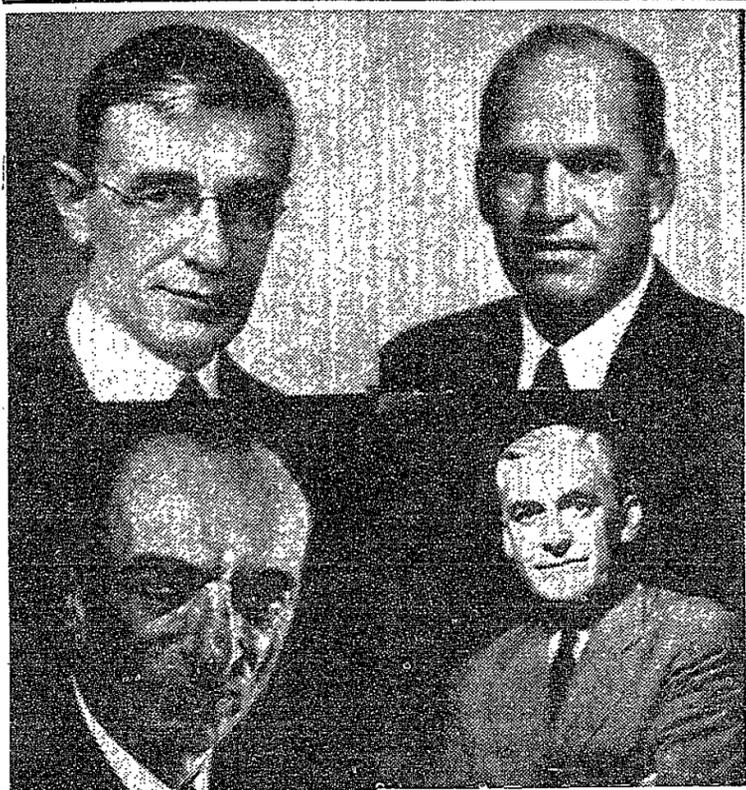


THE PROBLEM OF WORLD PRODUCTION



College, Cambridge University, England. He is editor of "The Pacific World" and a contributor to technical publications.

Lower Left: Sir Henry Tizard, K.C.B., British physicist and aeronautical authority, and president of Magdalen College, Oxford, from 1942 to 1946, is chairman of the British Advisory Council on Scientific Policy, the British Defence Research Policy Committee, and the Committee on Industrial Productivity. His scientific contributions in the field of aeronautics are credited with helping to enable the R.A.F. win the Battle of Britain. Sir Henry was educated at Magdalen College and at the University of Berlin. In addition to other medals he is the holder of the American Medal of Merit.

Upper Right: Frank Wallace Notestein, one of the world's outstanding authorities on population problems, has been director of the Office of Population Research, Woodrow Wilson School of Public and International Affairs, at Princeton University since 1941. He has been a consultant of the Department of Social Affairs for the United Nations since 1946.

Lower Right: Robert Price Russell, chemical engineer and industrialist, is president of the Standard Oil Development Company and is also active in Venezuela in the International Basic Economy Corporation, a firm established to make a contribution to raising world standards of living. Mr. Russell was educated at Clark University and at the Institute where he received his master's degree.

Upper Left: Dr. Vannevar Bush, president of the Carnegie Institution of Washington, was director of the Office of Scientific Research and Development during the war, and was former chairman of the Research and Development Board of the National Military Establishment. Born in Everett, Mass., in 1890, Dr. Bush was educated at Tufts College where he received his bachelor and master science degrees. Harvard and the Institute jointly awarded him the degree of doctor of engineering. He is a distinguished electrical engineer and is the designer of the Institute's differential analyzer.

Middle Left: Fairfield Osborn of New York City, internationally known naturalist, is president of the New York Zoological Society, an office which he has held since 1940. His "Our Plundered Planet" attracted widespread attention when published last year. Born at Princeton, N. J., in 1887, Mr. Osborn was educated at Princeton, and Trinity

Problems Of Production, Population Hashed Out By Bush, Osborn, Others

Vannevar Bush, president of the Carnegie Institute and wartime head of the O.S.R.D., posed "The Problem of World Production" at the first of panels on "Men Against Nature." "In its essence," Dr. Bush stated, "it is a result of the upsetting of the nebulous something which we call the balance of nature."

"The available means of subsistence—not food alone, but materials for shelter and for all the other needs of men—are limited; the number who must subsist on them increases geometrically; nothing can beat a geometrical increase; and we are doomed to starve. Freed by the applications of science from the controls of epidemic disease, possibly freed by world government from the controls of war, population will increase exponentially without limit, exhaust the resources of the earth, and leave a few miserable remnants crawling about in barbarism. The answer to the argument in this bald form is that science and its applications also increase exponentially."

Citing examples of how modern technology is rapidly increasing production of food and prolonging human life, Dr. Bush affirmed his belief in the effectiveness of science in solving the problem. "I am prepared to abide by the conviction that, if we hold to the course of increase of knowledge and press vigorously forward upon it, though there may be troubles, problems, and abuses, in the end we shall know that it was worth the risk."

Osborn Is Pessimistic

A more pessimistic attitude was expressed by Fairfield Osborn, president of the New York Zoological Society and author of "Our Plundered Planet." Asking the question, "Can modern technology substitute for the processes of nature?" Osborn went on to say, "It would not be sensible to rest upon the hope that inorganic synthetics as substitutes for food can be created. Certainly this possibility lies a long way in the future."

"In conclusion, scientific activities aimed at supplementing or accelerating the processes of nature are practicable and indeed imperative. Science may even unravel the

final secrets of photosynthesis and the mysteries of chlorophyll, but in these explorations we are apt to fall into the abyss of a fateful delusion and be deceived into believing that modern technology has the power to substitute itself for the functional processes of nature.

"Allow me to recall here that our problem is not one of food alone but is essentially one of maintaining the natural economy of the earth. Plant life including forests, animal life in its myriad forms, productive soils and water sources—each of these is in truth an inter-related part of a unified whole which sustains this economy and causes it to operate productively. In like terms, we are speaking not of the life of an individual but of the preservation of our civilization. Its structure and nature's structure will continue or dissolve together."

Population Expert Speaks

Dr. Frank W. Notestein, director of the Office of Population Research at Princeton University, began by saying, "As a demographer in the company of experts on production, I should like to talk about reproduction." To Dr. Notestein, the problem is that of "achieving the replacement of human populations by means of low birth rates and low death rates, instead of by the present tragically wasteful system in which millions are born who survive only briefly in varying degrees of ill health."

Dr. Notestein went on to outline recent trends in populations growth in various world areas. Among his

conclusions, he stated, "The optimists who see no problems of resources and production also seem to be too little aware that long-range solutions will require higher levels of living for more people."

"An escape from a grossly inefficient form of population replacement depends upon balance and speed in all aspects of change—technological, social, political, and economic. The problem for some decades will be to secure progressively higher levels of living for growing numbers while unleashing indigenous forces of social change. It is not a simple combination: indeed, it will be surprising if events take a smooth and uninterrupted course."

Agricultural Developments

In general agreement with Dr. Bush was Robert P. Russell, vice president of the International Basic Economy Corp. and formerly president of the Standard Oil Development Company. Mr. Russell discussed great advances in recent agricultural technology, citing several specific situations.

"To sum it up, I'm convinced that modern technology can lay the basis for a refutation of the Malthusian doctrine for more generations than any of us need consider. Technological advance alone won't do this, however, and powerful economic, educational and political forces must also be brought to bear, if the potentialities uncovered by technology are to achieve their inherent promise."

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