reactions to vary in accordance with a straight-line law greatly facilitates calculations of this type and is justified in view of the vagueness of sub-grade modulus values. It is, then, simple to take into account, and use to the greatest advantage, slab flexibility in reducing bending stresses.

The publication of these lectures provides the road engineer with most of the practical details he requires in regard to recent developments in road and runway construction, both in the United States and Great Britain, and also a theoretical background in regard to soil mechanics, enabling him to relate the results of laboratory tests to the strength of the sub-grade and road slab in supporting wheel loads. Dr. Glanville, his staff and the various lecturers who contributed, are to be highly congratulated on a work which will be of great value to road engineers in all parts of the world.

STAR POSITIONS

Apparent Places of Fundamental Stars, 1947

Containing the 1535 Stars in the Third Fundamental Catalogue (FK3) of the Berliner Jahrbuch. (Published by Order of the Lords Commissioners of the Admiralty.) Pp. xxxii + 538. (London: H.M. Stationery Office, 1946.) 42*s*. net.

UNTIL 1940 each of the principal almanacs in various countries published the apparent places of a different selection of stars, the places of which were not even always referred to the same fundamental system. In addition, the number of stars for which the apparent places were given in any one almanac was insufficient. As a result of discussions at the International Astronomical Union in 1932, 1935 and 1938, it was decided that the Third Fundamental Catalogue of the "Berliner Jahrbuch" should be used as the fundamental catalogue for apparent places of stars in all ephemerides. It was further recommended that the apparent places of all the stars in that Catalogue should be published in a single volume, the calculations being carried out by France, Germany, Spain and the United States, Great Britain undertaking the printing. The first volume appeared in 1941, and subsequent issues have retained practically the same format except for temporary omissions owing to war-time difficulties. The late appearance of the 1947 volume, which should have been published in May 1946, is exceptional.

The introduction is printed in four languages—English, French, German and Spanish—and provides full explanations with examples of the use of the different auxiliary tables, together with a list of the corrections applied for parallax and orbital motion.

The first section, comprising 34 pages, gives the mean places of all the stars (1947·0) with their annual variations, proper motions and mean errors. The next and largest section contains the apparent places, at upper transit at Greenwich for every ten days, of 1,483 stars the declinations of which lie between ± 81°. First differences are given for each co-ordinate to facilitate interpolation, and at the foot of each page is subsidiary information on mean place, mean error, secant and tangent of mean declination, etc. Section 3 gives the apparent places, for every upper transit over the Greenwich meridian, of fifty-two stars lying within 9° of the two celestial poles. These include the effect of short-period terms of nutation, and subsidiary information is provided. Section 4 contains short-period terms of nutation in longitude and latitude, mean and apparent sidereal time, at 0^h, tables for converting mean solar to sidereal time and vice versa, and also for converting hours, minutes and seconds to decimals of a day, corrections to a linear interpolate for the effect of second differences, and corrections for diurnal aberration. The last section gives an index to the apparent places of stars, and many of them are given more than one name to facilitate the search for their positions.

This publication will naturally find a place in every observatory engaged in fundamental observations. It will also prove very valuable to institutions engaged on accurate surveys, for which there is not sufficient selection of stars in the almanacs. M. DAVIDSON

SCIENCE IN PROGRESS

Science in Progress

By Frank B. Jewett, James B. Macelwane, Donald W. Kerst, Hugh S. Taylor, L. Michaelis, Michael Heidelberger, G. W. Beadle, Peyton Rous, E. C. Stakman, Carl Caskey Speidel, Herbert M. Evans. Edited by George A. Baitsell. Fifth Series. Pp xv+353. (New Haven, Conn.: Yale University Press; London: Oxford University Press, 1947.) 5 dollars.

THE fifth series of "Science in Progress" contains reports by ten leading American men of science in their respective fields and an introduction by Frank B. Jewett, president of the National Academy of Sciences, on "The Future of Scientific Research in the Post-war World". He has estimated the effect of the War upon "fundamental and applied science and scientific manpower". His plea is for a reconsideration of the scope and importance of fundamental research. A mere beating of swords into ploughshares is only a part of the problem. He is particularly impressed by the increasing use of team-work and mathematical machines in scientific research. For the most part all the chapters in the specialized fields can be followed by any reader with a grammar school scientific training.

Some of the chapters are noteworthy as models of thorough, scholarly yet simple treatment. Of these, D. W. Kerst's account of the development of the betatron, H. S. Taylor's history of contact catalysis between the two World Wars, G. W. Beadle's chapter on genes and the chemistry of the organism, and Peyton Rous's essay on the cancer problem are particularly outstanding for their directness and clarity. Rather more technical in style, but masterly and up to date, are the chapters by J. B. Macelwane on the interior of the earth and seismology, by L. Michaelis on oxidation and respiration, Michael Heidelberger on serological complement, E. C. Stakman on the difficulties of dealing with plant diseases, and Herbert Evans on hormones. The last, containing such sentences as "hepatic gluconeogenesis which adrenal cortical hormones characteristically produce", may make hard going for the layman in physiology. By contrast, the description given by C. C. Speidel of the cinephotomicrography of living cells in action makes easy reading.

It is to be hoped that Yale University Press will continue to issue such annual accounts of recent work in science. The general production of the book may make British readers rather envious of the qualities still maintained in the United States.

W. L. SUMNER