

retreat of the Eskimos from Asia was perhaps correlative with their occupation of Greenland; that the Arctic villages left by the Eskimos to the maritime Chukchi were compensated for by the new Greenland settlements, including those captured from the Norsemen.

Here Bogoras seems to overlook or minimize the importance of recent discoveries in northeastern America and to allow too little time for the growth of the various Eskimo cultures in the eastern Arctic. It is highly improbable that the Eskimos inland from Hudson Bay, who never hunt sea mammals or visit the sea except to trade, migrated from Alaska within the last 800 or 1000 years and abandoned their ancient culture in favor of a new and more primitive mode of life. Again, the old Thule culture of Hudson Bay and northwest Greenland, whatever its place of origin, was certainly well established in those regions before the Icelandic discovery of Greenland. It is fairly certain, too, that the Skraelings, whom the old Norsemen encountered in "Vinland," were Eskimos, and it is hard to believe that they could have traveled so far from Bering Strait in one or two centuries. Finally the Eskimo settlements in the Arctic are so scattered and extend over so vast a stretch of coast line that even a violent disturbance of the population on the Asiatic shore could hardly cause, except very remotely and then only after the lapse of many centuries, so great a movement in northeastern America as the migrations to Greenland.

D. JENNESS

EXPLORATION IN ARABIA

R. E. CHEESMAN. *In Unknown Arabia*. xx and 447 pp.; maps, ills., index. Macmillan & Co., London, 1926. 25s. 10 x 6½ inches.

Well within the margin of the great desert of southern Arabia lies the oasis of Jabrin. Although mentioned by medieval Arabic geographers and shown on many modern maps as a broad well-watered wadi running eastward to the Persian Gulf, Jabrin before 1924 "had been denied to European eyes, and had been seen even by very few Arabs. Its palm groves had been surrounded by a veil of mystery and many were the tales of wonder and magic told by the superstitious badawin who graze their camels in the vicinity." Major Cheesman's journey has swept away the mystery. We know now that the well at Jabrin with "unlimited water at 40 feet" lies in latitude 23° 18' 6" N., longitude 48° 54' 10" E., and we also know that the Jabrin oasis, far from being a great, wide, fertile wadi, is a small tract of "neglected palm groves with bare limestone spaces and shallow water holes." A few Bedouins of the Āl Murra tribe dwell here in an "encampment of black and white wool-woven tents." Having come recently under the control of Ibn Sa'ūd, who is trying to foster in the nomads of his realm a taste for agriculture and more civilized ways of living, the Āl Murra at the time of Cheesman's visit were "attempting to grow a few small patches of young wheat," irrigating their meager fields by means of primitive water hoists operated by donkeys.

Major Cheesman came to Jabrin on a course running a little west of south from Hufūf through waterless sandy and gravelly plains fringing the dunes of the Jāfūra desert to the east. His journey, undertaken primarily for the purpose of collecting zoölogical specimens, was made possible by Ibn Sa'ūd. Before plunging into the unknown south, Cheesman was obliged to spend several months in the capital of Al-Hasa, during which he occupied himself in collecting specimens. His informal, humorous story of experiences in Hufūf gives an entertaining picture of everyday life in one of the largest and most prosperous settlements of Arabia.

Hufūf owes its prosperity to an abundant water supply. There are probably several hundred running springs in the Hasa oasis, many of them thermal. Use of the water for irrigation, as is almost universally the case in arid regions, is strictly controlled by the community. "When a man buys a garden he obtains a paper on

which his times for water are noted, and this paper is left with the Governor. . . . The system of control that has been evolved by custom has now developed into a marvelously complicated and efficient piece of machinery."

Besides writing of his journey to Jabrin Cheesman devotes a chapter to an expedition carried out in 1921. Hearing that there were ruins at Salwa, lying at the head of the shallow, narrow gulf separating the peninsula of Qatar from the mainland, he undertook a journey thither, in the course of which the first survey of the gulf of Salwa was made. The ruins proved disappointing, but Cheesman found a recompense for his disappointment in 1923 when he discovered an extensive field of ruins near 'Oqair, the port of Hufūf. There is strong reason to believe that these represent the remains of the great ancient emporium of Gerra.

In the zoölogical field Major Cheesman not only collected many specimens, including some of new species, but made not a few valuable observations on adaptations of animal life to the desert environment. Unlike Dr. P. A. Buxton (see *Geogr. Rev.*, Vol. 15, 1925, pp. 170-172), he is a believer in protective coloration: "I think the development of a colour as evidenced most clearly in a subspecies is the result of an influence which I will call the subspecific desire, operating through generations of that species, for that particular tone which will harmonize with its environment and render the wearer inconspicuous."

Owing to the fact that the desert is occasionally visited by fogs and that its surface is not infrequently covered with a heavy dew, Cheesman finds it difficult "to advance any theory as to whether the various species seen are able to exist entirely without water or not." Stories of camels going very long periods without drinking "are mostly derived from imaginative badawin by over-credulous travellers." The maximum period during which the camel can withstand thirst is probably not very much more than twelve days.

Cheesman points out that "the sands were the nomad's best grazing grounds and were not the lifeless wastes I had imagined" (see also the present number of the *Review*, pp. 205-206). "In the dune country the plants were larger and in far greater variety" than in the gravel plains, the reason for this being that "the sand has the power of absorbing and retaining dew and, of course, rain if it occurs, while the gravel has not."

THE COUNTESS MALMIGNATI. Through Inner Deserts to Medina. 188 pp.; map, ills. Philip Allan & Co., London, 1925. 10s. 6d. 9 x 6 inches.

The authoress professes to have made an extensive journey from Palmyra through the deserts of northern Arabia to Zilfi, thence to Medina, and thence returning by the Hejaz railway back to Damascus. Her book is illustrated with photographs and drawings.

She asserts that her trip was facilitated by "Sultan Al Tayar," Prince of the "Roalla" tribe; the head chief of the Rwala since 1906, however, has been An-Nûri eben Sha'lân. My young friend Sulţân âl Tayyâr, who is not a member of the Rwala but of a subdivision of the Weld 'Ali, camps almost the whole year round in the vicinity of 'Adhra, not far from Damascus, and never leads his tribesmen to central Arabia. The Rwala would never camp near Palmyra in June nor migrate in high summer in the unreasonable manner described by the authoress. The camping grounds of the 'Amârat are on the banks of the middle Euphrates, not east of Medina where she states she has met this tribe. Since 1842 there have been no *kaymākams*, or Turkish governors, in the settlements of Nejd, although the Countess Malmignati writes of having encountered one in every town there. The manners and customs of the Bedouins and settlers as she describes them are ridiculous.

The authoress does not mention the year of her expedition. In 1908-1909 and again in 1914-1915 the undersigned lived many months with the Rwala and Shammar

in the regions that the Countess pretends to have crossed. At the time of my sojourn in Arabia, however, she was unknown both in the desert and at Damascus. From 1916 to 1919 Medina was besieged, and it would have been impossible to enter it as she pretends to have done. Since 1919 the railway between Medina and Damascus has been in operation very seldom. It is not possible, therefore, to assign any date for the Countess's trip.

The photographs and sketches contradict the narrative. There are two photographs (at pages 46 and 68) both said to represent the rich merchant "Mahmoud Bassaam," who the Countess says accompanied her on her journey. The illustration at page 46, it is true, is a portrait of my friend Muhammad eben Bassām, a millionaire residing at as-Sāleḥijje—but he never accompanied any European into the inner deserts. The person in the illustration at page 68 is a different man, Dāūd an-Nebki, also an acquaintance of mine. The figure at page 62 according to the legend represents the author's tent and caravan at Palmyra. As all the camels in this photograph carry pack saddles and are lying before a peddler's tent and the huts with the mountains behind them resemble the huts of 'Adhra with the mountain chain overlooking it, I suspect that the camels are the same as those in the photograph at page 84 and that they represent pack camels carrying cotton from Dāūd an-Nebki's farm to Damascus and photographed at the mosque of 'Adhra. In the drawing at page 132 entitled "On the March" the Countess and her companions are riding on pack saddles! In this as well as in the figure at page 78 Prince Sultan and his horse riders are carrying *bunduqiyye* rifles, whereas in reality they would be ashamed to be seen with such antiquated weapons. The figure at page 142, said to represent Arabs from Zilfi, is a photograph taken near the Roman vault at 'Adhra; the tomb of the saint belongs in the field southwest of the village and not in the vicinity of Zilfi where the Wahhabites long since would have destroyed it. The figures at page 168 were taken in the vicinity of Sūq Wādi Barāda, west of Damascus, and have nothing to do with the village of Hanakiyah, east of Medina. Furthermore, no Bedouin woman would ever dress in the manner in which the authoress appears in the frontispiece.

These and many other details which might readily be cited show us that the book in part at least is palpably fictitious and that it is probably based wholly on observations made by the authoress in the immediate vicinity of Damascus supplemented by a none too ingenious imagination.

ALOIS MUSIL

THE GREAT BARRIER REEF OF AUSTRALIA

J. P. THOMSON AND CHARLES HEDLEY, edits. **Reports of the Great Barrier Reef Committee.** Vol. 1, xii and 175 pp.; maps, diagrs., ills., bibliogr., index. *Trans. Royal Geogr. Soc. of Australasia (Queensland)*, Vol. 1, 1924 (Special Ser.), 1925. 10s. 9½ x 6 inches.

At the suggestion of the Royal Geographical Society of Australasia, centered at Brisbane, Queensland, the scientific societies of the Commonwealth have organized a large committee "to investigate the origin, growth and natural resources of the Great Barrier Reef." With a length of about 1000 miles and an enclosed lagoon from 20 to 70 miles in width, the Great Barrier Reef is the largest coral reef in the world. At the time of writing a letter received from Sir Matthew Nathan, Hon. Chairman of Barrier Reef Committee, states that the boring through Oyster cay, some 20 miles from Cairns, has been carried down, largely through loose stuff, for 450 feet without the foundation rock being reached and is being continued.

The field of study has been wisely defined as including the Queensland coast as well as the reef and its lagoon. Charles Hedley of the Australian Museum at Sydney [whose death unfortunately occurred on Sept. 14 last] was appointed as full-time scientific director, and a new serial, the *Transactions of the Royal Geographical*

Society of Australasia (Queensland), established at Brisbane, to publish the results of investigation as they are reported. The first volume of the *Transactions* was issued in 1925 and contains 16 articles, mostly rather brief.

The leading article is "A Geological Reconnaissance in North Queensland" by Professor H. C. Richards, vice chairman and secretary of the committee, and Mr. Charles Hedley. It is not very penetrating with regard to the main problem, namely, the foundation of the barrier reef, which indeed can hardly be reached in a preliminary study. And in some respects the paper is unconvincing. Thus, the statement concerning two sandstone islands of gently anticlinal structure between the islands in the lagoon: "Consideration of the shore lines on both sides [of the channel] suggests that the sandstone mass has opened out or cracked roughly along the axis of the anticline, for the peninsulas on the one side fit into the bays on the other side. It would strike a lay observer that some unusual disruptive force had been in operation here. There would no doubt be a series of minor cracks at right angles to the main crack along the axis, and the disposition of the bays on either side of the channel are no doubt governed by these cross fractures." A lay observer would be a very poor adviser in such a problem; and it may surely be questioned whether cross cracks would account so well for the infitting of peninsulas and bays—an infitting which an outline map shows not to be very precise—so well as the drowning of a slightly sinuous anticlinal valley, eroded previous to the submergence.

A paper on "The Natural Destruction of a Coral Reef," by Hedley, records the effect of a heavy rain in 1922—55 inches were measured at a near-by station—in killing one of the shore fringes of which Saville Kent gives fine plates in his famous and magnificently illustrated work on the Great Barrier. A report by the same observer on the Townsville plain, apparently a worn-down area of weak rocks—"a readjustment to a new base level consequent on a large subsidence"—is in part more interrogative than affirmative: "What forecast is there whether the earth movements so energetically performed in the ante-penultimate cycle will continue, augment, decrease, or cease? It is suggested that these movements originate in the sinking of the floor of the Carpenter Deep. For its area this deep is already profound. If that depth has now reached equilibrium, a period of stability for the shore may be due. But if the Carpenter Deep shall continue to sink from great to greater depths, then the coast may be racked to correspond." An evident alternative is that then the coast may continue a very tranquil subsidence.

Lieutenant W. E. J. Paradise contributes a descriptive paper on the coral pinnacles that rise, tower-like, in the quiet lagoon waters back of the main reef; and in connection with this paper is the frontispiece, an airplane photograph of an isolated reef from a height of 10,000 feet; the reef and the shoal in its rear stand out with a white rim of surf foam from the black of the deeper water.

Several papers on the physiographic evolution of certain coastal areas are contributed by F. Jardine, science research scholar of the University of Sydney, in which various river changes appear to be well worked out; but the bearing of these changes on the origin of the Barrier Reef is not made clear; the effect of a small volcano of recent eruption in diverting the course of a river—truly, a good item, but only of local interest, and already described by Daneš 14 years ago—is given unnecessary prominence. A serviceable map of the coast, the lagoon, and the reef closes the volume.

W. M. DAVIS

CLIMATE OF QUATERNARY TIMES IN MEXICO

FRITZ JAEGER. *Forschungen über das diluviale Klima in Mexiko.* viii and 64 pp.; maps, diagrs., ills. *Petermanns Mitt. Ergänzungsheft No. 190*, 1926.

The Basin of Mexico and the region to the north were in Pliocene and Pleistocene time occupied by a large fresh-water lake. On Ixtaccihuatl the snow line lay at