fruit, and of the remarkable long-period storage of fermented breadfruit paste in the Pacific Islands, a study of food values and storage behavior of the Maya breadnut would be of agricultural and historical interest. The question naturally arises whether the early Maya civilization, that built so many large cities and occupied them for the long periods shown by the dated monuments, could have been supported by a migratory "milpa" agriculture like that of the present day, calling for a new forest clearing every year to grow the family maize crop. A use of long-lived, hardwood tree-crops would render the ancient Maya agriculture somewhat similar to that of the archaic "Golden Age" in the Mediterranean countries, where olives, figs, grapevines and pear trees were chiefly relied upon.

Forage or fodder may prove more important than food uses, if Brosimum becomes established in southern Florida, where, as in other tropical regions, dairies are difficult to maintain. Groves of large *ramon* trees are considered in the Maya country as the best pastures, the cattle being greedy for the fallen leaves as well as for the nuts. Also the trees may be tapped and the latex mixed with chicle or drunk like cow's milk, the natives reporting it good for nursing mothers and asthmatics. A related species, *Brosimum utile*, is the "cow-tree" of Venezuela, made famous by Humboldt as furnishing a potable latex, not to mention "cow trees" of other countries and of other botanical families. The Maya breadnut trees now growing in Florida, at the Plant Introduction Garden near Coconut Grove, were raised from seeds collected in April, 1922, in the district of Tikal and Uaxactun in northern Guatemala, and brought to Washington.[1]

O. F. COOK

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SOME EUGENICAL ASPECTS OF THE INDIANS OF PISTE, YUCATAN

PISTE is a typical Maya village, located in the center of the political state of Yucatan. It is Indian in culture, modern medical science is practically unknown and nature is allowed complete freedom. In 1935 there were 415 inhabitants, of whom 207 were males and 208 females. The birthrate, calculated over a 17-year period, was 60.1 per M, and the deathrate 31.7 per M. The secondary sex ratio of 513 children born in this town was 108.5 males to 100 females. Births are attended by native midwives, and native medicinal practises are used. The average interval between births for 147 infants from 51 mothers was 28 months. Birth control is not practised in this community, and comparatively few abortions and stillbirths occur. The average number of children from 33 completed families was 6.69. The average age of mothers at the birth of the first child was found to be 18 years. This figure is based on exact birth dates. In this town there is only one woman over 25 years of age who is unmarried, and this is probably due to the fact that she is blind. Of the 513 children born into 109 families, 17.2 per cent. died before 2 years of age; of these 56 per cent. were males and 44 per cent. females. Not much can be said at present as to the life span of these people, since the birth dates of the older members of the population are not accurately known. It is the author's impression, however, that the older members do not live much longer than 60 years.

Since 1800 there have been two general migrations from the town. Before 1847 Piste was a thriving mestizo (Spanish-Maya cross) town. From that date to 1880 the town was completely unoccupied. This was during the War of the Castes. After 1880 it was reinhabited, increasing in population until in 1918 there were 474 inhabitants. About 1920 there was a political revolution which caused another exodus of 200 or more people, after which the population began to increase in numbers until in 1935 there were 415 inhabitants.

Naturally in these interior towns there is considerable inbreeding, and these 415 people can mostly be catalogued in the leading family pedigrees, *e.g.*, Tun, Mex, Dzib, Ceme, Mis and Cauich. There are, however, no obviously feebleminded people in this town.

In Piste during the 17-year period there were seven pairs of twins born and one set of triplets.

The diseases of the Maya Indians of Yucatan are considered at length in Publication 431 of the Carnegie Institution of Washington, and the social customs in Publication 448 of the same institution.

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TACONIC THRUSTING AND PALEOGEOGRAPHIC BASE MAPS

THE original position of early Paleozoic sediments in eastern North America has been altered by later folding and thrusting so that the present map gives a foreshortened base relative to ancient geography. This was recognized by Schuchert[1] in his spreading seaways to their interpreted original width on the present base. In this method, the position of early Paleozoic outcrops becomes anomalous with respect to the mapped distribution of the seas in which they formed. The writer has prepared a paleogeographic base map in which each of the principal Taconic thrust sheets in western New England has been stretched to overcome the foreshortening in its width. Then each slice has been moved back from the foreland

[1] See *Official Record*, U. S. Department of Agriculture, May 17, 1922.

[1] C. Schuchert, *Bull. Geol. Soc. America*, 41: 704, 1930.

to the position from which it is believed to have been displaced. The resulting map displays the several slices in their relative original positions; paleogeography drawn on the base is realistic with respect to the width of seaways, and the present outcrops are in their proper place in the ancient geography. A similar base map has been prepared for eastern North America.

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SCIENTIFIC BOOKS

THE DETERMINATION OF CRYSTAL STRUCTURES

International Tables for the Determination of Crystal Structures. Volumes I and II. Gebrüder Borntraeger, Berlin, cooperating with the Chemical Catalog Company, New York. 692 pages. 1935. 33 R.M. geh. 40 R.M. gebd.

THE tables have been prepared by an international committee of some twenty of the foremost x-ray crystallographers, under the editorship of C. Hermann, and with honorary editors, Sir William Bragg and M. v. Laue. As stated in the preface, the tables arose from the need for an international standard work with a nomenclature to which all papers on crystal structure might be referred. The aim is to put an end to the previous state of affairs, in which, in order to read the literature of crystal structure determinations, it was necessary to possess a knowledge of the many tabular works with their various abbreviations and different choices of axes and origins.

The unification of space group terminology has been accomplished by introducing the new system of Hermann and Mauguin. The great advantage of this system over previous ones is found in the fact that the symbol itself gives the complete spatial picture of the symmetry elements. Although the primary purpose of the tables is to present the new unified space group notation, advantage is taken of the opportunity to present a great deal of other information of considerable use to the x-ray crystallographer.

The first two chapters of Volume I explain the new nomenclature and correlate the new notation for crystal classes and space groups with the older schemes of notation. The next two chapters present the crystal classes, equivalent faces, translation groups and the various transformations of axes. Chapter V comprises the greater part of Volume I and presents the 230 space groups. Under each space group the following information is given: the Schoenflies symbol and the new symbol; the special positions; a diagram showing the equivalent points in the general position; a diagram giving the spacial arrangement of the symmetry elements; the point symmetry in the special position; the sub-groups; the structure factor, and the general vanishings. The tabulated structure factors for each space group will certainly be welcomed by all structure workers. In Chapter VI the space group criteria are collected in the most suitable form for space group determination. The final chapters present the point symmetries of the special positions and a table of lattice complexes.

The second volume is devoted to mathematical and physical tables. A chapter on quadratic forms gives the necessary formulae, together with useful tables, such as $h^2 + k^2 + l^2$. The next chapter includes goniometric tables and the extremely useful tables $\sin 2\pi x$ and $\cos 2\pi x$ with x varying in steps of 0.001 from zero to unity. The value of these two tables for structure factor calculations can hardly be overemphasized. The next section includes a very useful summary of the more important intensity formulae, together with tables of atomic scattering factors, absorption coefficients, absorption factors, wave-lengths, glancing angles and atomic and ionic radii. The last chapter is on graphical methods. The choice of subject-matter in this chapter is rather poor, the relative amount of space and emphasis given to the different methods appears to bear no relation to the importance of the method in actual practise. For example, a more complete treatment of the methods of indexing Weissenberg patterns and full-page reproductions of the tetragonal and hexagonal Hull charts would have been decidedly more useful than Figs. 53 and 54, which are intended for graphical indexing of *cubic* powder patterns. Much of the material in this chapter should have been omitted.

As a whole the International Tables constitute an excellent piece of work, which can be most highly recommended. The material is well arranged and the figures and printing first class. The editors and contributors have worked hard to give the science of x-ray crystallography a unified system of notation; it is now up to the workers in this field to cooperate by adopting it.

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THE ANIMAL PARADE

Parade of the Animal Kingdom. By ROBERT HEGNER, assisted by JANE Z. HEGNER. New York: Macmillan, 1935. 675 pp., over 700 illustrations.

A DISTINGUISHED worker among the poor of London once remarked to me that when people became utterly