leading scientists. The terribly destructive rains of 1925, followed by conspicuous, yet less marked phenomena in 1932 and 1939, have lent further support to this theory. But the unexpectedly heavy precipitation of January, February and March of last year, with its direct and indirect effect upon sea and animal life which I observed at the time of the Lima Assembly of the Pan American Institute of Geography and History, apparently has not been noted in scientific literature.

A subsequent search into the scattered and scanty records of known periodic changes in the Humboldt Current has not yielded satisfactory results. The most illuminating record of Peruvian rains, which I have seen, appears in an article entitled "Las Lluvias en Piura,"[1] which summarizes the rains over a hundred-year period. There were six dry intervals of three years each, two of four years each, one eleven-year interval, one nine-year interval, one six-year interval, six two-year intervals, at least twelve one-year intervals and five periods of two or more successive wet years. The most thorough investigation of this region in the 'twenties and 'thirties has been made by Dr. Robert Cushman Murphy.[2]

The earlier records relating to the wet and dry cycles off the Humboldt Current area are probably not so carefully made as the data of the past fifteen years. A lamentable absence of adequate reporting stations is obvious. Yet surely, the rains of 1941 have disproved the existence of the reputed seven-year cycle.

ELIOT G. MEARS

QUOTATIONS

SCIENCE AND WAR

IN the magazine SCIENCE Dr. Peter L. Kapitza, a physicist whose name is identified with brilliant efforts to reach absolute zero, reviews the work done by Russian scientists to improve weapons and to find substitutes for much needed importations. His story parallels that which has been told by American and British scientists. If it departs from the familiar pattern it is because of its insistence on the highly practical character of Russian scientific research. Since science must serve the state in Russia, it has concerned itself with discoveries that can be applied in the factory, on the farm and in the hospital. Though this policy has made it difficult for the theorist to thrive, it is now bearing fruit in the form of highly efficient airplanes, improvements on old surgical procedures and the better utilization of raw materials. Here and in Great Britain it was necessary to mobilize science for the war effort. Russian science was mobilized by the state from the very beginning, so that the change from peace to war research was easy.

Scientists deplore war not only because it diverts attention from the urgency of problems which, if solved, would conquer baffling diseases and shed much needed light on the structure of the universe, the nature of matter, the mystery of life, but also because it exploits science. Dr. Kapitza strikes a different note. As he sees it, science derives much inspiration from war. He makes much of the Haber process for synthesizing ammonia—a process which not only enabled Germany to stave off defeat during the last war but which gave her fertilizers. He might have gone farther. The laws of gravitation were derived from ballistics as much as from swinging pendulums. Studies of the gases liberated when guns are fired gave both chemistry and physics an enormous impetus. Blood banks and the control of typhus came out of war, and so did some of the new techniques for operating on the brain and for repairing head injuries.

It is worth noting that the only institutions where science was systematically taught during the eighteenth century were the artillery schools of France; that the heavy chemical industry was created when Leblanc met an urgent wartime need for soda; that the earliest sewing machine, that of Thimmonier, was first used in making uniforms; that synthetic rubber, synthetic gasoline and the whole coal-tar chemical industry were developed by Germany with an eye on the inevitable British blockade. What gains science may make as the result of the present war no one can predict with certainty. Already it is clear that new plastics of startling properties will be developed, that a healthy synthetic rubber industry will be established, and that new synthetic drugs will take the place of those which we have hitherto extracted from imported plants.—*The New York Times* for April 19.

SCIENTIFIC BOOKS

ORGANIC CHEMISTRY

The Chemistry and Manufacture of Cosmetics. By MAISON G. DE NAVARRE. xix + 745 pp., with numerous illustrations and tables. New York: D. Van Nostrand Co., Inc. 1941. 8.00.

THE book opens with a Foreword by Dean Roland

[1] *Boletin de la Sociedad Geografica de Lima,* Tomo IV, 1894.

[2] *Geog. Rev.,* 16: 26–54, 1926, and 29: 1–33, 1939.