birth would increase to seventy-two years. This gives us some idea of the supreme importance of improving the rates of mortality beyond age fifty-two. Those who have attained this age are up against a fearful handicap and their chief hope for relief must come from those investigators who will find a way to reduce the rates of mortality at the *older* ages. He is a hopeful prophet who will predict an average age of eighty, ninety or one hundred years for those who are born now, if the cold facts are faced. There is an absolute limiting value for this expectation at any age equal to the sum of the age and the expectation of life at that age. But unfortunately the value of the latter depends almost entirely on the rates of mortality at that age and higher ages.

We shall now turn our attention to a brief study of the incidence of gains in the expectation of life at different periods of life. For example, we may well ask what gain has been made since 1890 in the *average* number of years one may expect to live between birth and age twenty-two. The application of simple actuarial formulas to our life tables enables us to answer this question. In 1890 for Massachusetts males the expectation was 16.04 years, in 1920 it was 18.81 years; thus a gain of 2.77 years was

TABLE B

COMPLETE EXPECTATION OF LIFE AT SELECTED AGES

Original Registration States

At age	Years	Years	Years	Years	Years	Years
Birth	47.88	54.05	6.17	50.70	56.41	5.71
22	40.55	42.69	2.14	42.11	43.59	1.48
52	19.35	19.91	0.56	20.43	20.79	0.36
72	8.11	8.17	0.06	8.64	8.66	0.02

New York City

At age	Years	Years	Years	Years	Years	Years
Birth	40.65	51.61	10.96	44.86	54.83	9.97
22	34.90	40.10	5.20	38.15	42.07	3.92
52	16.01	17.86	1.85	17.51	19.24	1.73
72	7.09	7.67	0.58	7.61	8.26	0.65

made for this period of life. For the age interval between age twenty-two and age fifty-two the gain was 1.57 years, between age fifty-two and seventy-two it was 0.44 years, and from age seventy-two to age at death it was – 0.40 years, in other words, a retrogression. The same type of gain is obtained from the life tables for Massachusetts females.

Similar results are exhibited by other classes of the population. The notable thing in all of them is the marked decrease in gains in the periods beyond age fifty-two. The large cities, New York, Boston and Chicago, show much better gains in these older age intervals than the other classes of the population. The explanation of the gain raises an interesting question; perhaps a large measure of this gain in the cities may be accounted for through easier access to the best hospital and medical service.

What constructive measures, then, can we formulate to meet this outstanding problem? They must be far-reaching and involve much beyond what we are doing now. We must appeal to every effective agency to make a renewed effort at this point. Investigators in biology, genetics, eugenics and bio-chemistry may discover methods for prolonging life more potent than those of the physician. When we reach a limiting point in the elimination of disease, the only one which remains is what we may call "Old Age." Most of us believe that human longevity is inherited and this may give a promising lead. In recent years students of genetics have been very active in investigating those characters which can be strengthened through inheritance. There is a question as to whether the improvement of mortality rates through a recognition of inheritance of long life should not be the starting point after medicine and all the other effective means with which we are familiar have been pushed to the absolute limit. The statesman and sociologist, the scientist in many fields, the educator and the enlightened press will all be prominent coworkers in this broader line of attack. The increase in the span of life is now the outstanding unsolved problem of the human race. Its supreme importance to man from every point of view should command the effective support of individuals and governments through scientific foundations of the broadest scope and unlimited resources.

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SCIENTIFIC EVENTS

THE DANISH OCEANOGRAPHIC EXPEDITION[1]

THE oceanographical cruise on which the *Dana* recently started will be the first round-the-world oceanographical expedition since the the return of H. M. S. *Challenger* from her famous voyage more than 50 years ago. The leader of the expedition is Dr. Johannes Schmidt, and the general direction of it is entrusted to a committee under the patronage of Prince Valdemar, with Professor C. H. Ostenfeld, a member of the board of directors of the Carlsberg Fund, as president, and Vice-Admiral C. Amdrup as vice-president. The *Dana*, fully equipped, is placed at the disposal of the expedition by the Danish government; all other expenses than those of its preliminary equipment will be borne by the Carlsberg Fund.

[1] From the London *Times*.

The *Dana* is a steam trawler of the Lord Mersey type, purchased by the Danish government from the admiralty after the war, a sister ship of the English research vessel *George Bligh* and the Scottish *Explorer*, and normally employed, like them, in investigations of sea fisheries in pursuance of the concerted program of research of the International Council for the Exploration of the Sea.

According to the provisional arrangements, the *Dana* will first visit Spain and Portugal, the Straits of Gibraltar and the western part of the Mediterranean, and will then sail *via* Madeira and the Azores to the West Indies, and thence through the Panama Canal into the Pacific, visiting Tahiti, the Fiji Islands, New Caledonia, New Zealand and East Australia. After a stay of two months in East Australian waters the expedition will proceed northwards in the early spring of 1929 to Japan and China, and thence to the Malay Archipelago, the Dutch East Indies and Siam and across the Indian Ocean from Java to Madagascar. From Madagascar the route will follow the east coast of Africa, and the expedition will return through the Red Sea and the Mediterranean probably in the spring of 1930.

The areas selected for most intensive examination are the Straits of Gibraltar, the Straits of Bab-el-Mandeb, the sea round New Caledonia and the most easterly part of the Mediterranean. The purpose of the expedition is general oceanography, physicochemical as well as biological. Special attention will be paid to ocean depths, for which purpose the ship is equipped with up-to-date echo-sounding apparatus, but every branch of oceanography is provided for, both in the technical apparatus of the ship and in the qualifications of her expert staff. Investigations of the fauna of the sea bottom will be limited, owing to the expenditure of time which they involve, to certain selected areas, notably the waters about New Caledonia.

The investigations as a whole will form a logical continuation of Dr. Schmidt's former expeditions in the Atlantic and the Mediterranean, and it is Dr. Schmidt's intention, without interfering with the general oceanographical program, to pay particular attention to the life histories of all the species of eel to be found in Indo-Pacific regions. The way has been prepared for these investigations by a preparatory voyage made by Dr. Schmidt two years ago, and by the examination in the Carlsberg Laboratory at Copenhagen of large collections of specimens procured from the Pacific and the Indian Ocean.

AN INTERNATIONAL FUEL CONFERENCE

PLANS for the Fuel Conference to be held in London from September 24 to October 6, 1928, under the auspices of the World Power Conference, and in which the United States will take part, were made public on July 19 by the executive secretary of the Federal Power Commission, O. C. Merrill, who is general chairman of the American committee of the World Power Conference.

According to Mr. Merrill, each national committee will be permitted to send two official delegates to the Fuel Conference, which will deal with fuels as a source of heat and power. Among the delegates of the American Committee, as announced by Mr. Merrill, are the following:

Dr. Gustav Egloff, petroleum technologist, Universal Oil Products Company, Chicago, Ill.

H. W. Brooks, consulting engineer, 316 Metropolitan Tower, No. 1 Madison Avenue, New York City. (Representing American Society of Mechanical Engineers and the International Railway Fuel Association.)

O. P. Hood, chief, technologic branch, U. S. Bureau of Mines, Washington, D. C. (Representing American Society of Mechanical Engineers.)

Martin Frisch, manager of Field Engineering, Combustion Engineering Corporation, New York City.

G. A. Orrok, consulting engineer, 130 East 15th Street, New York City. (Representing American Society of Mechanical Engineers.)

David B. Rushmore, formerly consulting engineer, General Electric Company, New York City.

O. C. Merrill, general chairman, American committee, World Power Conference.

The Fuel Conference, which is to be held at the Imperial Institute in London, was organized as a sectional meeting of the World Power Conference by the British national committee with the approval of the international executive council of the World Power Conference. The Earl of Balfour is honorary president of the conference and Sir Alfred M. Mond is president.

The technical program is divided into five classes—solid fuel, liquid fuel, gaseous fuel, fuel utilization and general aspects, and under these heads will be discussed the composition and classification of fuels, preparation of fuels, storage, handling and transmission of fuels and the utilization of fuels.

GIFTS FOR MEDICAL RESEARCH AT THE UNIVERSITY OF PENNSYLVANIA

IT was recently announced that the University of Pennsylvania has received from Edward B. Robinette, an alumnus and banker of Philadelphia, a proposal to establish a foundation that, according to the founder's plans, may eventually have a capital of at least $1,000,000 and that is to receive immediately $250,000 of that sum.

In carrying out this plan, the first $250,000, which is to be given at once by Mr. Robinette, will be used by