U. S. Bureau of Chemistry and Soils, Washington, D. C., *secretary-treasurer.*

THE annual agricultural outlook conference for the Southern States was held at Atlanta, Georgia, from November 8 to 11. Representatives of the department and of most of the agricultural colleges, experiment stations and extension services in the South attended. Outlook reports will be issued on agricultural credit and demand, tobacco, fruits, truck crops, potatoes, rice, sugar, cotton, poultry, dairy products, hogs, beef cattle, sheep, feed crops, farm labor, farm equipment and fertilizers. On the closing day there were round-table discussions of outlook extension and farm-management extension work, and reports on developments in marketing and cooperative purchasing and on the effects of changes in transportation upon marketing problems.

A GARDEN of native plants has this year been established in the part of the alluvial fan directly behind the Yosemite Museum, Yosemite National Park. Planting was begun last April on a two-acre plot, flagstone walks were installed, and a spring developed to supply a running stream and pools. The work was made possible by a gift of $4,000 by Miss Marjorie Montgomery Ward.

MRS. CARLOS F. MACDONALD, widow of the late Dr. Carlos F. MacDonald, a distinguished psychiatrist, of New York, died in Atlantic City on November 5. On May 7, 1928, Mrs. MacDonald established a trust fund, in memory of her husband, to be known as the "Carlos Frederick MacDonald Research Fund," and held in trust by The Girard Trust Company. The income of this fund is used by the Wistar Institute in the promotion of biological research and the publication of research in any Wistar Institute journal. By Mrs. MacDonald's will this fund eventually will be very greatly increased.

AT a recent meeting of the council of the Royal College of Surgeons it was announced that Sir Buckston Browne had now completed his gift of £100,000 for building and endowing the Surgical Research Farm at Downe, Kent.

THE University of Oslo has received a gift of 20,000 kronen from a Norwegian chocolate factory for the foundation of a chair on the physiology of nutrition.

DISCUSSION

EMANUEL SWEDENBORG ON THE THEBESIAN SYSTEM OF THE HEART

THE comparative recency of the published appreciations of Retzius,[1] Ramström,[2] Nordenskiöld[3] and others, shows how long the world at large had been content to permit the luster of Swedenborg the theologian to obscure its estimate of Swedenborg the biological thinker. Pioneer in many fields of the intellect, this gifted physicist and engineer (1688–1772) turned in middle life to the intensive acquisition of the anatomy and physiology of his day. Making full allowance for the tendency to mystical interpretation during this transitional phase of his career, Swedenborg's contributions to biological theory—especially neurological—were noteworthy, and to a degree that has failed of adequate notice even within the present century.

His work on the circulation is essentially unknown to science. Of peculiar interest to the writer has been that part dealing elaborately with the coronary system; for it is here discovered[4] that Swedenborg was the first to conceive of the Thebesian vessels (and their foramina in the inner walls of the heart) as subserving an entrant, nutritional function. To Swedenborg the coronary arteries—on evidence which the present day must find it hard to attach to so subversive a conclusion—are not arteries at all, but veins tributary to the aorta; hence his recourse to the only other apparent source of blood supply to the heart muscle—the *ductus carnosi* of Vieussens, later known as *venae Thebesii.*[5]

In the revival of discussion, with persistent conflict of evidence,[6] as to the rôle of these channels, both normal and vicarious, the contention of Swedenborg forms an appropriate background. It is pictured in his own words, as follows: "For these ducts are so many small and proper arteries of the heart, and have their own small and proper ventricles or chambers, which we have denominated lacunae" [the intertrabecular crypts].[7]

A recent editorialist[8] has drawn attention to the

[1] Gustav Retzius, *Verhandl. d. Anat. Gesellsch.*, 1903.
[2] Ramström, "Emanuel Swedenborg's Investigations in Natural Science," etc., Uppsala, 1910.
[3] Nordenskiöld, "The History of Biology," transl. by Eyre, N. Y. and Lond., 1928.
[4] I owe my first information on the subject (1929) to the courtesy of Dr. John P. Sutherland, of Boston.
[5] The origin and development of Swedenborg's theory is discussed, with bibliographical notes, in the *Annals of Medical History*, N. S., 4: 434, 1932.
[6] For divergence of view *cf.* Wearn, *Jour. Exper. Med.*, 47: 293, 1928; Batson and Bellet, *Am. Heart Jour.*, 6: 206, 1930; Stella, *Jour. Physiol.*, 73: 36, 1931; 75: 18 P, 1932; Löhner, Pfl. Arch., 228: 457, 1931.
[7] "Œconomia Regni Animalis," Amster., 1740–48, I, 412. The extract follows Clissold's translation.
[8] *Jour. A. M. A.*, 98: 233, 1932.

marked discrepancies of result and inference on the Thebesian question as it concerns the possible compensatory function of these vessels in chronic coronary occlusion, and commendably emphasizes the urgent importance of having the problem settled with finality. In the future development of the subject Swedenborg's proposition may well find a place, historically, as embodying in principle one widely entertained hypothesis relative to the cardiac sinusoids. Even more, his almost modern structural conception of the intramural vascular relations, based on the injections of Lancisi and other eminent early anatomists, should have similar recognition.

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SUGGESTIONS IN STRATIGRAPHIC NOMENCLATURE

PERHAPS others as well as the writer have often been at a loss for a concise, logical and self-explanatory term for indicating all that portion of the geologic sequence (or geologic time) below or antedating the Cambrian system (or time). Strangely enough, the embarrassment becomes more acute if one searches for a term to include the Paleozoic, Mesozoic and Cenozoic. To the lower or earlier subdivision such terms as Azoic, Eozoic, Agnotozoic, Proterozoic, pre-Cambrian and pre-Paleozoic have been applied by various authors in different ways.[1] Chamberlin and Salisbury make a dual subdivision of this expanse of time into an Extrusive and a Gradational Eon, but in the latter they include the Proterozoic, as understood by them, and the basis is not "zoic," a feature so well fixed in geologic nomenclature since the days of John Phillips. Haug's treatise devoting one chapter to pre-Cambrian, the next to Cambrian, the next to Silurian, etc., does not clearly bring out the dual classification here under consideration. Ambiguities and needless circumlocutions are to be found in our most recent and authoritative writers on geologic topics owing to a lack of precise terminology.

Note the following:

> . . . the high degree of evolution and specialization seen in the invertebrate fossils at the very base of the Paleozoic was in itself a proof that pre-Paleozoic evolution occupied a period as long as or even longer than the post-Paleozoic.[2]

The meaning here is in doubt, but the chances are ten to one the author means post-Proterozoic, instead of "post-Paleozoic," else the whole Paleozoic is eliminated in his second time division. Again, p. 29, *op. cit.*

> The larger estimate of 80 million years on the theory that pre-Cambrian sediments took as much time as those from the base of the Cambrian upwards.

Bearing in mind the unique and overwhelming importance of life in the development of this planet and the still unexplained but universally recognized earlier moiety of geologic time, characterized by obscure traces of life, and a later moiety with life so abundantly preserved, one may perhaps denominate the earlier as the *Cryptozoic* and the latter as the *Phenozoic* Eon, unless more descriptive terms have already been suggested. Hence the above quotations would read:

> . . . the high degree of evolution and specialization seen in the invertebrate fossils at the very base of the Paleozoic was in itself a proof that Cryptozoic evolution occupied a period as long as or even longer than the Phenozoic."

> "The larger estimate of 80 million years on the theory that Cryptozoic sediments took as much time as Phenozoic."

Ambiguity, hyphenated hybrids and needless circumlocutions seem accordingly to be avoided.

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RUPTURED YOLK IN HENS AND PULLETS

SEVERE losses occur among chickens from a disease which sometimes results in the rupture of egg yolks in the abdominal cavity. Once established in a flock, the disease usually persists over a long period. In some flocks the death losses have amounted to more than 50 per cent. within a month.

In studies made on 87 flocks, *Pasteurella avicida* was recovered from 48 per cent. *Salmonella pullorum* and *Salmonella gallinarum* were found in a few cases.

Detailed studies were made on the pathogenicity of *Past. avicida* found in cultures and in tissues from field cases in eight flocks. Intramuscular and intraperitoneal injections of cultures and of yolk material from diseased birds caused death in from 18 hours to five days or longer. Infection sometimes occurred, following intranasal inoculation and when cultures were placed in drinking water. The introduction of cultures directly into the crop failed to produce infection. Lesions typical for the disease were produced in experimental birds and cultures of *Past. avicida* were recovered from most of the birds injected.

Post-mortem examinations of field cases and of experimental birds revealed the lesions usually described for fowl cholera. In addition to these lesions,

[1] See Gregory and Barrett, *Jour. Geol.*, 35: pp. 747–742.

[2] "Origin and Evolution of Life," 1930, p. 28.