Some Red Sea Ports in the Anglo-Egyptian Sudan
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of science. But, though we should seek for knowledge for knowledge's sake, in nearly all these cases, when the search is pursued in this spirit, some practical good will come from it to the human race. Dr. Hjort does not hold out much hopes to us that any of these deep-sea fishes will afford a supply of human food, although the prawns taken from several hundred feet deep were excellent eating. But there are many other ways in which practical benefits may be reaped, of which only one will I mention. Some time ago my friend Mr. R. K. Gray raised the question in conversation with me whether those currents in mid-ocean, which are due to tides, may not so put a vessel out of its course as to be the cause of some of the many serious accidents to shipping so often occurring. If this investigation of ocean currents should add even in a very small degree to the safety of the ships of all nations, its cost will be covered a hundredfold. It is, however, as men of science that we must mainly congratulate Dr. Hjort and Sir John Murray for the admirable work they have done on the *Michael Sars*.

Dr. HJORT: May I thank you, Mr. President, for the very kind words you have said of me, and every one who has spoken, for their friendly remarks about my work? It has been a very great pleasure for me to have had this co-operation with British scientific men. My Norwegian companions and myself were from the very first, when we came here in the beginning of April last year, as cordially received as colleagues as any men could be. We were most cordially received by our friends in Plymouth, and by the scientific men here in London, and kindly again when we arrived in Glasgow; after the cruise the Norwegian members of the expedition are very thankful for all the great kindness which has been shown to us. I should like especially to be allowed to say one special word, to thank Sir John Murray. It is one of the greatest pleasures of my life that Sir John Murray had such great confidence in me as to ask me to undertake this expedition. I do not know any one whose esteem is dearer to me than Sir John Murray, not only because of his great work in the *Challenger* expedition, which has been the foundation of all oceanography, and has been our study since we were young students, but also because of his great personality. I remember once that Sir John Murray, when asked to give his title, said, "Well, I am a student." I think that this is the highest title, the greatest and most noble title, which a man, even Sir John Murray, can have, and I think nobody has deserved it more than he has, and I think, as my friend Dr. Mill has remarked, that his participation in our expedition is a new proof of his great and energetic interest for the advancement of oceanography.

SOME RED SEA PORTS IN THE ANGLO-EGYPTIAN SUDAN.

By J. W. CROWFOOT, B.A.

I. INTRODUCTORY.

FROM the earliest time the priests of Egypt made offerings of incense on solemn feast days to fill the house of the God with fragrant savours, and the figure of a priest with outstretched censer is familiar to all who have visited Egyptian temples. So great a part did the offering of incense play in Egyptian ritual, that some have with the ancient scribes themselves seen in it a proof that these rites are to be traced to invaders or missionaries from the gum-bearing countries about Southern Arabia, "the glorious region of God's Land." The question of origins may be left on one side;

it is enough for us to register the fact that the supply of frankincense and myrrh for the divine service and other needs must have occupied traffickers long before the days of Queen Hatshepsut, perhaps even before the time of the First Dynasty.* The great journey blazoned on the walls of Deir el Bahri, and the other journeys mentioned on hieroglyphic inscriptions of various dates, represent only the official Egyptian side of this trade, and the Egyptians were but interlopers in a traffic which had existed for long centuries, and which then, as in later days, was oftenest in the hands of the dwellers in Southern Arabia. In this sea-borne traffic watering-stations were as indispensable as coaling-stations are to-day, and at convenient intervals along the shores of the Red sea the merchantmen of Himyar and Saba must have had their ports of call in which to replenish their stock of drinking-water and escape from ugly weather. But for the position and character of the ports we can argue only from the analogy of later days.

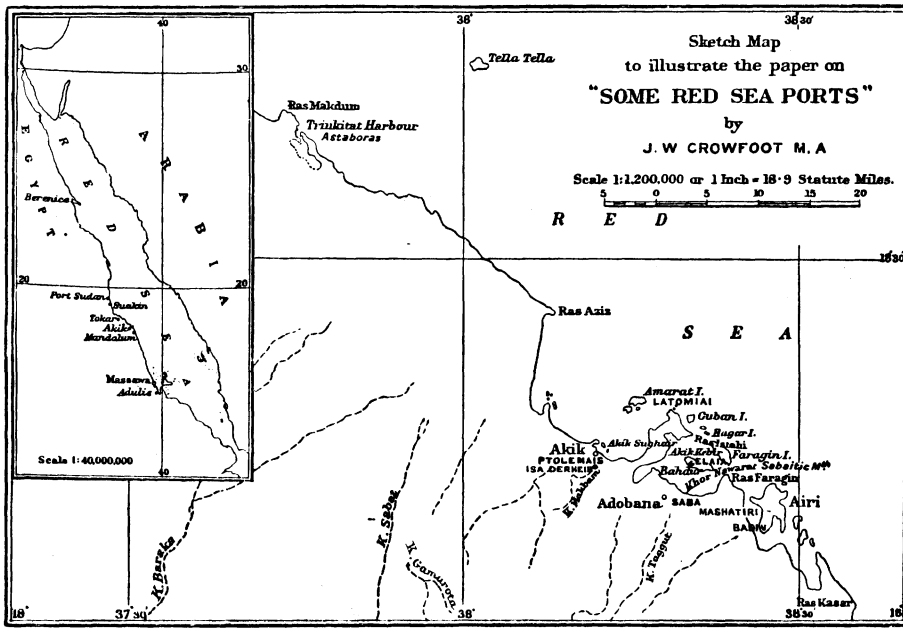
On the Red sea, as in the island of Meroe, the Greeks are the first articulate interpreters of the country, and two writers in particular, Agatharchides and Artemidorus, have a special claim to be remembered. Neither of the two was an explorer describing what he had seen with his own eyes, but both had access to the reports and commentaries of the travellers sent out by the earlier Ptolemies, and their works, which have reached us only in quotations preserved by Strabo, Diodorus, and Photius, enable us to get a clear idea of the character of voyages then made down the Red sea. Agatharchides writes like a rhetorician interested in the sentimental, or rather the sensational, side of human affairs, ever ready to draw moral conclusions pointed by picturesque description. The quotations which are directly attributed to Artemidorus are more businesslike: his book seems to have been simply a work of reference of the nature of a pilot's guide. A third Ptolemaic writer who deserves mention is the great geographer and mathematician Eratosthenes: according to Pliny, he established a station at Ptolemais in the Red sea from which to take scientific observations in his attempt to lay the true foundations of geography, and although Pliny's statement is probably inaccurate in detail, it is to the scientific methods of Eratosthenes and his school that we owe such certainties as we have.

This early Ptolemaic age reminds us curiously in many ways of the great European age of discoveries. We can feel, in the writings that have come down, that the Ptolemaic adventurers conceived themselves to be pioneers bursting into a new world of untold riches: they came upon traces of earlier adventurers, Egyptians and Sabæans, but these had left no clear record, and the scanty signs and legends of their passing only added new glamour to the quest. In their intercourse with the natives, the best and the worst features of the later European planters might be paralleled. The very objects of their enterprises carry our thoughts

* Compare Breasted, 'A History of Egypt,' p. 127, etc.

naturally to the El Dorados and Spice islands of the Portuguese and Spanish conquistadors. The Ptolemaic episode of the Red sea is, in fact, the first chapter of the book of European expansion in the tropics, and a beginning not unworthy of the sequel.

The gold-mines and precious stones of the islands and shores of the Red sea attracted the Macedonian travellers to the first stage of their journey of exploration. South of these they found another motive in the quest of elephants and ivory, and still further south they came to the aromatic gums of Somaliland. The Far Eastern trade with India and China remained still in the hands of Southern Arabians, or else reached Europe by the northern land routes. The section of the Red sea with



which we are specially concerned lay between the gold country and the gum country, and reached the zenith of its importance during the first century of Ptolemaic enterprise, say from 300 B.C. to 200 B.C. The Ptolemies of this period endeavoured to provide a new arm to their military forces in the shape of a squadron of trained elephants, and for this purpose sent expedition after expedition to the eastern shores of the Red sea to capture elephants alive. The whole of the western coast from Ptolemais southwards was thus studded with stations from which hunters went into the interior to chase elephants. These stations were generally named after the leaders of the expeditions, and Ptolemais, the most northerly of such bases, was distinguished from other cities of the same name by the words "Epi Theras" or "Theron." Ultimately, however, it was found that the African elephants were useless in war when opposed to the Indian,

and the difficulties attending their capture, embarkation, and transport, graphically described by Agatharchides, were so great that the trade soon languished away when it was deprived of state aid. The energies of the later Ptolemies were not equal to reviving enterprise in such remote parts, and most of the Macedonian names, with which the charts of the Red sea had been covered, survived only in the libraries of Alexandria.

The Romans are, of course, the heroes of the second chapter of European expansion in the Red sea, and a great change had come over the conditions of local trade before the beginning of the Roman hegemony. Strabo unfortunately quotes nothing in this region from contemporary eye-witnesses, such as the soldiers who gave him such a precious picture of the contemporary conditions of Meroe; but from the silence of Strabo and the brief references of other writers we can infer certainly a revival of Oriental or local prestige. The few non-Greek names noted by the earlier writers have outlasted both the departure of their chroniclers and the new names which the latter had sprinkled so liberally over the coast-line: other native or Oriental names, such as Adulis and Mandalum, appear upon the map. Ptolemais epi-Theras has sunk into a small trading-port, and the Greek merchants, who still come from the northern ports, are afraid to land upon the mainland and do their business from remoter island bases. Politically, Egypt had been for some time powerless and unable to protect Egyptian interests, and when it passed under Roman rule, the petty trader to Erythræan ports fared hardly better for some time.

The attitude of the Romans was entirely different from that of the Ptolemies. The shores of the Red sea had no great commercial importance in their eyes; they established no stations for the chase of elephants. The further Eastern trade, on the other hand, was a matter of vital moment, especially as the enmity of the Parthians barred the old land trade-routes. Hence the sacking of Aden, the discovery of the monsoons, the development of trade routes in Upper Egypt from the Nile to the Red sea, and the enormous dimensions which the Indian trade now rapidly assumed. Thus we find in Claudius Ptolemy, the professional geographer of this period, an accurate knowledge of the salient characteristics of the coast; the latitudes in which he fixed his various points were wrong, but the sequence of places is correct, and the brief descriptive names which he gives to outstanding natural features could hardly be bettered. But by reason of their preoccupation with the richer regions beyond, we do not find in the Roman writers nearly so much detail as in the work of the Ptolemaic pioneers who crept cautiously along the coast from anchorage to anchorage. The author of the Periplus, who sailed from Berenice to Ptolemais and thence to Adulis without noting any intermediate station, is characteristic: in curiosity, which is the mother of science, the Ptolemaic authorities stand unsurpassed.

The most valuable addition to our knowledge made by the Roman writers is the light thrown upon a local intermediate commerce which

arose, or continued, in complement to the great Indo-Egyptian trade. The author of the Periplus, who gives us these indications, was apparently a merchant engaged in the trade between India and Egypt, and his work has the value of an ancient consular report. Over and above the merchants who trafficked directly between Egypt and India, there were others who trafficked between Egypt and the Red sea ports on the one side, and between the latter and India on the other. At Ptolemais, he tells us, only tortoiseshell and ivory in small quantities could be found, but at Adulis there was a regular demand for Egyptian textiles both made up and in the piece, for Egyptian glass, copper, and iron utensils and weapons, for Syrian and Italian wine and oil, and for gold and silver plate for the king's use; and from India, Adulis imported also iron, blades, cotton, girdles, fur cloaks, fine muslins, and gumlacs. The exports consisted, according to this writer, only of ivory, tortoiseshell, and rhinoceros horn; but to these Pliny adds hippopotamus hides, monkeys, and slaves. It is curious to find no mention among the exports of gold or feathers or pearls; but even if this trade were of comparatively small dimensions, it is clear that the local conditions which made such a trade possible at all had changed very much since the time of the Ptolemies.

In the petty local trade which has just been described we can see the beginnings of the rise of the great kingdom of Axum, which reached its height some three or four centuries later at a time when Roman Egypt had fallen upon comparatively evil days. Proud buildings were raised in the capital, the rulers of Axum claimed dominion over both shores of the Red sea, and monuments of their influence occur, as we shall see, not only in the modern colony of Eritrea, but north as far as the ancient site of Ptolemais. The wealth and progress of the country is corroborated by stray inferences from Byzantine voyagers, diplomatic envoys, missionaries, pilgrims, and traders, but for further light we must wait until the sites in Abyssinia and Eritrea have been more thoroughly explored.

The material progress which had made such great strides under the *Pax Romana* and continued under the Abyssinians did not cease when the thalassocracy passed again to the Arabians. Islam was in no wise hostile to material culture, and the Southern Arabians, who had been famous merchants for centuries, did not forget their cunning when they changed their faith. The islands of the Red sea, which were used by the earlier Khalifas as penal stations, soon became centres of flourishing mercantile communities. Religious divisions brought the Red sea once more into prominence as a trade and pilgrim route between Egypt and Arabia, much as the hostilities between Rome and Parthia had done at the beginning of the first millennium. The Fatimid court in Egypt became the centre of what we may describe as an African concert of powers: princes from Nubia and Abyssinia and the Yemen met at the court of the heretic Khalifas. An account of the revenues of the kingdom of Zebid * in the year

* See 'Yaman: its Early Medieval History,' p. 8. By H. C. Kay. London: 1892.

366 A.H. (976 A.D.) illustrates the condition of things in the Red sea: it includes duties upon ships from India; contributions of musk, ambergris, camphor, sandalwood and china; taxes upon ambergris levied on the shores of Bab el-Mandab, Aden, and elsewhere; imposts on the pearl fisheries; tribute from Dahlak, including 1000 slaves, 500 Abyssinian and 500 Nubian female slaves, presents of the king of the Abyssinians on the further side of the sea. Archæological evidence of this glorious age will be found in the sequel, and evidence also of its passing; the triumph of orthodox Islam under Saladin, the weakening of Egypt under Mamluk rule, the raids of the Portuguese, the rise and decline of Turkish naval power,—these fill the later centuries, but add no new features to the history of our district.

This epitome of the history of our region will serve to show that, although the ports on the Red sea may have been used for thousands of years, they have no continuous history. The settlements on the sea-coast have always worn a foreign air: Suakin is inhabited to-day by a motley crowd of Jiddans, Yemenites, Hadramutians, Indians, and Abyssinians, whose interests are concerned with other Red sea ports or even with Aden, Bombay, and Mombasa almost more than with the mainland immediately behind them, which is held by nomads distinct in race and language and customs; and it was so also with the predecessors of Suakin. All our knowledge of their past is due to immigrants and traders from afar, who for a century or so lent them a transient significance and then disappeared, to be succeeded some two or three hundred years later by other foreigners of a different stock. Himyarites, Egyptians, Sabæans, Greeks, Romans, Axumites and Arabs have visited these shores, and each newcomer has brought with him a new list of names; you will ask an Arab pilot in vain for the sites of the mediæval ports of Aidab and Badi. If this be the case with town names, it is obvious that the "uncouth memorial names" of bays and headlands given by Ptolemy's admirals have as little chance of survival as the English names in the Admiralty charts and Pilot's Guide, and most of the Macedonian names had in fact been forgotten with the settlements themselves by the time of the Romans. In consequence, our various literary records and the latter-day names do not throw much light upon one another, and one of the great aids of archæologists in other countries fails us almost entirely.

A second consequence of the alien character of the successive settlements has been their continual tendency to shift in obedience to varying external conditions. In the last decade the chief port of the Sudan has been moved from Suakin to Port Sudan—Sheikh Barghut, because the latter harbour is more suited for the entrance of modern vessels. In Eritrea the chief port is now at Massowa, but in the early centuries of our era it was at Adulis, which is now, by the encroachment of the land, some miles from the sea-coast. A little before this, in the time of the Periplus, foreign merchants were afraid to anchor off the mainland because the natives were unfriendly and too powerful to be overawed: they were, in

fact, driven from one island called the island of Diodorus to another called Oreine, which was further from the shore.* But yet only three centuries before this the early Ptolemies had established their chief port on the mainland at a place called Berenice Sabæ, which has not yet been identified, but was somewhere north of a yet earlier centre of the Arabians called Sabæ, or Sabat, lying north of Adulis (Ptolemy). In this district, therefore, the centre of trade has moved at least five or six times in accordance with temporary external conditions.

Neither of these facts, however, constitutes so grave an obstacle to archæological work as do the natural conditions of the coast. The hills on the mainland consist of exceedingly hard crystalline rocks which do not lend themselves to decorative work. By the shore itself, on the other hand, there is abundance of soft coral rock, which is very easily cut but is also very perishable. In place, again, of the fine dry preservative air of the desert alongside of the Nile, we have a damp and often rainy climate which soon obliterates any distinctive mouldings on the soft coral stones. Modern Suakin, for example, wears a fine semblance of antiquity, but the appearance is due to the rapid weathering of the stones and is quite illusory; one of the oldest houses in the place was built less than sixty years ago, in 1269 A.H., and men still living can remember trees growing on the island, on which the Turkish fort was the only building of importance.

From all these considerations, it follows that we must not apply to attempts to identify ancient place-names on the Red sea coast canons of criticism which may be applicable elsewhere. We cannot hope to find corroborative inscriptions such as we look for in Egypt or in Asia Minor. After all, we are studying a series of settlements which existed for the practical needs of foreign traders, and which were not for the most part likely to be adorned with public buildings of sufficient magnificence to leave much trace behind. If we can set out in an intelligible order the list of names left us by our classical authorities and find sites which will agree with this order, we may not have accomplished very much, but we shall probably have accomplished all that is possible.

II. Ptolemais—Akik.

Little progress can be made with the historical geography of the Red sea coast until the site of Ptolemais is more or less settled, and the chief result of a preliminary journey of reconnaissance which I made in January, 1907, along the coast south of Tokar, was the conviction that the Admiralty authorities were wrong in identifying the ruins on the island of Airi (Er-rih) with Ptolemais, which must be looked for further to the north, in the neighbourhood, or on the actual site, of Akik. A second conviction which I carried away from this expedition was the necessity of exploring the coast by sea instead of from the shore: all the classical descriptions are based on the reports of travellers who journeyed by sea, and I felt sure that

* 'The Erythræan Sea,' by McCrindle, pp. 46, 47.

their descriptions would be less difficult to unravel when read as one coasted along in a bark such as the writers themselves might have used. After certain points have been thus fixed, a series of journeys into the interior will enable us to follow in detail the frequent digressions in Strabo's text, devoted to the description of tribes and hunting-grounds visited by the Ptolemaic explorers. The sections which follow deal with the small portion of this programme which I was able to carry out in the end of 1907.

Suakin was my starting-point, and with Strabo, Ptolemy, and the 'Red Sea Pilot' on board, I set sail in a large sambuk (dhow) which plies once a month between Suakin and Akik. Suakin itself is an old site; the name occurs in more than one mediæval writer, and according to the report of old inhabitants who can remember the building of the modern town, ancient cisterns underlie several of the present houses, and one said to contain pillars of brick was until late years exposed on the Hospital island. If, as seems probable, Port-Sudan—Sheikh Barghut is to be identified with Strabo's Port Soteira and Ptolemy's Port Theon Soteiron, Suakin will probably be the Port of Good Tidings (Limen Evangelias) mentioned by Ptolemy; but there has been so much building during the last few decades that no trace of classical work is likely to be found. Between Port Soteira and Ptolemais Strabo does not mention a single harbour, although there must have been a port near Suakin from which perhaps the temple of Isis to which he refers was founded. On our journey also we put into no port between Suakin and Akik. The shore became flat as soon as the mountains behind Suakin had faded out of sight, but they were long in fading, for the wind was against us, and though we left Suakin before daybreak, we were obliged to anchor for the first night off a reef still some way north of Trinkitat: this reef, which appeared to be nameless, or the island of Tella-Tella, which is further out to sea, may be the island mentioned by Strabo before reaching the mouth of the Astaboras at Trinkitat. On the second day the sea grew rougher, the wind remained in the same quarter, and in the afternoon our foresail fell down with a thud; the damage was soon repaired, but we were far from Ras Aziz at nightfall, and, as the coast was dangerous, our skipper determined to put out into the open sea, where at least there were no rocks. A tremendous storm of rain poured down a little after midnight, and drenched every person and everything in the boat, including my bedding and the firewood. On the third morning, however, the wind veered round, we sighted Ras Aziz about 8 a.m., reached Akik in another six hours, and again saw mountains close to the shore.

Ptolemais, the prime object of our quest, was founded by a certain Eumedes who was sent by Ptolemy Philadelphus to hunt for elephants, and it was consequently known as Ptolemais-epi-Theras, or Ptolemais Theron. Eumedes, according to Strabo,* enclosed without the knowledge of the inhabitants a kind of peninsula with a ditch and wall, and by his courteous address gained over those who were inclined to obstruct the

* P. 770.

work and made them friends instead of enemies. Thus the first and most northerly of the Macedonian hunting bases was founded upon the mainland, and friendly relations were established with the natives. Ptolemais soon became more than a hunting station. It became and remained for some centuries the principal port between Berenice and the present region of Massowa, and if any credence is to be given to Pliny,* which is doubtful, it was one of the geodetic stations used by Eratosthenes in his wonderful attempts to measure the circumference of the Earth.

In the first century A.D. it was visited by the writer of the Periplus, who describes it as being at that time a little trading town. "In this mart," he says, "is procured the true or marine tortoiseshell, and the land kind also, which, however, is scarce, of a white colour and smaller size. A little ivory is also sometimes obtainable, resembling that of Adouli. This place has no port, and is approachable only by boats." † With the references of Claudius Ptolemy in the second century of our era, the literary records of Ptolemais close, and the name appears to have been entirely forgotten.

The approximate position of Ptolemais has long been recognized, but it will be well to state the case for the proposed identification in full detail.

We know from Strabo that Ptolemais was south of the mouth of the Astaboras. By the Astaboras Strabo meant the Khor Baraka, which rises from a lake close to the lake from which the true Astaboras, the Atbara, comes. The Khor Baraka does still sometimes reach the sea at Trinkitat: an Arab told me that in the autumn of 1907, the flood came down in such volume that boatmen filled their water-jars out of the harbour in Trinkitat. Ptolemais was therefore south of Trinkitat, and cannot be identified, as Müller suggests, ‡ with Ras Makdum, which is the promontory north of Trinkitat.

Secondly, we know from Pliny § that Ptolemais was north of Lake Mandalum, and this place, like Berenice and Adulis, has fortunately preserved its name. It is thus described by the 'Red Sea and Gulf of Aden Pilot:' ‖ "Mandalum is 18 miles S.S.E. of Ras Kasar; there is at this place a very small bay between the points of the coast reef, where boats anchor. The shore hereabouts is low and swampy, but backed by high land, and a little within the beach is a salt plain where the Bedouins come down with their camels to procure that article." Lord Valentia notes at Mundalow, as he spells it, "protuberances which were either watch-towers in ruins or rocks." ¶ My pilot, who knew the name, told me the place was also called Herum.

We have, therefore, to look between Trinkitat and Mandalum for the site which best suits the other conditions posited by the ancient writers.

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* H. N., 6. c. 34. † 'The Erythræan Sea' (McCrindle), p. 44.
‡ 'Cl. Ptolemæi Geographia' (Paris), vol. 1, p. 756.
§ H. N., 6. 34. ‖ Edit. 1900, p. 176.
¶ 'Voyages and Travels of Lord Valentia,' vol. 2, p. 244. London: 1811.

Now, Akik is the first regular port of call south of Trinkitat ; it is the capital of the district and the seat of a Mamur, and therefore, in any case, fills the position once held by Ptolemais. It was occupied, moreover, throughout the middle ages, and is noted by Yakut (*s.v.*) as a place from which tamarinds and other things were exported ; the name, according to the same authority, meaning a place where a spate, or *seil*, comes down after the rains. If, therefore, we can show that it combines the other geographical conditions and also furnishes archæological evidence of its antiquity, we may claim to have made out a good case for the identification, though the geographical indications are, it must be admitted, scanty enough.

Near Ptolemais Pliny mentions a lake called Monoleus, and just north of Akik are large swamps or lagunes with which the lake may be identified. A more valuable indication comes from Strabo, who, directly after leaving Ptolemais, mentions six islands called Latomiai, or Quarries, between this and the Sabaitic mouth, which I hope to prove subsequently to be Khor Nowarat. Now, between Akik and the entrance to Khor Nowarat lie the islands and island groups called Akik Sughair, Amarat, Guban, and Hagar, and these islands are actually visited to this day by boats in search of lime and coral stone. The dangerous character of the coast to the north gives colour to the picture painted by Agatharchides of the perils of the elephant trade, and even though a little jetty has been built, ships cannot moor alongside of it, and Akik is, like Ptolemais in the time of the Periplus, an open road approachable only by small boats. Finally, I have found unmistakable evidence of Greco-Roman building materials close to Akik, and therefore urge that the identity of the two places is established with as much certainty as we have any right to expect in this region.

We may accordingly proceed to a detailed examination of Ptolemais-Akik without further misgiving.

As we drew near to Akik on the third morning after leaving Suakin, a lively argument was going on in the hold of the ship. "I ask pardon of God the most excellent of Creators," exclaimed a youth from Jidda, "but when the world was made and the vegetables were distributed He gave them to Taif and to Suakin and to Massowa, but Akik He left utterly destitute." "No," said a man of Akik, "here there are many sheep and much milk and semn." "The talk is of vegetables," retorted the Jiddan, and the champion of Akik was silenced. Akik is a barren spot, and the site would never have risen into any importance on a less inhospitable coast. The principal building is a two-storied fort of coral stone built by Sir Charles Holled-Smith : the ground floor serves as offices for the Mamur, and the upper floor as a rest-house. The huts of the natives are built along the shore, and are oblong in shape, with one story only and a pitched roof, made either of matchboarding or of thatch. I counted about a hundred of them. The natives themselves are mixed : there are several Arab families, mostly of Jiddan origin, and the remainder belong to the Beni

Aamer or kindred tribes. There is one shop of which my Jiddan fellow-traveller had charge; this shop serves as the café of the place, and the serious business seems to consist chiefly in the exchange of Arabian dates for semn, for which purpose several Suakin merchants keep representatives in Akik.

Behind the lines of huts an expanse of tolerably firm mud reaches back to a ridge that protects the town from the floodwaters of Khor Makbam. This ridge may conceivably have been an artificial embankment, but I dare not express a definite opinion on this point without some digging and much fuller information about the floods than I was able to collect. The most prominent feature on the ridge is a group of modern Muslim tombs, built of coral blocks neatly whitewashed: the top of each tomb usually contains two basins scooped out of the stone, a small one intended for incense and a larger one for water, but oftenest now filled by an aloe plant. A little north of these, near an opening in the bank, are traces of some older building, and further again to the north are the remains of a small structure built of coral blocks surrounding a plastered square, but there was no evidence to show the age or purpose of these works.

A second and much larger ridge rises about a mile and a half away in front of the mountains which fill the western horizon. To reach this we had to cross the bed of the river and a tract of country covered with a tangled growth of low vegetation, "amphibious weeds such as from Earth's embrace the salt ooze breeds." On the road we passed two small mounds which have been occupied at some time or other, as there is some coarse pottery lying about, but nothing on the surface to indicate any particular period. The ridge behind them, which was our goal, runs for more than a mile in a north-westerly direction, and is precisely the type of place which Orientals have from time immemorial chosen for a necropolis. Here alone are there remains which throw any clear light on the past history of the region.

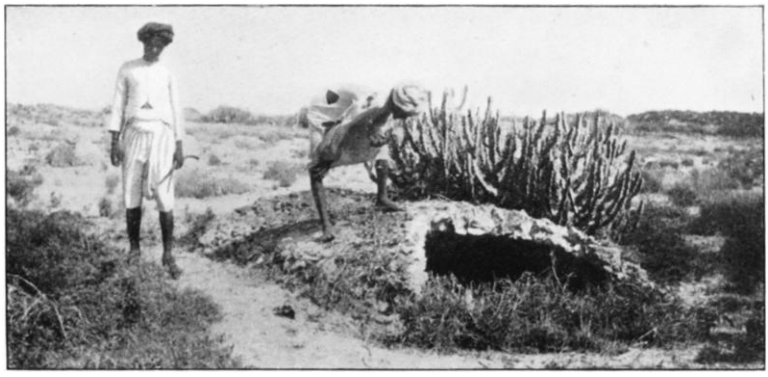
The natives call the ridge Isa Derheib, but inasmuch as the word Derheib means a building and Isa is presumably the common Arabic form of Jesus, there is not much to be deduced from the name. The whole ridge is covered with funeral monuments of very different types, and bearing witness, therefore, to the various vicissitudes of the place. Modern tombs of the type seen close to Akik are, however, entirely wanting, and the most recent tombs are the quartz-sprinkled graves of Beni Aamer nomads from the interior. Interspersed with these are regular tumuli, ring-graves of hard mountain stone, graves in which unhewn blocks of felsite are found side by side with squared coral blocks, and several structures of different kinds in which coral blocks only are used. The most cursory glance at these varied remains is enough to show that the place has been used as a necropolis for many centuries, that it was once used by a civilized folk who built with cut stones from the seashore, and has since passed into the occupancy of a succession of ruder tribes

from the mainland, and a few hours' examination enabled me to recognize among the remains of cut stone the handiwork of some known historical peoples or periods.

The most precious discovery was the stone represented in the first Plate; this had been recently half detached from a square step tomb (?), in which it had been built with the moulded face downwards. The mouldings on this block, the cyma, dentils, and fillet, clearly declare its classical origin, and all that we know of the past conditions of the country inclines us to refer it to the Hellenistic rather than to the Roman age: the shape of the block and the runnel upon the top show that it was designed to be part of the cornice of a building of some pretension. The stone measures 0·62 *m.* by 0·23 by 0·21, and the tomb (?) in which it was built is such a simple structure that we are justified in arguing that the materials of which it is made are not likely to have been carried from a great distance, especially as abundance of good coral stone may be found in the immediate neighbourhood. I purposely refrained from disturbing more of the stones which were still *in situ* than I could help, but several of those exposed showed masons' guiding lines, which proved that they too had been taken from some earlier building; and there are at the extreme north end of the ridge fragments of two columns, also of coral stone, which, though unfluted, may most probably be referred to the same date as the cornice block: the portion of a wall close to them may, on the other hand, be later. However, the existence of the cornice stone figured above is, I submit, decisive evidence of the existence of a classical building here, and in itself a well-nigh convincing proof, inasmuch as no similar evidence is forthcoming on any other site in the district, that Akik is to be identified with Ptolemais-epi-Theras.

During the eleven centuries which extend from the date of the geographer Claudius Ptolemæus to the date (A.D. 1224) when Yakut compiled his geographical dictionary, no reference is made to Ptolemais-Akik by any writers with whom I am acquainted, and we know that for about four centuries in the middle of this period, say from 650–1050 A.D., another port not 20 miles away to the south, called by the Arab writers Badi, sprang into some sort of fame. It seems, therefore, that for a time the site of Ptolemais-Akik was overshadowed by Badi, though it is highly improbable that it was altogether deserted. But during the centuries immediately before the rise of Badi, which correspond in part to the expansion of Axum, Ptolemais was brought under the influence of the new power: this appears to follow from the next group of remains on the ridge of Isa Derheib.

At the extreme south end of the ridge was a structure consisting of a low wall only 30 centimetres in breadth, enclosing a space roughly square and rendered with plaster, in the middle of which was a stepped building measuring just 3 metres square, of which only 2 steps remained. The outer measurements of the whole structure were 7·50 by 7·20 metres, and in the north-east corner of the enclosure wall a small flat-bottomed basin



ONE OF THE SMALLER DOMESTIC CISTERNS AT BADI.

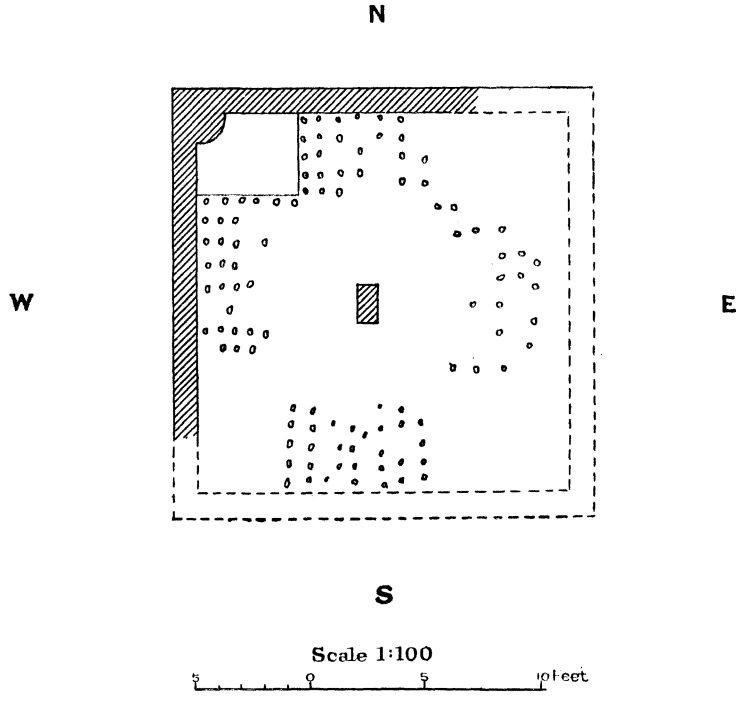
STELE SURROUNDED BY DWARF STELE, FOUND AT ISA DERHEIB.

SOME OF THE BUILDINGS AT ASSAREMA DERHEIB.

A BUILDING AT ASSAREMA DERHEIB, SHOWING ENTRANCE.

had been scooped out. All the stones used were coral blocks. Believing this to be a tomb, I determined to sink a shaft under the central erection, but after digging through a metre of foundation composed of pebbles and broken coral blocks I came to sand, and though I continued for another 2 metres until the sand began to be very wet, I found no trace of a burial whatever. I turned next to the structure from which the cornice block already described had been wrenched: this had been a square stepped building similar to the central portion of the first structure, but rather larger and with remains of three steps. Below the surface I found precisely the same conditions as in my first effort, and consequently was forced to the conclusion that, unless the body had been buried in the

Plan of Stele on Isa Derheib



destroyed topmost courses of these buildings, they could not have been meant for tombs at all, but must have been cenotaphs of some sort or altars or thrones: 6 or 7 other square monuments of the same type I left untouched.*

* This conclusion was perhaps too hurriedly reached in view of the tentative character of my excavation. I did not examine the ground round the buildings, and the bodies may conceivably have been buried in front or behind the central erection, as is sometimes the case in a cemetery of the Greco-Roman period at Chatby-les-Bains, near Alexandria, where the tombs are square stepped buildings, but on a smaller scale than ours.

Only a few steps from the first building I had examined was a great monolithic stele, standing 2·25 metres high in the centre of a square measuring 4·95 metres across, and enclosed like the step-monument by a single course of coral stone walling: the stele itself was of hard, unhewn mountain stone. Within the enclosed square the ground immediately round the stele was left bare for about 1·50 metres on each side, and at all the four corners there was a free space measuring about 1·50 metres square, carefully rendered over with plaster,* but the inter-spaces between these bare places were filled with rows of little stones, varying from 3 to 10 inches high, set up on end like dwarf monoliths and most irregularly placed. Further along the ridge there were the remains of three other somewhat similar arrangements. In two of these there were fragments of the central stele; in the third the surrounding wall, absent in the others, was perfect, so too the plaster for about a metre from each side, and the whole length on each side was studded with rows of little stones like skittles, but in the centre there was neither stele nor plaster, so here I sank a third pit, but with the same result as before. The number and grouping of the dwarf steles, to which I can find no parallel elsewhere, appear from the four examples on this site to be arbitrary; the large steles, on the other hand, are clearly to be compared with the well-known steles in Abyssinia at Axum and elsewhere. The stele represented on the previous page belongs to the first class, distinguished by the most recent explorers of Axum as "bruchflächig oder roh behauene,"† a class of which there are already about a hundred known in different places, and the plastered floor and the basin in the adjoining monument suggest, like the altar-basins in front of some of the steles at Axum (*ib.*, p. 19), that offerings of blood (?) were made here. Like those at Axum, again, these monuments lay outside the ancient town, and, although having no structural connection with any grave chambers, were almost certainly erected for the cultus of the dead. The step form also is thoroughly characteristic of Axumite buildings (*ib.*, pp. 22, 25), and although no small monuments of the Isa Derheib type are mentioned by Littmann and Krencker, other writers have noticed similar structures elsewhere on the Red sea coast. Salt,‡ for example, says that among the Danakil "the tombs were rudely constructed in the exact shape of pyramids, with stones cemented together with chunam, and some of these piles were entirely covered with the latter material, the base of one of them occupying a space of full 10 feet square;" and still further south on the coast of Somaliland, another traveller, M. G. Révoil, notes "tumuli in circles or like truncated pyramids or with monoliths at the end."§ The stele and the square step structure have therefore very wide connections,

* The plaster has disappeared more or less at all corners except the north-west.

† Littmann u. Krencker, 'Vorbericht der deutschen Aksumexpedition,' p. 13. Berlin: 1906.

‡ Salt, 'A Voyage to Abyssinia in the Years 1809–10,' p. 179. London: 1814.

§ Révoil, 'Notes d'Archéologie et d'Ethnographie,' p. 5. Paris: 1884.

and it is most fortunate that the discovery of a classical block built into one of the latter gives us a certain *terminus a quo*, while the subsequent rise of Badi and temporary disappearance of Ptolemais-Akik from literary records give us a very probable *terminus ante quem*. I suggest accordingly that the whole group is to be dated somewhere between the fourth and seventh centuries A.D., synchronizing, that is to say, with the domination of Axum.

III. The Sabaitic Mouth and Elaia-Bahdur.

At Akik I hired a small sambuk (dhow) to take me on my next stage to Airi. The day previously I had visited one of the islets called Akik Sughair, which was said to contain old buildings, but the old buildings did not appear to me to point to any very ancient period; they may well have belonged to the predecessors of the Suakin merchants now settled in the mainland, who, like the merchants trafficking with Adulis in the time of the Periplus, were afraid to settle nearer to the shore. We passed these islets accordingly without stopping, and steered outside the Amarat group of islands. The largest of these, I was told, contained a pool of fresh water, and they were visited for lime and stone by boats from Akik and Suakin; but the wind was not favourable to our landing, and we went on past Guban island to Hagar island, which we reached about 3 p.m. Here the pilot said we must moor for the night, because there was no other possible anchorage between this and Airi; and the entrance to Airi, which as the wind then stood we could not hope to make before nightfall, was too dangerous to enter after dark. Hagar island is a mere reef covered with the usual matted vegetation and haunted only by a few sea-birds, and I questioned the pilot very strictly before consenting to lie by for the night. There was no anchorage, he assured me, nearer than the harbour of Old Akik on Bahdur island, which was out of our course, and which I had visited earlier in the year. Consequently we spent the rest of the day fishing, and lay off Hagar island for the next twelve hours, and I did not regret the delay, for I was but experiencing the conditions which the ancients had to face, and which lie behind and explain the notes they compiled for the guidance of their successors.

Of our two classical authorities for the district between Ptolemais and Adulis, Ptolemy is the most succinct: writing in the great days of the Indo-Egyptian trade, he was able to obtain ample information, but contented himself with selecting the most important points only. The section in which he deals with the Red sea coast appears, therefore, both intelligible and correct except in so far as the figures are concerned, whereas of the section in which he deals with the interior I can make very little. We will follow his list of names in the reverse order, starting from the known point in the south, namely, the Gulf of Adulis. Inside this gulf Ptolemy*

* IV. c. 7.

mentions three names; Adulis, the most southerly, now called Zulla; then a mountainous promontory, which can be none other than the "isolated mountain mass" * of Gebel Guddam; and lastly the city of Sabat, which has not yet been identified. North of Sabat we come first to a promontory called the terminus of the Kolobi, and then to a Long Shore (αἰγιαλὸς μεγάς) which is clearly part of the region north of Massowa, described by the 'Red Sea Pilot' as "almost devoid of easily recognizable landmarks."† Between this featureless shore, which reaches as far as Ras Kasar, and Ptolemais only two points are noted—the altar of Eros, a beacon which we cannot hope to identify; and the Sabastic or, according to Strabo, the Sabaitic Mouth. Between Akik and the beginning of the long featureless shore there are only two important indentations in the coast-line which might possibly be identified with the Sabaitic Mouth: these are the entrance to the harbour of Airi, which is, as we have seen, too dangerous to approach by night, and the great bay in the centre of which lies Bahdur island. Of this bay Lord Valentia, who proposed to identify it with the Sabaitic Mouth, wrote that "it is accessible without danger at any season of the year, and will afford to any ships, not only a secure asylum, but a supply of fresh water and provisions." ‡ The 'Red Sea Pilot' describes it as "without exception the finest bay in the Red Sea," and I do not think we need feel any further hesitation in accepting Lord Valentia's identification, but the above propositions, based only upon a consideration of Ptolemy's list, become well-nigh certainties when we turn to the second of our authorities, which is the account quoted by Strabo from Artemidorus.

The narrative of Artemidorus is based, as we have already said, on the reports of the explorers sent out by the earlier Ptolemies in pursuit of elephants. These explorers hugged the mainland closely, and the only islands which they mentioned are islands lying hard by the shore: the great islands of the Dahlak group which played so large a part in the later history of the district lay entirely out of their course, for they were sent in search, not of pearls, but of elephants. The account given by Artemidorus of the region between Ptolemais and the Gulf of Adulis is as follows, the digressions in which he deals with the interior being omitted:—

"Then (*i.e.* after Ptolemais) follow six islands called Latomiai: after this the so-called Sabaitic Mouth, and, in the middle land between, a fort built by Suchus; then a port called Elaia and the Island of Strato; then a port Saba and a hunting-ground for elephants of the same name. . . . After Elaia come the watch-towers of Demetrius and the altars of Konon. . . . After the altars of Konon port Melinus. . . . Then the port of Antiphilus. . . . Next to the port of Antiphilus is a port called the Grove of the Kolobi and the city of Berenice against Sabæ and the large city of

* 'Pilot,' p. 187. † *Ibid.*, p. 175.
‡ 'Voyages and Travels of Lord Valentia,' vol. 12, p. 253. London: 1811.

Sabæ ; then the grove of Eumenes." From this point on Strabo's account of the coast is much vaguer and does not concern us here.

The passage above quoted is not at first sight easy to understand, and has been, I think, generally misunderstood : the Sabaitic Mouth would naturally derive its name from the port Saba, but where are we to look for Port Elaia and Strato island, and why does " Artemidorus " go back to Elaia in order to reach the next landmark ?

Before proposing a solution of this difficulty, I would make two observations. In the first place, Artemidorus is giving a most detailed account of the coast. In order to make up the number of six islands between Ptolemais—Akik and the Sabaitic Mouth—entrance to Khor Nowarat, we must include some very small islets, though if every rock were counted the number would be even greater. Secondly, it is clear that it is not Port Saba which is to be identified with Ptolemy's city Sabat (as Müller thinks *), but the " large city of Sabæ " mentioned subsequently as being, like Ptolemy's Sabat, south of the grove or mountain of the Kolobi. From this observation we get another proof of the detailed scale on which Artemidorus is working—he mentions ten names between Ptolemais and the Port of the Kolobi, where Ptolemy mentions only three. We can now return to our text and follow the account of Artemidorus from point to point.

Sailing from Ptolemais—Akik, he would pass in order the islands and island groups called Akik Sughair, Amarat, Guban, and Hagar. These are the Latomiai or Quarries, and the name is, as we have seen, still applicable to them. From these he would enter Khor Nowarat—the Sabaitic Mouth, passing between Ras Istahi, on which some cairns may mark the foundation of Suchus, and an outlying reef of Faragin island, called Shatira. Between Hagar island and Bahdur, which lies in the centre of the bay, there is again, as we have seen, no anchorage, and the next port which " Artemidorus " could make would be the harbour of Old Akik on Bahdur island. Here there are numerous signs of ancient occupation, to which we shall return shortly, and the island may therefore, I propose, be identified with Strato island, and the harbour with Port Elaia.

From Port Elaia our guide would naturally make for the port which gives its name to the whole bay, and this must have been somewhere near the modern village of Adobana, which appeared to me to be rather larger than Akik. The heavy spates in 1907 brought to light a few old long red bricks, apparently forming the foundations of a circular pier about 3 feet in diameter in the bed of Khor Taggut, quite close to the modern village, and the older inhabitants told me that within their memory the land between the village and the hills was regularly cultivated. The place is

* 'Geog. Græci Minores,' vol. 1, Introduction, p. 67. Paris: 1855. Droysen ('Geschichte des Hellenismus,' vol. 3, p. 343. Gotha: 1878) follows Müller's example, complains of the confusion in Strabo's accounts, and completely disregards the context of the phrases which he quotes.

therefore likely enough to have been occupied in former days, and the distance from Saba to Meroe, fifteen days, quoted by Strabo, corresponds exactly to the estimate given me by the Nazer of the Beni Aamer, whom I met here. The hunting-ground of Saba probably lay to the south in the comparatively open country towards Karora. There is no trace of elephants here now, but other game—gazelle of various kinds, for example, and kudu—is abundant in the neighbourhood. A few hours inland, in one of the valleys behind Akik, I disturbed a couple of warthog; there were many tracks of leopards, and in Khor Sabat, perhaps five hours north-east of ancient Saba, I came upon the fresh droppings of a large lion, which had done much damage hereabouts. These valleys were filled with herds and flocks that had been driven northwards for the winter grazing, from the valley of the Gash near Kasala, and the lion had doubtless followed in their traces. It does not seem at all unlikely, therefore, that elephants were found as far north as this in the days of Strabo.

On his departure from Saba, Artemidorus would naturally again make Elaia, and leave the bay through a channel between Faragin island and Ras Faragin, which is still practicable for native boats. The puzzling order of names thus becomes intelligible, and at each point we have found material evidence to corroborate our identifications.

After leaving Elaia for the second time, Artemidorus takes us to the watch-towers of Demetrius and the altars of Konon. One of these might be identified with the mound of Mashatiri on Airi island, and the other perhaps with some beacon on Ras Kasar; but at this point my own journey ceased, and I hesitate to hazard any other identifications, although my reis gave me a list of several anchorages north of Massowa, and told me of ruins on islands north of Dahlak. We have, however, I submit, without doing any violence to the text of Strabo, provided an intelligible account of the progress of Artemidorus, and the only point about which I feel any diffidence is whether Strato island is Bahdur. Elaia is certainly the port now called Old Akik (Akik Kebir) on Bahdur island, and the island is large enough to have had a name distinct from the name of its harbour in ancient times as well as in modern, but it is curious that Strabo should not have expressed the connection clearly.

I visited Bahdur in the month of January, sailing thither from Adobana. The port of the island is called Old Akik, because it was used as a city of refuge during the Dervish time by the inhabitants of Akik; it is thus a good latter-day example of the retreat to the islands which the dwellers by the sea have always beaten when threatened with hostilities from the interior. A ruined fort, a large disused cistern, many ruined houses, and a smallpox cemetery date from this recent occupation, and since this time the island has had an evil name as the resort of smugglers and slavedealers from the Zebedia tribe. When I visited the island I found the inhabitants reduced to five families, two of the old refugees from Akik and three of the Zebedia, and they lived mainly, like the people at Akik and Adobana, on

the profits made by their womenfolk during the cotton-picking season at Tokar. Fish is plentiful and excellent, and whelks abound here, the opercula of which (dufur) are valued all over the Sudan as a scent. People from Adobana come here to visit the Khalwa (mosque school) and ablution place of Sidi Osman el Morgani, a member of the holy family which is honoured throughout the northern Sudan; he was one of the refugees during the reign of terror, and some of the pilgrims bury here. A hundred years ago, Lord Valentia touched here and found it the residence of a representative of the Turkish Government sent from Suakin. He describes it as "a miserable little place, one small mosque being the only stone building. There is no trade," he adds, "except an export of ghee and some tortoiseshells. The dhows now come this way from Suakin, Jidda, and Massowah for fear of the Wahabee." *

The antiquities consist of an interesting series of cisterns which are still in use, close to the modern ruins. They are made on this wise. At the end of a natural wadi, above which are several modern tombs and a small fort, a square pit has been excavated some 10 or 12 feet deep and 8 or 10 yards across. At the two outer corners of this pit two other roughly quadrilateral cuttings have been made to about the same depth, and these have been extended in turn at the extreme corners. The whole excavation looks, therefore, like a wide V-shaped quarry cut in the natural coral rock. After heavy rains, the whole quarry is a pool of water, and to prevent the water from evaporating, wells have been sunk all over the bottom of the quarry and especially at the foot of the sides. The mouths of these wells are about 2 feet in diameter, and the reservoirs spread out beneath in a beehive shape, often supported on pillars. In one I saw five arches with water flowing round them. After the rains, as soon as the upper water has been exhausted, the well mouths are carefully covered over with wood and stones to prevent fouling and evaporation, and the water thus kept lasts till the next rains. I did not count the wells, but there must be at least sixty of them in the excavation, and as they were full at the time of my visit—indeed, the deeper end of the quarry was still full of surface water—I could not get into them, but the people told me that they were not plastered, and the coral here must therefore be impermeable. Similar cuttings which have been made in other parts of the island are now useless, as the water either seeps away or turns salt.

I could not hear of any other antiquities in the island, and recent events would naturally result in the disappearance of surface relics, but the reservoirs which I have described are more primitive in type than the mediæval cisterns which are found at Badi. In fact, I see no reason why they should not go back to Sabæan or ancient Egyptian times, and their existence gives ample reason for the mentions made of Elaia by the authorities of Artemidorus.

* *Op. cit.*, p. 251.

IV. Badi-Airi, a Mediæval Port.

The ruined town upon the island of Airi, or Er-rih, as it is written in the Admiralty charts, has been visited by several travellers. In the 'Red Sea and Gulf of Aden Pilot,' it is boldly identified with Ptolemais, but others have been more discreet; Heuglin * simply notes the lateness of the visible remains, and Sir Charles Holled-Smith † mentions two Arabic inscriptions. Arabs often drive their flocks across the ford to the island, because the grazing there is very good, but they shun the ancient site as a haunted place where you hear the dead talking by night and washing. On several old Muslim sites I have heard the same story of the dead washing by night before they pray, but this site, curiously enough, was not recognized by the people as a Muslim site. On the contrary, they regarded the ruins here as the work of Persian unbelievers, and when I read the inscriptions to them praised God for the discovery and declared that there was a special blessing on my advent. Two of the inscriptions which I found on my first visit in January, 1907, were dated in years corresponding respectively with 997 and 1015 A.D., and I could find no trace of anything earlier, nor any indication of the name of the town. My second visit, made by sea, was more fruitful of results.

The first night after leaving Akik we spent off Hagar island, and weighed anchor just before sunrise on the next morning. We rounded Faragin island, passed a prominent mound on our left called Mashatiri, and made the harbour of Airi in less than four hours. The name of Mashatiri held the key for which I was looking, though it was not until my return to Khartum that I recognized its value. Reading there once more Yakut's account of different places in the Red sea, I came under the name of Badi (باضع) ‡ upon a couplet quoted from the Diwan of Abul Futuh Nasrullah ibn Kalakis, which runs thus—

> "Then the dune of Mashatiri and the two cisterns of Dasa,
> And the ruins of Badi, which are as though they were inhabited."

With these lines and the name of Mashatiri in my note-book, there could be no longer any doubt as to the identification of the ruined city.

The author was an Alexandrian poet who spent several years in the Yemen. In the year 563 A.H. (1168 A.D.) he was wrecked near Dahlak, and died in 567 A.H. (1172 A.D.) at Aidab. The latest remains at Badi cannot therefore be later than the middle of the twelfth century: the latest dated inscription which I have found in fact belongs to the year 428 A.H. (1037 A.D.). The name Dasa is still applied, I have been told, to a part of the mainland opposite to Mashatiri, but the name Badi is apparently unknown.

Badi seems to have been a place of some importance during the first

* *Bull. de la Soc. Khéd. Géog.*, 1876, p. 111.
† *Proc. of Roy. Geog. Soc.*, 1892, pp. 546 foll.
‡ 'Yakut,' ed. Wüstenfeld, 1, p. 471. Leipzig: 1866.

four or five centuries of the Mohammedan era, although references to it are meagre. It was used, like Dahlak, as a penal station by the early Khalifas, and hither Omar ibn el Khattab exiled a certain Abu Mihgan in the year 13 A.H. (634 A.D.).* Hither, too, Abdullah, son of Merwan, the last ruler of the Beni Umayya, fled on his way from the land of Nuba after his father's death in 132 A.H. (749 A.D.).† It is mentioned also in geographical lists by Yakubi (9th century A.D.), Hamdani (10th century A.D.), and others,‡ and according to Yakut it had regular trading relations with the interior. The people of Badi, Yakut says, talked Habashi, and the Habash used to bring them ivory and ostrich eggs and other products of their country in exchange for medicines, perfumes and combs, and in fact most of the luxuries in the interior came from Badi. The women of Badi, he also tells us, bored ring-holes all round their ears, and this fashion has survived to the present day among the Beni Aamer and Hadendowa. There was, therefore, a native element in the town, holding probably a position like that of the native African element in modern Suakin and practising some of the same customs. Not one of our authorities tells us why or how it was finally deserted. The natives have two stories: some say that its ruin was due to a famine, others to an attack made by the Beni Aamer, but God knows! The references in history to Badi are therefore scanty, but the ruins give a much more distinct idea of the energy and intelligence of its inhabitants, and their patient resourcefulness in combating the natural disadvantages of the site.

The remains of the town lie on a spit of land projecting at the south-west end of the island and joining a submerged reef which unites the island with the mainland. On the west side of this spit are the remains of many walls, houses, and cisterns; the lines of streets could be traced without much difficulty. The houses were built of squared coral blocks laid in mortar, and each house had its own cistern, varying in size and shape. The larger walls presumably belonged to Government buildings and storehouses. Behind these remains, in a semicircle on the north and east sides of the ancient town, is a chain of mounds rising perhaps 30 feet above sea-level. The men who were with me dug a trench in one of the biggest, which they declared to conceal the palace of the ruler, and found, as I had foretold, nothing but the bones of domestic animals, shells, potsherds, glazed earthenware, and glass—the refuse, in fact, of a kitchen midden.

North and east of these mounds the remains of dwelling-houses cease, and an area about twice the size of the residential region was devoted to a single purpose—the storage of rain-water. The whole site was carefully levelled to form a succession of basins, and each basin contained one or

* Tabari, Series I. p. 2484. Ed. Leyden: 1892. I am indebted to Dr. Moritz, Director of the Khedivial Library, for this reference and others which follow.

† Masudi, 'Bibl. Geog. Arab.,' part viii. p. 330. Ed. Leyden: 1894.

‡ Makrizi's authorities as quoted by Burckhardt ('Travels in Nubia,' pp. 497 and 507. London: 1819), where Nadha should be corrected to Badi.

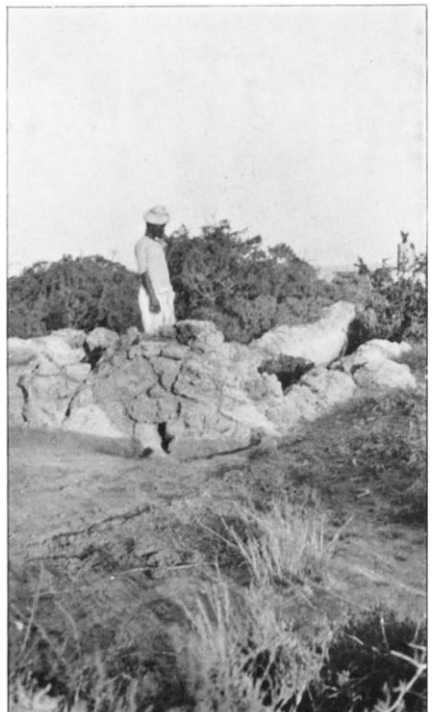
more covered cisterns. One of the best preserved of these lies on the outer or southern edge of the site. This cistern is oblong, and lies in a basin covering about 2000 square metres, the banks of the basin, which are only just traceable now, being formed in part no doubt of the rock thrown up when the cistern was excavated. The cistern (see Plate) was partly cut in the coral rock and partly built up with coral blocks, and roofed with a flat arch so as to prevent evaporation. Inside the whole was coated with hard lime-plaster to keep the water from percolating through the rock. The water was received into the cistern on all sides from the banks; the inlet channels at the two ends are still open, and two on one of the long sides and one out of an original three on the other are also visible. The water was drawn through a square opening at one end, and on the left of it was a small platform on which the buckets or skins were rested. In the middle of this was a small hole about 4 inches in diameter and carefully plastered round. The men with me said that this hole had been made to receive the money for which each bucketful of water was sold, and it is exactly like small holes which I have seen used for this purpose in Tokar by the side of private wells where the water is regularly sold.

Another type of cistern which is common on the site has a circular well-like opening about 2 feet in diameter, the reservoir beneath expanding in a beehive-shaped excavation. The mouth is built up in the same style as the roof of the oblong cisterns; the lower part was quarried out of the rock, and in many cases columns were left to support the roof; the whole was plastered inside. Like the reservoirs already described, each of them or each group (for one or two are often close together) lay in a carefully prepared catchment basin, and the inclination of the water towards these cisterns is still clearly marked by the amount of soil washed down into them and the luxuriant vegetation arising from them.

I counted over a hundred cisterns on the site, and there may well be twice this number. Those in the residential quarter were distinctly the smaller, being filled, I imagine, chiefly by the water which drained from the roofs of the houses. In the other part of the site, which was covered apparently with public cisterns, the well-type was commonest close to the refuse heaps, where the fall was steepest, and the oblong tanks at the extreme edge, but the two types are sometimes found side by side in the same basin. The arching of the cisterns must have been built upon a wooden framework.

North of the town and beyond the area devoted to water-storage are the ancient cemeteries. Here I found fragments of twenty-four inscriptions, seven of them on blocks of coral, and the rest on felsite from the mainland. Unfortunately, the softness of the coral left nothing of interest decipherable in the one case, and the hardness of the felsite was almost as disastrous in the other, for the masons had been content usually to leave only the faintest marks upon the stones. However, I was successful in

CORAL BLOCK WITH GRECO-ROMAN MOULDINGS FOUND AT ISA DERHEIB.



END OF LONG CISTERN, SHOWING ONE INTAKE.

reading names and dates upon three of the stones and names upon two or three others. All begin with the Bismillah and a chapter from the Koran, generally the Surat el Ikhlas ; the three dates are A.H. 387, 405, and 428, corresponding with A.D. 997, 1015, and 1037. The style of lettering is good, and compares favourably with the gravestones of the same period from Aswan and Dahlak. These inscriptions were all found in the lower slopes of the cemetery, and at least a foot of soil had generally gathered round them. On the upper slopes there was no accumulation, and headstone and footstone were often both erect. On one little knoll there were some square walls with adjacent graves built of coral stone which did not appear to be orientated in the ordinary Muslim fashion. A brief excavation which I made in the hopes of finding evidence of some pre-Mohammedan settlement only brought to light the skeletons of men looking towards Mecca in the most orthodox position of hopeful resignation.

Four of the best preserved inscriptions have now been placed in Khartum, together with fragments of the glass and earthenware which is scattered about on the site, but no other small objects of any interest were found. Further investigations might bring to light more inscriptions, and would enable us to draw a plan of the whole site, but it may be doubted whether they would yield much of historical value.

Such are the remains of Badi, and I venture to claim that they give a unique picture of the energy, foresight, and organizing power which enabled the early Mohammedans to expand not only over the well-known Mediterranean and Asiatic routes, but also along the much less familiar shores and hinterlands of tropical Africa. They illustrate the difficult conditions which throughout all time have faced adventurers upon this coast, and the capacity to overcome these difficulties possessed by the races with which Egyptologists as well as mediævalists are concerned. We have learnt from Yakut that Badi was a mixed settlement with a bi-lingual population, but the inscriptions do not give us an inkling of the latter fact ; the formulæ used are perfectly orthodox, the fathers of the deceased are mentioned to the third or fourth generation, and the lettering of the better ones is admirable in design and execution. Some few indications of origin, however, the inscriptions do contain. One of them commemorates the great-grandson of a certain El Fadl el Gofi, who must have originally come from some place in the Egyptian Delta. Another surname, found on a second inscription, is El Mansi, "The Forgotten," which is still used in Egypt. Two other stones are in honour of a family in which the name El Walid, a favourite with the Beni Umayyah, twice occurs, and the name Aban or Ayan, which occurs in the same pedigree, may point, I am told, to Southern Arabia ; but there is no reference to office, calling, or status on any of the tombs.

Hamdani, one of the few writers who mention Badi,* refers to "the

* Ed. D. H. Müller. Leyden : 1884, vol. 1, p. 133. In a note in vol. 2, p. 24, Müller quotes Kremer to the effect that "Base" is an Ethiopian name for Massowa.

west of the Sea of Kolzum from Aswan towards Badi and Suakin and the Mines," as if it formed a single whole. The connection is noteworthy, for the period of the prosperity of Badi coincides exactly with the period when Aswan reached its height and when the mines in the northern Sudan were most actively worked. Two series of inscriptions from the old cemetery at Aswan have been published,* which bear dates varying from 863 to 1054 A.D., and we know from another source that the mines in the Eastern Desert passed about this time into the hands of Arabs who intermarried with Boga tribes,† just as did the inhabitants of Badi. Such dated stones as have been found in the mines belong, moreover, to the tenth and eleventh centuries A.D.‡ Hamdani's circle may even be widened, for the period of Aswan, Badi, and the mines is also the period of such dated inscriptions in Greek and Coptic as have been discovered in the Christian kingdom of Dongola. And in other respects we might draw an even closer parallel between the history of Badi and the early history of Dahlak, which, after having been, like Badi, a place of exile, underwent various vicissitudes, being sometimes independent and sometimes subject to the sultans of Yemen, but survived the decay of Badi and fell ultimately under Abyssinian influence about the year 1300.§

It is, in fact, to a general weakening of the powers that made for civilization, whether Mohammedan or Christian, and a consequent revival of the less advanced races, that we must attribute the passing of this moment of culture. The earlier Arabs established friendly relations with the native tribes they found in possession; they intermarried with them both in the interior and at Badi, and far away on the Blue Nile Ahmed ibn Abdullah ibn Solaim found, in the tenth century A.D., a Muslim suburb in the Christian capital of Aloa.|| Two hundred years later all is changed; the southern Christian kingdom had fallen to pieces, and the northern kingdom of Dongola was threatened by Arab tribes, and survived for a little longer only by the help of Muslim Egypt; the flourishing little port of Badi was deserted, the mines in the Sudan were suddenly abandoned, and the vain remonstrances addressed in the thirteenth century by the Sultan of Egypt to the Prince of Suakin, which set forth the pillaging of Egyptian merchants and the insecurity of the desert roads, make manifest the anarchy into

After the decay of Badi, the name may have been transferred to Massowa; but there are, I believe, no signs of ancient occupation at Massowa, and a site so far south is inconsistent with the indications given by Yakubi and Masudi.

* H. C. Kay in *J.R.A.S.*, 1895, pp. 827 foll.; and W. Wright in *P.S.B.A.*, 1887, p. 329.

† Quatremère, 'Mém. Géog. et Hist. sur l'Egypt,' vol. 2, pp. 152, 154. Paris: 1811.

‡ Llewellyn, 'Report on a Mining Concession in the Egyptian Sudan,' pp. 25, 29, 42. London: 1903. To these stones may be added one in the Gordon College Museum from Deraheib, dated 1025 A.D.

§ Basset in *Journal Asiatique*, 1893, pp. 77 foll.

|| Quatremère, *op. cit.*, vol. 2, p. 23; and compare Yakubi in *Bibl. Geog. Arab.*, part vii. p. 335. Ed. Leyden: 1892.

which these regions had then fallen.* The cruder types of graves that we have noticed on Isa Derheib and elsewhere are the visible signs of these later centuries of retrogression.

V. Conclusion.

The four sites with which we have been concerned, Ptolemais, Elaia, Saba, and Badi, form a single geographical group similar to the southern group which centred round the Gulf of Adulis. In the introductory chapter, the tendency of sites to shift slightly round a common centre in obedience to external conditions was briefly noted. In this northern circle we can trace the same tendency in operation. The island settlements on Airi and Bahdur were founded by immigrants whose hold upon the mainland was precarious, and the circumstances which led to the original choice of Bahdur were repeated, as we have seen, during the recent dervish trouble, with a resulting re-settlement. The settlements near Adobana and Akik, on the other hand, were the work no less of immigrants, but of immigrants who, by virtue of their diplomacy or their superior weapons, feared nothing from the interior. But the reason why a group of sites should be found thus centring round Khor Nowarat or the Sabaitic Mouth has not yet been explained, for the presence of a magnificent harbour, even "the finest bay in the Red sea," hardly accounts for the existence of sites north and south of it with harbours that have no intrinsic value. The reason is to be sought inland rather than in the configuration of the coast-line.

Ptolemais we know to have been a trading town, in Roman days the only trading town between Berenice and Adulis; Badi is similarly, in the stretch between Suakin and Dahlak, the only mediæval market on record,† and Saba must have played the same part in pre-Macedonian days. In other words, they were not mere watering-stations, but seaports with a trade of their own, and this fact is to be explained by their situation near the first point at which voyagers from the south, and the last point at which voyagers from the north, could find easy access to the hinterland of the Eastern Sudan. South of this point throughout the length of the modern territories of Eritrea and Abyssinia rises a chain of massive mountain ranges and tablelands barring the ways into the basin of the tributaries of the Nile. Travellers landing at Massowa must climb by steep gradients to a height of over 7000 feet before they can descend into the province of Kasala, whereas travellers landing at Akik and journeying through the Khor Baraka or the Khor Langeb, by routes still much frequented,‡ can reach this province without climbing more than about a third of this altitude. The existence of these routes explains why, at

* Quatremère, pp. 170 foll.

† Dr. Littmann has suggested to me that the very name of Badi may be derived from the same root as (bidaa) بضاعة, goods or merchandise.

‡ Cf. 'The Anglo-Egyptian Sudan,' vol. 2. London: 1905. Routes 8, 9, and 124.

divers times, immigrants have settled in the harbours between Badi and Suakin.

Lord Valentia * noted a hundred years ago that Suakin was kept from total ruin only by the caravans which still came annually from the interior of Africa on their way to Mecca; but these caravans would actually have shortened their land journey by making for Akik rather than for Suakin. The latter has supplanted the southern group of harbours simply because it is nearer to the port of Mecca, just as further north in the middle ages Aidab supplanted Berenice for travellers from Egypt. Before the spread of Islam and the conversion of trade-routes into pilgrim-routes, Ptolemais or Saba could justly have claimed the preference, and it was from Badi, according to Makrizi, † that the early Umayyad fugitives started on their flight to the land of Nuba; and it is after his mention of Saba that Strabo interpolates his first reference to Meroe and the road leading thither from the sea. And for the same reason Eumedes established the first of his hunting-bases at Ptolemais-Akik: the elephants of which he was in search were to be found in the country to which this port gave access, the country deep inland, called by Strabo, Tenessis. Whether or no we may see in this name a palæographical corruption of the word Tacazze, the Abyssinian name for the Setit, there can be little doubt that Tenessis is to be placed thereabouts where elephants still abound, the region to which the Baraka-Langeb route directly leads. Eumedes was voyaging by sea, and the existence of a breach in the wall of the Nile valley must have been reported to him by men who had trafficked with the interior along this road. The name of Saba suggests that this route was known to merchants from Southern Arabia, and there are hints also in Herodotus of early communications between this coast and the Nile valley. When Cambyses looked for interpreters to send as envoys to Ethiopia, he found Ichthyophagi at Elephantine who came from the Red sea coast and must have known all the main routes leading from the sea to the Nile.‡ Still earlier, by what other route can the deserters of Psammetichus who left the Pelusiac and Arabian garrisons § have reached the district of Tenessis, for it would be absurd to suppose that they marched the whole length of Egypt because they had not been relieved?

It is unnecessary to elaborate this further. Even if the inferences from Herodotus be disallowed, the geographical conditions are sufficient to prove that the peculiar and abiding significance of the region lies, and always has lain, in the fact that it commands the easiest outlet from the Kasala-Gallabat-Gedarif district and such of the countries further inland as have any interest in the Indo-Arabian trade. And this trade is more than enough to account for the modest trading settlements which we have attempted to describe.

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* *Op. cit.*, p. 271. † Burckhardt, *op. cit.*, p. 497. ‡ Herodotus, III. c. 19.
§ *Ibid.*, II. 30.

Appendix on Assarema Derheib.

The general considerations advanced in § IV. will justify us in connecting with the centuries of the prosperity of Badi some buildings which stand on a ridge in the middle of Khor Gamarota, some 20 miles inland from Akik. They are called Assarema Derheib, the Seven Buildings, although in reality there are the remains of ten separate buildings almost of the same type and differing but slightly in dimensions. In appearance they resemble a common form of Muslim "Gubba," or sheikh's tomb, which is built in three stages with a flattened dome and battlements at the four corners, a form represented by many examples in the Sudan built of mud bricks; but in material and construction these Eastern buildings are quite distinct. They are made of unhewn slabs of rock laid in mortar, and were originally plastered over, and contained in the eastern wall a small doorway which led into a minute chamber; but the chamber is so small that the buildings may almost be described as solid masses of masonry with a little den hollowed out in the middle. The external features of the building have, in fact, no structural significance whatever, as the following dimensions taken from one of the best preserved will show. The base of this measures roughly 6·60 metres square; the stage above, in which the chamber is made, roughly 4·40 metres square by 1·80 metres in height, the chamber itself being about 3 metres by 1·50 by 1·20 metres high. Above this is a solid block of masonry measuring about 3 metres square by 1·50 metres in height, and on this is the soi-disant dome, another 0·50 metre higher, and battlements at the corners. With proportions such as these, it is not surprising to find that in some of these buildings the top stage and the whole of one side have fallen away, yet the chamber still stands as perfect as ever. The actual method used for the construction of the chambers is the false-arch system: the walls of the room incline towards one another, each course overlapping the one underneath until a breadth has been reached of about 75 centimetres, which can be spanned by a row of long slabs. But in spite of this primitive construction, the external features remain to be accounted for, and they are so obviously related to a common type of Muslim Gubba that we are forced to recognize in Assarema Derheib the work of Muslims accustomed to mediæval Muslim conventions, but obliged to fall back upon local materials and local labour.

This conclusion is important, because in style and material these buildings resemble many others in the Eastern Sudan that have not yet been connected with any definite period. The people whom I met in the valley told me that there were others like these a few hours further inland. Captain Ensor, D.S.O., reported a group on a road between Tokar and Enkowit, and Captain R. V. Savile and Captain S. G. Newcombe tell me that there are several similar structures in the Khor Langeb, on the road between Kasala and Tamiam. A photograph of one of these has been published as that of an "Anak" house by Dr. Budge,* and Dr. Schweinfurth

* 'The Egyptian Sudan,' vol. 2, p. 178. London: 1907.

has written an article about some others to prove that they are Boga graves; but neither of these conclusions appear acceptable to me. Names such as Assarema Derheib, "the Seven Buildings," or Adarminish, "the Red Tombs," show that there has been a complete break in tradition between their constructors and the present "Bedaue"-speaking nomads. There is an enormous cemetery close by in Khor Gamarota, containing graves of various types, but for the most part surrounded with upright slabs, and these, though not like the latest form of grave used by the Beni Aamer, are recognized by the present inhabitants as graves, whereas the buildings of Assarema Derheib are variously explained as houses and forts and treasuries; in other words, they belong to a past as utterly forgotten as do the ruins of Badi. I suggest, therefore, that the whole group reaching from the coast of the Red sea to the neighbourhood of Kasala is to be attributed to an early wave of Mohammedan immigration, before the growth of the principalities of Baza, Taka, and others which arose between the disruption of the southern kingdom of Aloa and the rise of the Sultanate of Sennar, roughly between 1100 and 1500 A.D.

AN EARLY CHART OF TASMANIA.*

By WILLIAM FOSTER.

THE fact that the India Office possessed an old manuscript chart, apparently contemporary, of some portion of the new lands discovered by Abel Tasman in his famous voyage of 1642–43 was first made known in Sir George Birdwood's 'Report on the Miscellaneous Old Records of the India Office,' printed in 1879. Some years later, this reference attracted the attention of Mr. A. Mault, of Hobart, who, recognizing that the chart represented the southern coast of Tasmania, made a careful copy of it, and in January, 1892, read a paper on the subject before the Australasian Association for the Advancement of Science. The paper was afterwards printed by the Association in its report of the meeting (p. 408), and a coloured reproduction of Mr. Mault's copy of the chart was given.

Mr. Mault was unable at the time to glean any information regarding the origin of the chart or the means by which it came into the possession of the English East India Company; but he conjectured that it was either the original or a copy of one made on board the *Zeehaan* (one of the two ships employed in the voyage), and that it was obtained by some Englishman at Batavia upon the return of the expedition. These suggestions were discussed by Professor Heeres in the essay appended to the sumptuous facsimile of Tasman's journal issued at Amsterdam in 1898, and the conclusion reached was that until further information should be forthcoming it was impossible to say how the drawing originated.

* Map, p. 588.