man. It was secured by a farmer, who presented it to the university museum through Dr. A. H. Van Vleet. Its skeleton has been preserved, and a life-like model, full size, was made and is now in the university museum. The specimen was a female, slightly over four and one half feet in length from tip to tip. It had been seen in the locality where taken, by a number of persons at various times for at least three years previous to its capture.

There is no record nor tradition of an alligator ever having escaped or been liberated (or even held captive) in this vicinity, and it is quite unlikely that such a thing could have occurred in what was formerly the Indian Territory. It seems altogether probable, therefore, that this individual had traveled up the Arkansas River to the mouth of the Canadian, and thence up the latter to the vicinity of Norman, some three hundred and fifty to four hundred miles west of the Arkansas-Oklahoma state line. The Canadian River is not a navigable stream and for most of the year is only a small meandering creek in a wide valley well filled up with sand. It is subject to numerous freshets, and frequently changes its course, so that "lakes" or bayous are numerous. The larger of such bayous apparently would make an admirable habitat for this species.

It is useless to speculate on the causes which impelled this individual to make such a journey, but it is important that it was apparently successfully maintaining its existence in its new station until man's interference put an end to one of nature's experiments.

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Norman, Okla.,
November 26, 1909

QUOTATIONS

PRESIDENT SCHURMAN AND THE FUTURE OF CORNELL UNIVERSITY

President Schurman is determined to put every department of Cornell University under the control of the Legislature at Albany. He has hinted such a purpose in the past, and now he makes it clear. The first title in his report to the Board of Trustees is "State Support and Control of the University." Under this heading the president indicates that he would welcome state control and shows how it may easily be brought about; he does not explain how state *support* may also be obtained, but leaves it to be inferred that he thinks the state will inevitably support what it controls.

The president has done well to bring this question into the open. The alumni of the university are entitled to a voice in deciding so vital a matter of policy. Will they be found to favor the president's plan? We think not. But if they are opposed to it they must make themselves heard, or the president will unquestionably take their silence for consent. The alumni have representatives on the Board of Trustees whose opinion they, presumably, can sway, but this question is too important to be debated and decided behind closed doors. It should be discussed in the open. There are difficulties and dangers in the university's path if it follows President Schurman on his road to Albany. Are there substantial rewards at the end of the journey? The university will hope to make the state its benefactor. But will it not put behind it for all time the hope of any substantial benefactions from private sources? Which road shall we take? This paper hopes to have an opportunity to print some opinions on the subject.—*Cornell Alumni News.*

SCIENTIFIC BOOKS

Life Histories of Northern Animals: An Account of the Mammals of Manitoba. By Ernest Thompson Seton, Naturalist to the Government of Manitoba. With 68 maps and 560 drawings by the author. New York, Charles Scribner's Sons. 1909. Two volumes, royal 8vo. Vol. I., Grass-eaters, pp. i–xxx, 1–673, pll. i–xlvi, text illust. 1–182 and maps 1–38. Vol. II., Flesh-eaters, pp. i–xii, 675–1267, pll. xlvii–c, text illust. 183–267 and maps 39–68. $18 net per set.

The secondary title of Mr. Seton's great work, "An Account of the Mammals of Manitoba," more definitely expresses its scope and character than the leading title, "Life Histor-

ies of Northern Animals," for the work deals almost exclusively with the mammals of Manitoba with such reference to those of North America at large as is required in the full treatment of species which in most instances have a wide North American range. Although the author has spent many years in Manitoba, and is thus an authority from first-hand knowledge on the mammals of this province, his studies of the species in life have been made in large part at localities remote from Manitoba—from the eastern United States, Colorado, New Mexico, Wyoming and California northward to Great Slave Lake. This is, of course, as it should be—an intimate acquaintance with the species of a local area supplemented by studies of the same species in their wider distribution. His life histories of the mammals of Manitoba are thus their life histories as species, with special reference to their representation in Manitoba.

The present work is notable in many ways, some thirteen hundred pages, one hundred plates, two hundred and sixty-seven text illustrations[1] and sixty-eight maps being employed to elucidate the history of sixty species. Each history may be characterized as an elaborate monograph of the habits and distribution of the species to which it relates. Technicalities are reduced to a minimum, and are introduced only so far as to give the current technical name of the species and its systematic relations; the descriptions are brief but accurately diagnostic, and, with the profuse illustrations, are sufficient for the identification of the species and to show its external characteristics.

Mr. Seton has long been known to those who have kept in touch with his work as an ardent and painstaking student of animal life, and also as a natural history draughtsman of rare ability. His fitness for the task here undertaken is thus evident alike in the text and in the illustrations.

A few words from the author's preface and introduction will serve to present his viewpoint and aim in preparing the work. He says:

> This aims to be a book of popular Natural History on a strictly scientific basis. . . . Although I have limited the scope to the 60 species found in Manitoba, this takes in all the large land mammals of the United States, except about a dozen, including five of the big game. Having followed these 60 into all parts of their ranges, I have virtually included the Continent from Labrador to California. . . . Thirty years of personal observations are herein set forth; every known fact bearing on the habits of these animals has, so far as possible, been presented, and everything in my power has been done to make this a serious, painstaking, loving attempt to penetrate the intimate side of the animals' lives—the side that has so long been overlooked, because until lately we have persistently regarded wild things as mere living targets and have seen in them nothing but savage or timorous creatures, killing, or escaping being killed, quite forgetting that they have their homes, their mates, their problems and their sorrows—in short, a home-life that is their real life, and very often much larger and more important than that of which our hostile standpoint has given us such fleeting glimpses. . . . My theme is *the living animal*. . . .
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> No one who believes in Evolution can doubt that man's mind, as well as his body, had its origin in the animals below him. Otherwise expressed, we may say that: Just as surely as we find among the wild animals the germs or beginnings of man's material make-up, so surely may we find there also the foundations and possibilities of what he has attained to in the world of mind. This thought lends new interest to the doings of animals in their home-life, and I have sought among these our lesser brethren for evidence of it—in the rudiments of speech, sign-language, musical sense, esthetics, amusements, home-making, social system, sanitation, wed-law, morals, personal and territorial property law, etc. . . . As much as possible I have kept my theories apart from my facts, in order that the reader may judge the former for himself.

In the introduction he further unfolds the plan of treatment, and states that each animal is considered "under some thirty different heads" or sections, but in very few cases are they all employed in connection with any one animal, their absence indicating that nothing is known respecting these particular points. Among those most commonly employed are:

[1] As numbered, but in many cases half a dozen or more figures are included under one number.

tracks, speed, mind, environment, range, migrations, numbers, food, property, storage habit, sociability, means of communication, senses, amusements, nesting, homes, sanitation, training of the young, morality, enemies and disease, odd partnerships, commensalism, etc. These subtitles appear as side-headings in the text under the species, having been first defined and explained in the introduction.

To speak more in detail, the introduction is one of the most important parts of the book, beginning as it does with a Sketch of the Physical Features of Manitoba (pp. 1–11), followed by a section on The Faunal Areas and Life Zones of Canada (pp. 11–22), and a statement of the General Plan of Treatment for Each Species (pp. 22–34). Under the first section, treating of the geology and physical features, a map illustrates the distribution of the deciduous and coniferous forests, the sandhills and marshes of the province. The section devoted to faunal areas is illustrated by a faunal map of North America, excluding the tropics, the continent being divided into three primary regions, arctic, temperate and tropical, and these again into smaller areas designated as faunas and subfaunas. The lines of division are mainly in accord with those recognized by other recent authorities, corrected in certain details by the author's own researches, and with several new minor subdivisions. A diagram on page 21 shows the relationships of the zones and faunas of the temperate region, shaded to indicate the relative amount of rainfall in each. His two primary boundary lines, separating the temperate region respectively from the arctic and tropical, are the Arctic Circle and the Tropic of Cancer, the first being, roughly, the southern limit of perpetual frost in ground exposed to the direct rays of the sun, the other the line where frost ceases.

Under Plan of Treatment, each subtitle of the life history of a species is concisely defined. It is here said: "The environment is the creator of the animal, the mold in which each species was cast"—of course in the ultimate sense. "The range of the animal," he adds, "is part of its environment, and long ago I came to the conclusion that every animal is changing its range." That such is the case in Manitoba, with respect to several species, he brings forward indubitable evidence. Mr. Seton first became a resident of Manitoba in 1882, at which date certain species were entirely absent from the province which have since not only entered it, some from the southeast and some from the southwest, but have possessed themselves of considerable portions of its southern border. These are species which for the most part find in the opening up of new areas to agriculture favorable changes in environment.

The amount of space given to the different species varies in accordance with their importance and interest, or, perhaps more correctly, with the amount of information available respecting them. Thus some of the smaller rodents have as much space given to them as is given to the elk or wapiti, while still more is naturally given to the beaver. As an illustration of the method and fulness of treatment, the wapiti and pocket gopher may be cited. The account of the former occupies 30 pages, with a full-page plate of the animal, a full-page map showing its distribution and three full pages of figures illustrating the antlers (24 figures). The text gives first its names (English vernacular, technical, French Canadian and Indian); its family, generic and specific characters (the latter including measurements, weight, color); a list of the forms (subspecies) now recognized; a history of its early discovery and its early names, followed by the "life history," under the subheadings range, ancient numbers (estimated at 10,000,000), dwindling, in Manitoba, present number (estimated at 45,650 in 1907), signs, tracks (illustrated), wallows, dance, mating, antlers, record heads, the war-cry, pugnacity, the battle, the finish.

In the case of the pocket gopher, a full-page plate is given of the animal (life-size), a full-page map showing the range of the gopher family and a small map of the range of the northern pocket gopher in Manitoba; sketches of the fore and hind feet; life studies of the animal, showing numerous poses and attitudes in burrowing; a full-page and several other smaller diagrams of its burrows and tunnels under the snow, and others showing the fre-

quency of its mounds on given areas. The text and drawings are based partly on allied species inhabiting Colorado and California. Several pages of the text are devoted to its utility in making loam, and incidentally to showing the fallacy of Darwin's assumption that earthworms are found throughout the world, and are the chief agency in soil formation. Although in vast regions of the interior of North America there exists a stratum of humus, sometimes several feet in thickness, "earthworms are not native to any part of America south of the Great Slave Lake or west of the immediate Mississippi Valley," execept where they have been introduced.

This detailed, topical method of treatment is followed throughout the book, the illustrations varying with the character of the species treated, and include details of structure, poses of the animal, plans of runways, tracks, burrows, excrement (scatology), means of defense, etc.

The illustrations are usually the author's own, from sketches from life or from nature, the exceptions being usually skulls, which are mainly copied (with acknowledgments) from technical papers issued by the Biological Survey. The maps are the result of careful research, the ranges being compiled from the literature of the subject plus the author's personal information, the actual places of known capture being often indicated by dots within an admittedly hypothetical outline of the supposed range.

The author sticks closely to his text—the habits of the animals—to the exclusion of hunting stories and incidents of travel. Although the work is so voluminous the style is graphic and concise; the matter is pertinent and well stated, and there is no padding. There are some quotations from previous authors, some previously unpublished information from correspondents, credit for facts and data, published or unpublished, being bounteously given, but the great bulk of the matter is a record of the author's own observations and field explorations, carried on for a long series of years and over a wide range of country. As a contribution to the life histories of North American mammals it is without a rival, and beyond comparison the best work of its kind that has ever been written. Indeed, it is safe to say that nothing having the same scope and detail, either in text or illustrations, has ever before been attempted. These two ponderous volumes are a monument to the author's persistence and zeal through many long years of affectionate search for knowledge of the habits and intimate home life of our American mammals, to which the publishers have contributed a setting worthy of the subject.

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The Green Bug and its Natural Enemies. By Professor S. J. HUNTER. Bulletin of the University of Kansas, Vol. IX., No. 2.

This, the most voluminous study of the parasitism of a plant louse thus far reported, is worthy of careful attention. The rapid spread of the recently imported *Toxoptera graminum* from Europe is well presented and the illustrations of the structure of this and the related native species are quite satisfactory. The most useful parts of the work are the elaborate breeding experiments both on the plant louse and on its most abundant parasite *Lysiphlebus tritici.* Indeed, the publication affords the best data we have at hand for the discussion of the question of the efficiency of parasites. Not a little of the work is devoted to a defense of the author's claims as to the results of an aggressive campaign in which he distributed nearly 9,000 boxes of these parasites.

The author is very thoroughly convinced that the parasites were effective, saying (p. 8): "That this parasite not only controlled, but in many cases practically exterminated, the green bug last season, no one questions," and (p. 24): "Professor Glenn on the basis of twenty-five fold increase estimates that one female parasite placed with 2,000 adult green bugs just beginning to reproduce would exterminate them in twenty-five days, and one female with 10,000 such adults would exterminate them in thirty days."