at the shore-line of a bay to see a man standing at the shore-line on the opposite side. Where there are deep broad valleys between mountain ranges, the greatest distances can be observed.

EXPLORATIONS IN BRITISH COLUMBIA

ROLLIN T. CHAMBERLIN, professor of geology at the University of Chicago, who with Mr. Allen Carpe, of New York, was the first to climb any of the major peaks of the Caribou range of British Columbia in 1924, has returned to the university after reaching the summits of three new peaks of th erange. Mr. Carpe, a prominent member of the American Alpine Club and one of the famous Mt. Logan expedition in 1925, again was Professor Chamberlin's companion this summer.

The new peaks climbed this summer were Kiwa, with an elevation of 11,400 feet; Mt. Welcome, with an elevation of 11,150 feet, and Mt. Goodell, 10,450 feet high. Kiwa was named for a creek which has its origin in the range, and Goodell was named for "Slim"