SCIENCE

NEW SERIES
VOL. 91, No. 2361

FRIDAY, MARCH 29, 1940

SUBSCRIPTION, $6.00
SINGLE COPIES, .15

Entered as second-class matter July 18, 1923, at the Post Office at Lancaster, Pa., under the Act of March 3, 1879.

Manufacturers Honors RCA Scientists

Of the 572 industrial engineers and scientists chosen by the National Association of Manufacturers to receive awards as "Modern Pioneers on American Frontiers of Industry," forty-seven were members of the RCA organization. The awards were given for original research and inventions which have "contributed most to the creation of new jobs, new industries, new goods and services, and a higher standard of living."

Special national awards were given by the National Association of Manufacturers to nineteen of those receiving honors. Dr. Vladimir K. Zworykin of the RCA Manufacturing Company was chosen to receive one of these national awards.

47 RCA "Modern Pioneers on American Frontiers of Industry"

Randall Clarence Ballard
Max Carter Batsel
Alda Vernon Bedford
George Lisle Beers
Harold H. Beverage
Rene Albert Braden
George Harold Brown
Irving F. Byrnes
Wendell LaVerne Carlson
Philip S. Carter
Lewis Mason Clement
Murray G. Crosby
Glenn Leslie Dimmick
James L. Finch
Dudley E. Foster
Clarence Weston Hansell
O. B. Hanson
Ralph Shera Holmes
Harley A. Iams
Ray David Kell
Edward Washburn Kellogg
Winfield Rudolph Koch
Fred H. Kroger
E. Anthony Lederer
Humboldt W. Leverenz
Nils Erik Lindenblad
Loris E. Mitchell
Gerrard Mountjoy
Harry Ferdinand Olson
Richard R. Orth
Harold O. Peterson
Walter Van B. Roberts
George M. Rose, Jr.
Bernard Salzberg
Otto H. Schade
Stuart W. Seeley
Terry M. Shrader
Browder J. Thompson
Harry C. Thompson
William Arthur Tolson
George L. Usselman
Arthur Williams Vance
Arthur F. Van Dyck
Julius Weinberger
Irving Wolff
Charles Jacob Young
Vladimir Kosma Zworykin

RADIO CORPORATION OF AMERICA

Radio City, New York

SCIENCE

VOL. 91 FRIDAY, MARCH 29, 1940 No. 2361

Episodes and Personalities in the Development of Biology at Brown: DR. A. D. MEAD 301

Functions of the Preclinical Sciences in Medical Education: DR. MAGNUS INGSTRUP GREGERSEN 305

Scientific Events:
New Fellows of the Royal Society of Edinburgh; The Detroit Center of the University of Michigan; Paleontological Expedition of the National Geographic Society and the South Dakota State School of Mines; The Institute of Food Technologists; Recent Deaths 308

Scientific Notes and News 310

Discussion:
Varieties of Triticum vulgare Practically Immune to Stem Rust: DR. R. F. PETERSON, DR. T. JOHNSON and DR. MARGARET NEWTON. *Fresh-water Jellyfish in Hawaii:* PROFESSOR C. H. EDMONDSON. *Reappearance of an Ancient Absurdity Regarding Magnets:* PROFESSOR L. W. MCKEEHAN; WATSON DAVIS. *Roger Bacon Was Mistaken:* DR. JOSEPH O. THOMPSON 313

Scientific Books:
Political Geography: PROFESSOR PRESTON E. JAMES. *Naturalists in South America:* DR. ALBERT M. REESE 315

Reports:
The New International Commission of Snow and Glaciers: FRANÇOIS E. MATTHES 317

Special Articles:
Mobilization of Vitamin A from Its Stores in the Tissues by Ethyl Alcohol: DR. SAMUEL W. CLAUSEN and OTHERS. *The Isolation of Phytin from Soil:* W. J. DYER, DR. C. L. WRENSHALL and DR. G. R. SMITH. *On the Nature of the Leukocytosis-promoting Factor of Inflammatory Exudates:* DR. VALY MENKIN 318

Scientific Apparatus and Laboratory Methods:
A New Technic for Staining Vaginal Smears: DR. EPHRAIM SHORR. *A Rubber Cast of the Dogfish Spiral Valve:* PROFESSOR K. D. ROEDER 321

Science News 10

SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. MCKEEN CATTELL and published every Friday by

THE SCIENCE PRESS

New York City: Grand Central Terminal

Lancaster, Pa. Garrison, N. Y.

Annual Subscription, $6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary in the Smithsonian Institution Building, Washington, D. C.

EPISODES AND PERSONALITIES IN THE DEVELOPMENT OF BIOLOGY AT BROWN[1]

By Dr. A. D. MEAD

BROWN UNIVERSITY

IN the diamond jubilee number of the *Atlantic Monthly,* issued in November, 1932, seventeen articles selected from the 900 monthly issues of the *Atlantic* were reprinted. One of them was Dallas Lore Sharp's famous paper on "Turtle Eggs for Agassiz" (1910), which already had been reprinted many times and which, incidentally, has been read by Dr. Walter to his class in comparative anatomy in Brown every year for a quarter of a century. Now this touches my subject at several points: The hero of the episode was J. W. P. Jenks, the first teacher of zoology at Brown. Jenks was a lifelong disciple of Agassiz and widely disseminated his doctrines at Brown and elsewhere. Sharp was a student at Brown (1895) and a special protégé of Professor Jenks, from whom, while at Brown, he got the tale about the turtle eggs. Again, Sharp's own colorful career at Brown, if as adequately written up, would win a place in literature. And finally, his introduction to the turtle egg paper provides the theme, which is at least implied, of this post-prandial talk, namely, that the progress of a science in a period of years, like a game of golf in an afternoon, is not completely recorded in the mere enumeration of the end results and the scores, but that personalities and minor dramatic incidents are a vital and substantial part of the story.

Sharp found the clue to his story in Agassiz's four volumes of "Contributions to the Natural History of the United States." "The volumes," he said, were "massive, heavy, weathered as if dug from the rocks,"

[1] Address at the dinner of the National Academy of Sciences, Brown University, October 24, 1939.

For the composition of the trichrome stain the reader is referred to Foot's description.[2] The only modifications found desirable in adapting this stain to the vaginal smear were an increase in staining time with light green to 8 minutes and a reduction in the strength of acetic acid from the original 1 per cent. to 0.25 per cent. The acetic acid solution is made up fresh weekly. The other solutions will, with an occasional filtration to keep them clear, stain 1,200 to 1,500 slides satisfactorily. The exact procedure of staining is as follows:

(1) Fix slide while wet in 95 per cent. alcohol: ether (1:1) and carry through alcohols to water.
(2) Harris hematoxylin—2 minutes.
(3) Rinse 3–4 times in water and let stand 5 minutes in running water.
(4) Ponceau-acid fuchsin-orange G—5 minutes. Rinse 3–4 times in water.
(5) Phosphotungstic acid (3 per cent.)—10 minutes. Rinse 3–4 times in water.
(6) Light green—8 minutes. Do not wash.
(7) Acetic acid (0.25 per cent.)—3 minutes. Do not wash.
(8) Dehydrate, clear in xylol, and mount in damar.

Analysis of the action of individual components indicates the possibility of some simplification of the stain. Ponceau de xylidene, acid fuchsin and orange G were all taken up by the cornified cells and contributed to their final color. The most satisfactory staining of the cornified cells, using these dyes separately, was obtained with Ponceau de xylidene. Orange G is, however, desirable because of its staining of red cells. Phosphotungstic acid is essential because of its action as a mordant in fixing and intensifying the color produced by the preceding solution. Light green acts as a counterstain for the non-cornified cells. When used alone it will stain cornified cells a more intense green, but is unable to displace the other dyes once they have entered the cell. The staining with hematoxylin can be omitted, the nuclei then taking a red stain. Dioxane can be used instead of the alcohols as with tissue.

A more detailed description of the nuances of morphology and color revealed by this stain in smears from various normal and pathological states will be given elsewhere.

EPHRAIM SHORR

THE NEW YORK HOSPITAL AND THE DEPARTMENT OF MEDICINE, CORNELL UNIVERSITY MEDICAL COLLEGE, NEW YORK, N. Y.

A RUBBER CAST OF THE DOGFISH SPIRAL VALVE

THE spiral valve of the dogfish is a feature of most courses in comparative anatomy. It is difficult to visualize the spiral course taken by the food, and the large absorbing surface of the intestine is seldom appreciated. The structure and function of the spiral valve is well demonstrated by a rubber cast, which takes but a few minutes to make. The intestine from pylorus to rectal gland is removed from a fresh or formalin-preserved dogfish. The pyloric end is attached to a faucet and the contents completely flushed out by a slow but positive stream of water. This process is aided by gentle manipulation, and should be continued until the water is clear. After removal from the faucet the intestine is carefully squeezed to remove as much water as possible, and latex[1] is injected through the pyloric end under about 200 mm pressure. The large intestine should be tied off when latex flows out, and gentle manipulation assists the even distribution of the latex, mixing it completely with the water remaining inside. When the intestine is thoroughly turgid, the pylorus is tied off under pressure and the whole preparation hardened in 2 per cent. acetic acid for ten days. It is a simple matter to dissect away the tissue from around and between the flexible spirals, leaving a rubber cast of the interior of the intestine. The quality of the rubber improves if the cast is washed for a few hours in tap water and allowed to dry at room temperature for a day or two. The spiral may then be stretched, twisted or even unrolled without becoming permanently deformed, and is a striking demonstration specimen.

K. D. ROEDER

TUFTS COLLEGE

[1] Turtox Latex supplied by The General Biological Supply House.

BOOKS RECEIVED

ATWOOD, WILLIAM H. *Introduction to Vertebrate Zoology.* Pp. 511. 264 figures. Mosby.

CHILD, ERNEST. *The Tools of the Chemist, Their Ancestry and American Evolution.* Pp. 220. Illustrated. Reinhold. $3.50.

HAMBLY, WILFRID D. *Craniometry of New Guinea; Anthropological Series: Vol. 25, No. 3.* Pp. 83–290. 26 figures. 43 plates. Field Museum. $2.50.

Kyoto Imperial University; *Memoirs of the College of Science; Series A, May, 1939.* Pp. 41–223. Illustrated. Yen 3.80. *July, 1939.* Pp. 225–267. Illustrated. Yen 1.00. *September, 1939,* Pp. 269–356. Yen 1.00. Maruzen, Tokyo.

MYRDAL, GUNNAR. *Population, a Problem for Democracy.* The Godkin Lectures, 1938. Pp. xii + 237. Harvard Univ. Press. $2.00.

O'BRIEN, T. P. *The Prehistory of Uganda Protectorate.* Pp. xii + 319. 56 figures. 26 plates. Cambridge University Press, Macmillan. $7.50.

SVEDBERG, THE and KAI O. PEDERSEN. *The Ultracentrifuge.* Pp. x + 478. 154 figures. Oxford Univ. Press. $12.50.

WILLIAMSON, ROBERT W. RALPH PIDDINGTON, editor. *Essays in Polynesian Ethnology.* Pp. xlii + 373. 10 plates. Cambridge Univ. Press, Macmillan. $7.00.

[2] *Amer. Jour. Path.,* 14: 245, 1938.