bringing still more oil to the surface; but in many older fields all or most of the gas has been withdrawn, leaving an inordinately high percentage of the original oil to be taken out of the ground by secondary recovery methods.

Next comes the question of oil not yet discovered. It is difficult for any one to make a reliable estimate of the possible hidden reserves of crude. The viewpoint of the petroleum geologist is presented by Pratt,[5] who discusses the prospects of finding oil in terms of the subterranean structures and the efforts to explore these structures for their oil deposits. Of the crude so far discovered and developed world-wide, some 54 per cent. is accounted for by the search within the United States (Alaska not included). While this country constitutes only 5 per cent. of the land area of the earth, it contains 15 per cent. of the structural area most favorable for the occurrence of oil fields. If exploration by drilling is extended over this total area and if per acre yields equal to the average of the already proved areas are assumed, it would appear that the United States ultimately should give up at least 100 billion barrels of oil, including the 46 billion barrels which represent the total discovery (production plus reserves) to date. On the same basis, the rest of the world would ultimately produce some 600 billion barrels of oil, including the 38 billion barrels already found. Such considerations lead to the conclusion that "at the present rate of consumption the probable ultimate oil resources of the earth, made available and freely distributed, should meet humanity's needs for 300 years to come."

How to locate these potential oil reserves is a problem with so many technical and emonomic aspects that an adequate discussion can not be undertaken as part of this brief review. Not even those best qualified to have an opinion of this subject can predict how long new oil will continue to be brought in at the rate it is needed. This is the situation which has aroused so much recent comment and which logically leads to the question of where we stand with respect to alternate sources for the products now being obtained from petroleum.

(To be concluded)

OBITUARY

BARBARA STODDARD BURKS

THE death on May 24, 1943, of Dr. Barbara Stoddard Burks brought to a close the short career of a clear-visioned investigator who did much to emphasize the close relationship between the fields of psychology and genetics. Born in New York City in 1902, Dr. Burks received the A.B. and Ph.D. at Stanford University and was early identified with the psychological research in progress in California. In collaboration with Dr. Lewis M. Terman, she made a study of school children of outstanding intelligence, following their development through adolescence and finding them still superior in intelligence and achievement in later years. During her years in California, she began an extensive study of the children of parents with readily recognizable traits, such as alcoholism, comparing the development of those children reared by their own parents with those placed with foster parents. The results of this study helped to clarify the role of heredity in psychological development, while revealing the complexities of the situation. She made also a thorough and painstaking analysis of the intelligence, temperament and social adjustment of identical twins reared apart, following a number of such twins through many years of development, and concluding that heredity is of fundamental importance in determining the mental ability and temperament of the individual, while environmental differences play an important role in social adjustment. A well-trained and capable mathematician, Dr. Burks applied precise statistical criteria to her analyses.

In 1934, after the death of her husband, Dr. Burks went to Europe as a fellow of the General Education Board, and upon her return in 1936, she became a research associate at the Eugenics Record Office of the Carnegie Institution of Washington at Cold Spring Harbor, New York. Here she pursued for four years her interest in genetics in relation to physical and mental traits. She studied the inheritance and linkage of several mutations in man (ovoid red blood corpuscles, mid-digital hair and missing lateral incisors) and sought to establish a case of autosomal linkage. She also continued her studies of identical twins reared apart, making frequent trips across the continent to interview and test her cases. The high regard in which she was held by geneticists was evidenced by her appointment as chairman of a section meeting, that on abnormal human characters, at the Seventh International Congress of Genetics at Edinburgh in 1939, only one other woman, Dr. Kristine Bonnevie, being so honored.

In 1940, Dr. Burks became a research associate at Columbia University, collaborating with the State Charities Aid Association and the Social Science Research Council in a continuation of her foster-child studies. This work, left unfinished at her death, is being carried forward by Dr. Anne Roe. Dr. Burks was awarded a Guggenheim fellowship for the year 1943–44 for an extension of her study of identical twins, but her death occurred before the tenure of the fellowship began.

Dr. Burks was keenly interested in social problems

and felt strongly the responsibility of the psychologist and geneticist in this respect. Her home was a center for thoughtful and constructive discussion of social issues by her scientific friends. She spent a vast amount of time and energy as chairman of the Committee on Aiding Displaced Foreign Psychologists of the American Psychological Association, and through her efforts many exiled scholars were placed in academic positions. She served also as editor of the *Bulletin* of the Society for the Psychological Study of Social Issues. She was an astute critic of scientific and social literature, and her lively book reviews were a constant source of enjoyment to her readers.

The pioneering work of Dr. Burks in demonstrating the relation between genetic characters and psychological traits, and in the application of advanced mathematical method to the analysis of psychological data established her as a scientist of high caliber, whose future contributions to her field of research were certain to be of great value had her life not ended so soon. To her colleagues and friends, her contagious enthusiasm for scientific investigation, her refreshing open-mindedness to the ideas of others, her genuine interest in those around her and the warmth of her friendship are irreplaceable.

KATHERINE S. BREHME

WELLESLEY COLLEGE

FREDERICK JOSEPH TAUSSIG

THE sudden death from pneumonia of Dr. Frederick J. Taussig on August 21, 1943, was felt in a keenly personal way by many people in different walks of life. They could scarcely believe the news because he had so recently, and in such high spirits, left for a well-earned vacation at Bar Harbor. Now it is realized, as never before, how much he has been giving to St. Louis and to the nation in kindly, unobstrusive but very direct ways.

Not only has he ushered into the world two generations of St. Louisans (1902–43), but these fortunate ones and their parents have enjoyed the feeling that he was their friend, always interested in them and ready to help whenever the occasion offered.

In Washington University School of Medicine, from which he graduated, in 1898, class after class of students has profited by his teaching for well over 30 years. Through these enthusiastic disciples his influence for good has spread far and wide.

A frequently mentioned characteristic of Dr. Taussig was his boundless energy. Teaching, and a large practice, of the kind in which he was called into service at all hours of the day and night, he took in his stride, ever cheerful, never apparently unduly hurried.

By some miracle, he also found time to direct the medical activities of two great institutions, the Barnard Free Skin and Cancer Hospital in St. Louis and the State Cancer Hospital at Columbia. His directness, understanding of human nature and sense of humor made an almost unbeatable combination.

Numerous publications bear witness to his wisdom and industry, of which, perhaps, the most significant is his book, "Abortion, Spontaneous and Induced, Medical and Social Aspects," a classic recognized everywhere by medical men and sociologists alike.

Dr. Taussig communicated his zeal for research to others. An effective way promptly to bring a conference with most scientists to a close is to speak about one's own work, not theirs. Not so with him. He was always interested in every serious effort to advance knowledge. The secret of the marvelous manner in which Dr. Taussig remained so characteristically young to the last may have been his quick forgetfulness of self and the resolute way in which he looked ever to the future.

E. V. COWDRY

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RECENT DEATHS

A CORRESPONDENT writes: "Professor Oscar M. Morris, professor of horticulture and horticulturist in the Agricultural Experiment Stations of the State College of Washington, recognized as a national authority in the field of pomology, died at his desk on November 13 at the age of sixty-nine years. He joined the staff of the State College of Washington in 1910, and was head of the department of horticulture from 1911 to 1927. He began collegiate teaching on the staff of his alma mater, Oklahoma Agricultural and Mechanical College, in 1898, and was advanced there to a professorship of horticulture and horticulturist. He was a member of the American Pomological Society, the American Society for Horticultural Science, Phi Kappa Phi and Alpha Zeta."

THE death at the age of seventy-six years is announced of Alfred Vivian, emeritus dean of agriculture of the Ohio State University.

DR. E. P. CLARK, for the past fourteen years senior organic chemist in the Division of Insecticide Investigations of the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture, died on November 7.

JOHN W. STACEY, research associate in botany in the California Academy of Sciences, a well-known distributor and publisher of books on biology and medicine, died in San Francisco on October 16 at the age of seventy-two years.

SIR EDWARD BAGNALL POULTON, until his retirement