The changes can be calculated quantitatively from thermodynamic equations, and the values found show that the vapor pressure for the equilibrium system at +.0024° C is 0.0012 mm higher than that at the triple point, and at the 0° equilibrium it is 0.0003 mm higher. For most practical purposes these changes are negligible, and the vapor pressure in any of these three states may be taken as 4.579 mm[7] or 4.581 mm.[10] A recent experimental determination has given the triple point pressure as 4.5867 mm;[11] this is not consistent with other values accepted at present for the vapor pressure of liquid water at temperatures near the triple point.

SUMMARY

(1) A common error in text-books on physical chemistry is pointed out. It is hoped that the correct value for the triple point temperature, +.0098° C, will be given in new books and in succeeding editions of the books surveyed above.

(2) Inconsistencies in the vapor pressure values for ice and for liquid water near 0° C are pointed out.

(3) The equilibrium vapor pressures for ice and liquid water under two different sets of equilibrium conditions are compared with the triple point pressure.

WORDEN WARING

TULANE UNIVERSITY

PALEOBOTANY IN INDIA

I HAVE just received from Professor Sahni of the University of Lucknow, India, a Progress Report on Paleobotany in India, at the head of which appears the following statement:

"We mourn the death of Albert Charles Seward (April 11, 1941). Doyen of Paleobotanists, whose noble personality, no less than his vast learning, was a fountainhead of inspiration to the Indian school of paleobotany."

Those of us who knew Sir Albert Seward as Master of Downing College, Cambridge, had long marvelled at his ability to carry on administrative and teaching work, along with research in paleobotany, and had noted his power of inspiring and fostering research among those who were so fortunate as to come under his direction. But at the present time, we are particularly concerned to note what he was able to do for India; mainly, it appears through the influence of his ardent disciple Sahni. With this source of inspiration, a school of Indian paleobotanists, centering in Lucknow, has developed and for many years their writings have brought to us new information concerning the fossil flora of India. Sahni, in recognition of his work, has been elected a Fellow of the Royal Society.

A paper by Sahni, which accompanies the Report, has to do with the beautifully preserved petrified remains of *Azolla*, showing all the minute details of structure. "The first and most striking fact concerning this specimen is the great perfection in which it is preserved. This helps us to see that in this early Tertiary *Azolla*, which is definitely the oldest known species of the genus, some of the most intimate details of the structure, and the way in which the massulae become anchored to the megaspore, are identical with those found in modern species. Considering that this plant lived about 60–70 million years ago it affords an impressive example of the persistence through the ages of a highly specialized type of behavior during the reproductive phase of the life-history of a genus."

The Oriental mind, for ages developing according to what seemed to be its peculiar genius, now shows its ability to take on the qualities of western culture, for good and for evil. It appears that scientific men such as Seward may promote the good influences, and cause the oriental workers to discover and develop their innate abilities. In such ways scientific research may serve the cause of civilization.

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SCIENTIFIC BOOKS

CYTOPLASM OF THE PLANT CELL

The Cytoplasm of the Plant Cell. By A. GUILLIERMOND. Authorized translation from the unpublished French manuscript by Lenette R. Atkinson. Foreword by Professor William Seifriz. Waltham, Mass.: the Chronica Botanica Company. New York City: G. E. Stechert and Company. 247 pp. 152 figs. 1941. $4.75.

THIS is Volume VI in a new series of plant science books edited by Dr. F. Verdoorn. It is fortunate that the war has not prevented its translation by Mrs. Atkinson and publication in its present form, for it is a critical survey of all that has been done with regard to chondriosomes, vacuoles and various other structures in the cytoplasm of plant cells, by one who has made many of the most important contributions in this field.

One of the difficulties in the study of protoplasm is that it is usually divided into such small compartments, the cells, which are sensitive even to minor

[10] N. S. Osborne and C. H. Meyers, *Bur. Standards Jour. Res.*, 13: 1–20, 1934.

[11] K. Prytz, *Kgl. Danske Videnskab. Selskab. Math.-fys. Medd.*, 11: 7–46, 1931; quoted in *Chemical Abstracts*, 26: 627, 1932, and in reference 4 pages 563 and 575.

manipulation and *intra vitam* stains. Another is that in order to study protoplasmic structures they must usually be subjected to some stain, even if they are not killed, and the mere process of mounting for microscopic examination alters the oxygen supply and various other conditions. Guilliermond is fully conscious of all this, and his interpretations always allow for the possibility of some slight change from the healthy living condition even under the most careful treatment. In the twenty chapters of this volume his critical faculty is always on the alert to point out that the obvious interpretation is not necessarily the correct one or the only one. The general result is a solid body of well-documented material and conclusions, which will be of much value to all who are interested in the experimental study of protoplasm and the structures contained in the cytoplasm of plant cells.

The introductory chapters deal with the physical and chemical constitution of protoplasm, in which it is pointed out, for instance, that the viscosity ranges from 3 times to 10,000 times that of water and any isolated bit of cytoplasm forms a membrane about itself according to the law that molecules which lower the surface tension tend to accumulate in the peripheral layer. Much use is made of basic vital stains, such as Nile blue, cresyl blue and neutral red, while chrysoidine, probably because it is readily dissolved in lipides, stains clearly both cytoplasm and nucleus in cells which still show cytoplasmic streaming. But if growth is to continue, the vital dye is first accumulated in the vacuoles. In a chapter on the physical chemistry of protoplasm, microdissection and the coacervates of Bungenberg de Jong are among the topics considered.

In the chapter on plastids and the grana which are seen in some types of plastids, while no final opinion regarding their structurue is reached, plastids are regarded as probably composed of small lipide discs containing cholorophyll and embedded in a hydrophilic stroma. Five chapters are devoted to the chondriosomes and their relation to plastids. The duality of the chondriome is recognized and the author concludes on good grounds that plastids and chondriosomes are two categories of organelles which are permanently found in every cell of green plants, both showing all the characteristics of the chondriosomes in animal cells. The fact that the chondriosomes undergo vesiculation under some conditions leads to the conclusion that they also are coacervates.

Other chapters are concerned with the vacuoles, their vital staining, origin and development; and their transformations are fully illustrated in flowering plants, fungi and algae. They arise *de novo* in the cell and are believed to form through the separation from the cytoplasm of colloids having a stronger capacity for taking up water. The canaliculi of young plant cells are transformed into vacuoles, but a consideration of the evidence leads to the conclusion that there is no Golgi apparatus in plant cells.

This book should stimulate the study of the extreme complexity in morphological constitution of the cytoplasm, a colloidal system in which the chondriosomes, plastids and vacuoles constitute distinct phases. It adheres rather closely to the plant cell, but after all, that was the aim of the book.

One may agree with Dr. Seifriz, who has written the foreword, in being impressed with the thoroughness and the condensation with which the book has been written. The index of authors and of plant and animal names hardly compensates for the lack of any index of topics, and the frequent lack of dates in references to authors' papers will make some of them difficult to identify.

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SOCIETIES AND MEETINGS

THE AMERICAN SOCIETY OF TROPICAL MEDICINE

THE American Society of Tropical Medicine, meeting conjointly with the Southern Medical Association, the National Malaria Society and the American Academy of Tropical Medicine, held its thirty-eighth annual meeting in Richmond, Virginia, on November 10, 11 and 12, 1942.

One of the outstanding features of the scientific session was the seventh Charles Franklin Craig lecture on tropical medicine, entitled, "The Importance of Tropical Medicine in the Armed Forces," by Rear Admiral Ross T. McIntire, U. S. Navy, Office of the Surgeon General, Washington, D. C.

A second highlight of the meeting was a symposium on "Tropical Medicine and the Medical School Curriculum," at which Dr. H. E. Meleney of New York presided. Dr. Paul Russell, Lieutenant Colonel, Washington, D. C., discussed the "Military Need," and Dr. Jean A. Curran, Brooklyn, N. Y., discussed "Finding a Place in the Medical Curriculum." In the absence of Commander M. E. Lapham, Washington, D. C., Dr. Meleney discussed the "Civilian Needs," as well as his own contribution, "Recent Progress." This symposium stressed the fact that there is a definite need for tropical medicine to-day in our medical school curriculum. A two-hour session was devoted to discussing this subject with fifteen