TEN O'CLOCK MARKS[1]

SOME fifteen years ago while engaged in the reconnaissance survey of western Texas and southeastern New Mexico leading to a search for suitable potash core-drill sites, the writer while examining the terrain became conscious of a faint linear arrangement of patches of light sandy-loam soil which appeared on clear winter mornings following a frosty night. The peculiar lumpy condition of the soil was plainly due to frost action, but the origin of the faint-grained pattern superimposed upon this matte of raised soil was less certain.

The pattern once noticed is easily recognized elsewhere. It appears as a series of parallel straight lines as if the surface had been raked into small ridges and furrows about an inch or more from crest to crest and three-eighths to three-quarter inch deep. Wherever these striated surfaces were seen, the lines always pointed in a southeasterly direction which accords with the position of the sun at about ten o'clock on a winter morning in the vicinity of latitude North 30°. This suggested that some action of the sun was the cause of the pattern and as it had been seen always on ground sparsely covered by small bunch and buffalo grass, it was assumed the long, low-angle shadows cast by the grass had caused the differential melting of the frost in the soil. Consequently the subject was dismissed as of little importance until one day a year or two later I chanced to see a wide spread of frost-lifted loam with well-developed striae out in the middle of a broad playa, far removed from anything that could possibly cast a shadow. All the striae were oriented in line with the position of the sun in mid-morning. It was plain that two events had occurred between nightfall and late morning to change a previously smooth sandy-loam surface into this roughened and striated condition. Patches of ground containing a proper amount of moisture had frozen during the night raising lumps of soil above the level of the flat and in the morning the warmth of the sun in drawing the frost had caused a differential collapse of the raised material. The thawing and collapse on an exposed surface occurs at a critical moment and all within a few minutes of time. To one's imagination it appears as if streams of quanta had bombarded the supports from beneath rows of pedestalled soil but left other rows untouched.

Where moisture is supplied from beneath the surface and not from the atmosphere during a night of freezing temperature, frost-lift of soil is a common occurrence. It is most conspicuous in the southeastern states where saturated sandy soils oozing water during a night of freezing temperature grow carpets of slim, columnar, ice crystals which carry up with them the overlying surface material. When the ice on a level surface melts, the soil and debris fall back into place without giving suggestion of a regular or linear pattern. On a sloping surface the material drops down grade, thus serving the process of soil creep.

One winter, some years later, I came upon a smooth northwesterly-facing embankment with a four-foot radius of curvature. It was covered with frost-striae, but the lines did not have a constant direction. It was evident that this surface became progressively exposed to the sun from the upper to the lower part of the slope and that during this period of advancing exposure, the sun had moved through a wide arc to the west. Thus tangents to the curved striae were found to point in the direction of the sun at the time of initial exposure. This example gives further emphasis to the strange relation that the sun's rays have to these striae.

In all previous cases the effect was produced by the morning sun that by about ten o'clock on a winter day had warmed the air and the ground sufficiently to melt the frost. Those seen on the curved surface were formed in the afternoon. To produce and preserve these striae required an evenly balanced temperature throughout the day, one in which the air near the ground remained slightly below freezing in the shade but was raised slightly above freezing in the direct rays of the sun. The pattern progressively developed as the frozen surface emerged from the shadow.

This spring I happened to see straight striae on snow in Washington. The surface was dirty, but no relation existed between the arrangement of the dirt and the course of the striae. Their trend was also toward the position of the late morning sun. Foreign material, especially dark rock fragments, often make conical holes in ice and snow which point to the sun, but there seem to be few parallel examples of ablation effects[2] to serve as an explanation as to how these ten o'clock marks are formed. That these striae are repetitional realities is certain, for they have served the writer as a compass on overcast days, when the marks will persist a day or two under favorable conditions. The solution of the problem of their origin requires more detailed observation than it was possible for the writer to give to them in the fulfilment of his other duties.

WALTER B. LANG

[1] Published by permission of the Director, Geological Survey, U. S. Department of the Interior.

THE DEANE COLLECTION OF PORTRAITS OF ORNITHOLOGISTS—THE DEVELOPMENT OF AN IDEA

RUTHVEN DEANE was a retired business man of

[2] C. K. Wentworth, *Am. Jour. Science*, 238: 2, 112–116, February, 1940.

Chicago, a founder, fellow and one of the best-known early members of the American Ornithologists' Union. He was essentially a social individual, made friends readily and retained them indefinitely, a tireless letter writer, anxious to meet his correspondents and inquisitive as to their activities. It was not enough for him to know his confrères, their ornithological proclivities and accomplishments, he wanted to know how they looked. As a hobby he began collecting photographs of bird men—likenesses he called them—of ornithologists he had met, with whom he had corresponded or of whom he had heard. His album included photographs large and small, wood cuts, lithographs, half tones and steel engravings, in fact, any form of portrait reproduction. In order to keep his collection within reasonable bounds and at the same time have a goal, he limited his activities chiefly to the more permanent membership of the American Ornithologists' Union, including the fellows, foreign fellows and full members. Each "likeness" was carefully labeled, entered in a catalogue and filed away where it could be consulted when wanted.

This collection was modeled after another brought together by Dr. Paul Leverkuhn of Sofia, Bulgaria, librarian and private secretary of H. R. H. Prince Ferdinand. After the death of Dr. Leverkuhn his collection, then the largest of its kind in the world, was sold and dispersed. As shown by a list published in the *Proceedings of the World Congress of Ornithology* in 1896, it contained 387 subjects and a total of 515 items.

Deane, after working on his hobby for nearly half a century, found that his collection was growing rather unwieldy for the limited space available in his apartment and began to make plans for its future care and development. Several libraries were anxious to acquire it, but he insisted that it must be fully indexed so as to identify and "bring out" each individual represented. With this condition attached, the largest libraries in Chicago, Boston, New York and Washington hesitated to accept it even as a gift. Finally after correspondence extending over a period of eight years, the Library of Congress found a way to comply with the conditions, and in January, 1934, two months before his death, Deane's collection was delivered to the Library of Congress.

On arrival it was placed in the Division of Fine Arts, immediately accessioned and found to contain about 1,000 subjects, or nearly two and a half times as many as were represented in the Leverkuhn collection. Each portrait was given a number and placed in a standard sized envelope on which was marked the full name of the individual and the years of his birth and death. The envelopes were then filed in vertical steel cases and the large portraits and steel engravings placed in suitable portfolios. A special index card was prepared with spaces for full name, date and place of birth, date and place of death, position, title of one or more publications and reference to a published biography, if any, degrees and any miscellaneous information. From five to eight items were called for on each card requiring in a collection of 1,000 individuals from 5,000 to 8,000 items of information.

Ten years have passed since the Deane collection was transferred to the Library of Congress and transformed from a private collection to an integral part of a great national collection of portraits. During these years several notable contributions have been received, but these contributions have added to the series of photographs rather than to the number of individuals. The American Ornithologists' Union has elected a number of new fellows and members. Some of the old members have died, many new biographical sketches have been published and much biographical data formerly inaccessible are now available. All these changes require additions to the index cards. Comparison of the index with the recent membership lists of the Union indicate that about 200 photographs are now needed to bring the collection up to date.

Examination of the list of the former Leverkuhn collection shows that about 335 portraits in that collection are not represented in the Deane collection. As most of the portraits in the former collection were published, it is possible to obtain copies of them provided the place of publication can be found. Many of these have been located in the hope of obtaining copies and thus practically restoring the Leverkuhn collection, dispersed nearly forty years ago.

Bearing in mind the fact that the nucleus of the Deane collection was based on part of the membership of the American Ornithologists' Union, the expansion of the collection in conformity with its present national character is being planned in certain directions but still within the limits of the activities of the Union. The first step proposed is to include portraits of persons who have described birds, or in whose honor birds have been named, in the *Check List of North American Birds*. This should require the addition of perhaps 200 more names. Another step is to develop a feature which Deane had in mind but in which he had made only a beginning—namely, to bring out the background of ornithological work by including views showing the homes where ornithologists lived, the museums where they worked and where collections of birds are preserved, the more notable localities where collections were made and the leaders of expeditions on which ornithological specimens were collected.

The Deane collection is only one of a number of similar collections of portraits of scientific men which

exist in various parts of the country. The Brasch collection of 2,000 mathematicians and astronomers now in the library of Stanford University, the Howard collection of 3,000 entomologists in the Bureau of Entomology in the U. S. Department of Agriculture, the National Museum collection of some 10,000 prominent men and a similar collection of some 50,000 portraits in the library of the Wisconsin Historical Society at Madison give some idea of the character and scope of a few of these collections. But the Deane collection differs from all the others in several notable respects. The Howard collection is accompanied by a card index of names but without further data. The National Museum series is provided with a typewritten list of names also without further data. Each of these collections may contain two or three pictures of an individual, whereas the Deane collection has 15 to 18 of some men. Finally, the accompanying index card shows at a glance the essential facts regarding each individual—his age, birthplace, position, publications and a reference to his biography.

A similar collection in a university or historical library in each state, based on the activities of local workers, would make available a vast amount of information concerning the progress of science and industry that is now more or less inaccessible.

Ruthven Deane builded better than he realized. His desire to know what his confrères looked like developed into a hobby. His desire to know something about each individual developed into the museum concept of making a portrait illustrate a label or index card, and finally his long search for a suitable depository for his life work resulted in the development of his hobby into a national collection, a model of its kind, devoted to the diffusion of knowledge and accessible to all who may be interested in it.

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SCIENTIFIC BOOKS

ALLERGY

Allergy, Anaphylaxis, and Immunotherapy. By BRET RATNER, M.D. Baltimore: Williams and Wilkins Co., 1943. 864 pp. $8.50.

THIS book has a misleading title. Knowing that Ratner has long been concerned with problems of allergy, the reader will be considerably surprised that the index does not mention ragweed, or pollen, or even hayfever. The subtitle is more clearly descriptive: "A treatise presenting the fundamental principles and practice governing the use of antisera, vaccines, toxoids, blood transfusions, blood substitutes and sulfonamides, in the prevention and treatment of infectious diseases and of the allergic phenomena resulting from their use."

As the author frankly intimates in his prefatory remarks the book really represents "The Education of Bret Ratner" acquired as a preliminary to the writing of a text on allergy in childhood. It appears to me that the projected volume will probably be more unified than the present one, which is essentially made up of three books bound together.

I. *Principles and practice of immunotherapy:* 157 pages dealing with the nature and preparation of various materials used in the diagnosis, prevention, and treatment of infectious diseases (including 50 pages on the sulfonamides); 218 pages on the application of these materials to the control of about 40 diseases. The chapter-headings in this section are arranged alphabetically, which results in some strange and illogical bedfellows—xix, Meningitis, Mumps, Plague. xxv. Scarlet Fever, Syphilis.

This Book I is distinctly inferior to the remainder of the volume. It is a rather tiresome compilation of the author's readings rather than his doings and is burdened with trivial and irrelevant details—"wearing of heavy leather puttees . . . gauntlets . . . tourniquets"—for the prevention and treatment of snakebite, are recommendations that seem out of place in a book of this kind.

Books II and III, *Allergy to Immunotherapeutic Agents* (sera, blood, drugs) and *The Allergic State* (physiological pathology, blood changes, mechanism) reflect Ratner's experience and critical thinking. The presentation, therefore, is much more effective than in Book I. The discussion of allergy to serum is particularly extensive and detailed; it should be carefully examined by all students of the subject although many readers will have some dissenting opinion. Had this section, perhaps with some expansion, been presented as a monograph the contribution to medical literature would have been more clear-cut than is the book as a whole.

The full bibliography (55 pages) is a valuable feature, especially because it is arranged alphabetically by authors' names. As are many others, the reviewer is exasperated by the footnote-style of citation with its repetitious and virtually useless *loc. cits* and *ibids.*

The index, however, merits little praise. There are many examples of such entries as "Diphtheria, prophylaxis. *See* active immunization." "Diphtheria, Schick test. *See* Schick test." "Dog anaphylaxis. *See* Canine anaphylaxis." "Electrocardiographic changes. *See* under Allergy." Most cross-references