

The Sun-Cult in Ancient Egypt.¹

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II.

IT has often been maintained that the Aton-cult instituted by Ökhnatön (Amenöphis IV.) displays non-Egyptian features and is in a large measure the product of foreign influences. I hope, however, clearly to show here that in the main it is the outcome of certain tendencies of the old solar religion discussed in the previous article—tendencies which had begun to manifest themselves so far back as the Old Kingdom, which came increasingly into evidence during the Middle Kingdom and the eighteenth dynasty, and finally found in the teaching of King Ökhnatön a somewhat particularised expression.

It was pointed out in the first article that the sun-god, owing to the political and religious importance of Heliopolis, became at a very early date the State-god of Egypt, and that the priests of a number of the local gods, in order to enhance their prestige, identified them with the sun-god, the goddesses who were associated with these gods being identified with Hathor, the sun-god's consort. There was also, it must be noted, a distinct tendency to identify the various divinities with one another, thus considerably reducing their number as separate entities in the Pantheon. All this, combined with the prevailing uniformity in the structure and equipment of the temples, the temple liturgy, and the organisation of the priesthood—a uniformity due to the predominant influence of Heliopolis—fostered the growth of monotheistic or, anyhow, henotheistic ideas.

During the Middle Kingdom, when a Theban line of kings ruled over a united Egypt, Amün, the local god of Thebes, was identified with the sun-god, being henceforth known as Amunrē'. As a result of the imperial expansion of Egypt under the Theban emperors of the eighteenth dynasty, the sun-god, originally the national god of Egypt and the prototype of the Egyptian Pharaoh, became in the person of Amunrē' a world-god and a world-ruler. Thus the victorious Tethmōsis III. says of Amunrē' that "he seeth the *whole world* hourly." A hymn in praise of the sun-god, written in the reign of Amenöphis III., the father of Ökhnatön, speaks of the sun-god as "the sole lord taking captive all lands every day, as one beholding them that walk therein." The once merely national god has thus become a deity who exercises universal sway and possesses universal vision.

But the god of this hymn is not only the all-powerful, all-seeing ruler: he is also the beneficent protector and sustainer of mankind—"the valiant herdsman who drives his cattle, their refuge and the giver of their sustenance." It will be remembered, of course, that the sun-god appeared already in the literature of the seventh to eighth dynasties in the guise of "the shepherd (or herdsman) of all men." This same hymn further emphasises the sun-god's beneficent nature in calling him "a mother, profitable to gods and men." As is so frequently maintained in the religious literature of the Imperial Age, this hymn also asserts that the sun-god is the source of all, including his own, being.

¹ Continued from p. 502.

"Thou art the craftsman shaping thine own limbs; fashioner without being fashioned."

From this and other compositions it can be seen that the religious thought of the period just preceding the reign of Ökhnatön was distinctly monotheistic in its tendency. It was only necessary to advance this tendency a step or two further to arrive at actual monotheism. This is what Ökhnatön did when he asserted definitely once and for all that the sun-god was not only the supreme and universal god, but also the only God—an assertion that had never been definitely enunciated by the theologians who had preceded him, but had only been sporadically and somewhat vaguely hinted at by them.

The universality of Ökhnatön's god is clearly set forth in the famous hymn, which so closely resembles the 104th Psalm, and of which the king claims, probably with right, to be the author. The sun-god is represented as the All-Father, the source of all life. He it is who has created the different nations and assigned them their divers complexions and languages. He has also provided for their sustenance, making the Nile to well up out of the nether world to water the land of Egypt, but setting a Nile in the sky for other peoples, whence it comes down as rain. "Thou didst make the distant sky in order to rise therein, in order to behold all that thou hast made. . . . All men see thee before them, for thou art Aton of the day aloft."

There has been a certain amount of controversy as to whether Ökhnatön was actually himself responsible for the establishment of this monotheistic sun-cult. As has been stated at the beginning of this paper, some scholars incline to the view that the Aton-cult is distinctly of foreign origin and that its being established as the State-religion was due to the influence of Tyi, herself a foreigner, by whom her son Ökhnatön was completely dominated. Others, again, have maintained that the establishment of this cult was due to the successful intrigues of the Heliopolitan priests, who, attaining the ascendancy over a weak king, temporarily regained the religious hegemony of Egypt.

Those who take the view that the religious revolution was the work of Tyi and foreign influences, or of an intriguing priesthood, find the main support for their respective theories in the fact that the body, supposed to be that of Ökhnatön, is that of a man who could not have been more than 25 to 26 years old when he died, while the skull shows distinct signs of hydrocephaly, indicating that the person in question was weak intellectually. As Ökhnatön is known to have reigned for more than sixteen full years, he can, if this is his body, have been only ten or eleven years old when he came to the throne and the religious revolution began, and only sixteen or seventeen when he definitely broke with the priests of Amün, changed his name from Amenhotpe to Ökhnatön, and deserted Thebes and founded his new capital at El-Amarna. Yet before this change in name and residence two of his daughters, as a relief distinctly shows, were old enough to accompany him when he officiated at the temple liturgy, and, moreover, before the aforesaid change

took place, *i.e.* before the sixth year of his reign, we happen to know that Ökhnatön celebrated the so-called *sed*-festival, a festival marking the 30th anniversary of the Pharaoh having been designated heir to the throne. Had it not been for the age-limit imposed by Ökhnatön's supposed body, we should naturally have imagined, in view of this last piece of evidence, that when he succeeded his father, Amenöphis III., he must have been at least 24 or 25 years old.

As a matter of fact, however, though the coffin in which the body was found was beyond question made for Ökhnatön, yet the body itself is almost certainly not his, the date of the objects found thereon, as Prof. Sethe has recently shown, precluding that possibility.

There can be little doubt, therefore, that Ökhnatön was a full-grown man when he came to the throne, while at the time of his break with the priests of Amün and his shifting of the capital to Middle Egypt he was more than 30 years old, and accordingly at the height of his intellectual and physical vigour. The fact that Ökhnatön's supposed body is not his at all also disposes of the theory that he was weak mentally. There is, therefore, no necessity whatever to suppose that the new faith, which contemporary records so closely associate with the person of the king and which he was certainly quite old enough to have formulated, was the product of foreign influences during a regency of Tyi, nor yet of the Heliopolitan priesthood struggling for a religious and political supremacy. That Ökhnatön really was a man of exceptional mental gifts and high ideals—Breasted calls him "the first individual in history"—is evident from that remarkable portrait of him found at El-Amarna in 1912 and now in the Berlin Museum. All who see it are impressed by the beauty of the features and expression, the thoughtfulness pervading the whole countenance.

We need not, however, go to the other extreme, as some writers have done, and regard the love of righteousness and the beneficence attributed to Ökhnatön's god as primarily the expression of the king's own ideas and feelings. On the contrary, as has been pointed out in the preliminary article, these are the very qualities assigned to the old Heliopolitan sun-god. How far, indeed, the old solar religion had advanced in these particular directions, even before the Middle Kingdom, is especially evident in a literary composition of the ninth to tenth dynasties, to which by an oversight no reference was made in the above-mentioned article. In one portion of the work in question the ancient writer speaks of men as "the flocks of God (*i.e.* the sun-god)." God, he goes on to say, "made heaven and earth at their (*i.e.* men's) desire. He checked the greed of the waters, and made the air to give life to their nostrils. They (men) are His own images proceeding from His flesh. He arises in heaven at their desire. He sails by (*i.e.* in the celestial solar barque) in order to see them. . . . When they weep He heareth. . . . How hath He slain the froward of heart? Even as a man smiteth his son for his brother's sake. For God knows every name."² In the preceding section of the same work we read that "more acceptable (to the sun-god) is one righteous of heart than the ox of him who doeth iniquity."

That Ökhnatön's sun-cult is nothing more than a special development of the older sun-cult becomes only more evident the further one pursues one's researches. In the earliest stage of the cult the god appears simply in the guise of the Heliopolitan sun-god, Rē'-Horus of the Two Horizons (Rē'-Harakhte), with whom indeed, as we shall see, he was actually identified. As such he is depicted as a human figure with a hawk's head surmounted by the uræus-encircled sun's disk. Later on, however, but before the migration of the court to El-Amarna, the mode of representing the god was entirely changed. He was depicted as a solar disk, from which descend rays terminating each in a human hand—these hands being the only trace left of the old anthropomorphism, if they are not, as is quite likely, simply an expression of poetic fancy. The uræus was also retained, sometimes hanging from the disk, generally, however, rising up from the bottom edge towards the centre, though it was of no religious significance, but merely the emblem of kingship—Ökhnatön's deity being not only the world-god but the world-king.

The name of the new god in ordinary everyday parlance was *pa Aton*, "the Aton," *aton* (*itn*) being the word used then and earlier to denote the visible, physical solar body, though, as Sethe points out, the word seems occasionally to have been employed, even before Ökhnatön's time, to designate the sun-god himself. Generally, however, it just denotes the sun as a natural phenomenon or cosmic body, as distinguished from the god dwelling in it, a sense in which the word Rē' is never used.

According to the old theological teaching the physical sun was simply the embodiment of the god. Thus we read of "Atum (the sun-god) who is in his *aton*," "Rē' whose body is the *aton*," and him "who lightens the Two Lands (Egypt) with his *aton*." In fact, it was exactly on account of the very definite meaning of the word *aton*, Sethe maintains, that Ökhnatön chose it as the designation of his god; for the new religion was entirely materialistic in its conception of the Supreme Deity, in marked contrast to the—it must be confessed—much more spiritual conception of the old religion. Indeed it is just here that Breasted has gone astray when he asserts that "it is evident that the king was deifying the force by which the sun made itself felt on earth,"³ an assertion that is based on a mistranslation of the Aton's official nomenclature (see below). On the contrary, it was the actual cosmic body, the physical sun itself, not a mysterious power incorporated in it or working through it, which Ökhnatön made his subjects worship.

In addition to the ordinary name, the Aton, the god also bore an official or formal designation, the words composing it constituting a short profession of faith—a compressed creed. This designation, which, on account of the god's world-wide kingship, was, like the two names borne by every Pharaoh, enclosed in two cartouches, appears in two forms, an earlier and a later. The earlier, which dates from the very commencement of the reform, and continued in use until after the seat of government had been moved from Thebes to El-Amarna, is as follows:—"Liveth Rē'-

² A. H. Gardiner, "New Literary Works from Ancient Egypt," in *Journal of Egyptian Archaeology*, vol. i. p. 34.

³ Breasted, "Development of Religion and Thought in Ancient Egypt," p. 321.

Horus of the Two Horizons, rejoicing in the horizon, in his name Shu who is Aton." The new god is thus identified with the two forms under which the sun-god was known both before and after the reign of Ökhnatön—Harakhte (=Horus of the Two Horizons) and Shu. The epithet "rejoicing in the horizon" is not, Sethe points out, an invention of Ökhnatön's, but appears earlier in the eighteenth dynasty as a description of the sun-god. Shu, originally personified space, was, as Sethe also points out, a common appellation of the sun-god from the Hyksos period onwards, and never (certainly not as written in this cartouche with the sun-determinative) can be used in the sense of "heat" or "splendour," as Breasted and Erman respectively have supposed. Sethe rightly maintains that the prominent feature in this official nomenclature is the element Rē^c-Harakhte, the name of the Heliopolitan sun-god, all the rest, even the name Aton, being purely subsidiary.

The later official designation, which came into force apparently soon after the eighth year of the king's reign, is marked by certain significant changes. It runs as follows:—"Liveth Rē^c, the ruler of the Two Horizons, who rejoices in the horizon, in his name Father of Rē^c, who has come as Aton."

It will be seen that Horus and Shu, names which Ökhnatön perhaps thought were too definitely associated with the old religion, have been struck out and replaced by two epithets, "Ruler of the Two Horizons" and "Father of Rē^c." The name Rē^c, which has not been interfered with, had been, as Sethe points out, a regular element in the Pharaoh's first cartouche ever since the fifth dynasty, and as such was of no theological significance. Also the king evidently had no objection to this old name of the sun-god. For example, he still retained the royal title Son of Rē^c; Rē^c appears as an element in his own first name and in the names of his two daughters; two temples or shrines associated with his mother Tyi and his daughter Meritaton bore the name "Shade of Rē^c"; and the king himself, like other Pharaohs, is officially spoken of as Rē^c.

The element "Father of Rē^c" in the god's official designation is interesting, taking as it does the place of Shu. Shu, according to the old Heliopolitan theology, was the son of Rē^c, and as such he actually was assigned that title. It would, Sethe suggests, have been scarcely tolerable to the founder of the new religion that Aton, the creator and author of all being, should be regarded as the son of Rē^c, the sun-god of the old religion. Ökhnatön therefore asserts that his god is the father of Rē^c, *i.e.* he makes him cosmically older. The fact that the god is called Rē^c, and, at the same time, the Father of Rē^c, reminds one of the old epithet of Amün, Bull of his Mother, which simply means that he is self-created, that is, that he was not begotten by another. Sethe rightly maintains that though this epithet has a polytheistic touch about it, Ökhnatön would have been as little conscious of this as were the Christian Fathers when they formulated the doctrine of the Blessed Trinity.

Sethe directs attention to another very interesting point in this later designation of the god. "To come," he says, "has obviously here, as so often, the meaning of 'to come again.' The Father of Rē^c in question is thought to have come again after he had obviously

disappeared or had been mistaken for another through man's ignorance, and indeed he has come again in the form of the apparently new but in reality primæval god of Amenöphis IV."

Let us now consider briefly the temples of the Aton erected at El-Amarna and the liturgy celebrated therein. The main difference between the temples of the Aton and those of the old Solarised religion lies in the fact that the former seem to have been roofless. There were thus no columned halls and dark, mysterious sanctuaries with their surrounding chambers, the place of these being taken by a series of main and subsidiary courts lying behind the forecourt and leading one out of another. The reason for this architectural change was that Ökhnatön permitted no cultus-image of his god to be made, not because he was an iconoclast or afraid of idolatry, but because his conception of God was so intensely materialistic. The Aton, as already pointed out, was the actual physical sun, the cosmic body itself, not a divinity dwelling in that body and manifesting himself through it, and therefore ready similarly to manifest himself through a cultus-image, which was "the body" of the divinity it represented, according to the ideas of the ancient theologians—as we should express it, the divinity's embodiment. Offerings had, therefore, to be made direct to the god in the sky, a procedure which necessitated a roofless temple, for no roof must intervene between the god and the offerings held up to him and laid on the altar.

Despite this complete break with the old conception of the indwelling presence of the god in the temple-sanctuary,—a conception which brought the god so near to his priests and worshippers—it is remarkable how closely in many respects the general plan and equipment of the traditional Egyptian temple were adhered to, a clear indication that there were no direct foreign influences at work in the new religion; indeed, the architecture down to the very last detail is purely Egyptian. We still find the pylon with its two beflagged towers and the great forecourt with its large stone altar in the midst⁴—the forecourt being colonnaded in the case of the temple bearing the name of "Shade of Rē^c of the Queen Mother, the Great Royal Wife, Tyi." Evidently, too, the rearmost court of all in the Aton-temples, which occupied the place of the sanctuary in the ordinary Egyptian temple, was regarded as particularly sacred. Again statues of the king and also of the queen were set up as heretofore in different parts of the temples, the king and queen being thus enabled, so it was thought, to function perpetually as worshippers and offerers, or conversely as the recipients of worship and offerings. Yet again, before the entrance to what N. de G. Davies calls "the inner temple" of the Aton stood eight tanks of water for the purification of those who entered it. Such tanks or pools of water were, as pointed out in the preliminary article, a characteristic feature of the old Heliopolitan sun-cult. Finally, the "inner temple" was called the House of the Benben, the *benben* being, as we have seen, the sacred pyramidion in the great sun-temple at Heliopolis. Curiously enough, in the representations we possess of Ökhnatön's Aton-temples,

⁴ By an oversight no reference was made in the account of an ordinary Egyptian temple, given in the preliminary article, to the stone altar that always stood in the colonnaded forecourt.

no obelisks (which were so closely associated with the old sun-cult) are depicted as standing before the main entrance or elsewhere in the sacred precincts. However, we know that Ökhnatōn erected an obelisk in honour of Harakhte-Aton at Karnak, probably in connexion with his *sed*-festival celebrations.⁵

The Aton-temple liturgy itself is clearly the old temple liturgy adapted to the new ideas and new requirements. As there was no cultus-image, there was no place in the new worship for the toilet, or indeed many of the pre-toilet, episodes of the old liturgy. The worship of the Aton seems to have consisted mainly in the presentation to the god of food- and drink-offerings, perfumes, and flowers, and in the chanting of hymns and in musical performances in general. But the ceremonies connected with the presentation of offerings were those of the old religion, the officiant consecrating the offerings in the time-honoured fashion, *i.e.* by extending over them the so-called *kherp*-baton. As in the old liturgy, this ritual act was preceded by the burning of incense and the pouring out of a libation of water; indeed, the burning of incense and the pouring out of a libation were, as in times past, the regular accompaniments of every act of offering. The liturgy was celebrated, as of old, to the accompaniment of the rattling of sistra, and also of other musical performances, vocal and instrumental. Lastly, it should be pointed out, the ceremony of sweeping the floor—the removal of the foot-prints—before and after the celebration of the liturgy seems almost certainly to have been retained.

This article cannot be satisfactorily concluded without a brief discussion of two important questions that have already been touched upon in the preceding paragraphs, namely, Ökhnatōn's quarrel with the priests of Amūn, and the theory advanced by some scholars that in the establishment of the Aton-cult we are to recognise a temporary restoration of the political and religious supremacy of the Heliopolitan priesthood.

Long before the time of Ökhnatōn the Theban god Amūn had been completely identified with the Heliopolitan sun-god. What, then, was the cause of the king's rupture with the priests of Amūn and his breaking away from all Theban influences?

It must be borne in mind that the monotheistic tendencies of the preceding period had in no way affected the customary performances of the old institutional religion. Whatever may have been the speculations and ideas of the learned and enlightened few, the worship of the gods was conducted in exactly the same way as it had been for centuries, without a single hint at a change in the traditional ceremonial. Ökhnatōn's religious revolution, on the other hand, not only entailed a great change in the conduct of the temple services and far-reaching structural alterations in the temple buildings, but also, since the king would brook no rival to his god, the suppression of all the festivals and other performances connected with the provincial cults and with the various cults established at the capital. All this was a completely new attitude in Egyptian religious experience; indeed we are encountering the "jealous God" for the first time in human history, several centuries before His appearance among the Hebrews. The feelings both of the priests

⁵ Schäfer in *Ämliche Berichte aus den preussisch. Kunstsammlungen*, xi, col. 227.

and of the masses of the people must have been deeply stirred by this attack on their religious observances, particularly in so far as it affected the festivals celebrated in honour of the local divinities, festivals which no doubt played as great a part in the lives of the people as do those celebrated in honour of the local Egyptian saints at the present day.⁶ In fact, there can be no question that Ökhnatōn's reform meant far too sharp a break with the past for his intensely conservative-minded subjects.

It should here be pointed out that so early as the reign of Tethmōsis III. all the priesthoods of Egypt had been combined in one great organisation, with the high-priest of Amūn at their head. To the high-priest of Amūn, therefore, and to the priesthood of Amūn as a whole, all the local priesthoods would have looked to champion their threatened rights, while in Ökhnatōn's eyes this very high-priest and priesthood would have appeared as the embodiment of all the forces of reaction against which he was struggling. Herein lay quite sufficient cause for his breaking away entirely from Thebes and the Theban god. We must also remember that Ökhnatōn's materialistic conception of the Aton was entirely opposed to the—as already pointed out—much more spiritual conception of the sun-god formulated by the theologians of the old religion. It was impossible to regard the actual corporeal and localised divinity, such as Ökhnatōn maintained his sun-god to be, as capable of identification with a being (or beings) who could manifest himself (or themselves) in all manner of forms and in many places. Did the cause of the final rupture reside in this difference of conception as to the nature of the Godhead? If so, we have here a foretaste of those great theological controversies which troubled the Christian Church of the first five centuries, and of the seventeenth-century wars of religion.

Let us now briefly consider the theory that in the institution of the Aton-cult we are to recognise the restoration of the political and religious supremacy of Heliopolis. In view of all that has been set forth in the preceding paragraphs, the Heliopolitan sun-cult is clearly to be regarded as the basis of the new religion, or rather as supplying all the material out of which the new edifice was constructed. On the other hand, the particular shape that that edifice assumed must be regarded as the work of Ökhnatōn. If the sun-cult had been officially promulgated by the organised priesthood of Heliopolis or, as Borchardt⁷ suggests, of Hermonthis (Heliopolis of Upper Egypt [*Ἡρωνθίς*]), Ökhnatōn, instead of founding an entirely new capital at El-Amarna, would have been obliged to install the seat of government in or very near the actual official centre of the religion he had adopted. But he was able to act as he did, because the religion he professed was regarded as a completely new religion, a special revelation to himself, as he distinctly asserts. It was therefore not associated with any particular locality, so he was free to make his capital in any place that seemed to him to be most free from the old traditions and best adapted to his requirements.

Lastly, just a few words on the frequently-made assertion that foreign influences are discernible in the

⁶ See W. S. Blackman, "Festivals celebrating Local Saints in Modern Egypt," in *Discovery*, vol. iv. No. 37, pp. 11-14.

⁷ *Mitteilungen der Deutschen Orient-Gesellschaft zu Berlin*, March 1917, No. 57, p. 27.

Aton-cult. That there are no traces whatever of such influences, but that the Aton-cult is in every respect essentially Egyptian, the facts set forth in this article must have made perfectly clear. However, it is possible that Ökhnatōn had foreign blood in his veins, for Prof. Elliot Smith maintains that his maternal grandfather, Iuyu, is distinctly non-Egyptian in type. To this dash of foreign blood, therefore, may well be due the originality clearly displayed by Ökhnatōn in the particular expression which he gave to a certain trend of religious thought prevailing among his contemporaries.

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Scientific Investigation of the Whaling Problem.

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THE Colonial Office has recently announced that the *Discovery* has been purchased by the Crown Agents for the Colonies, on behalf of the Falkland Islands, for employment in researches, principally on whaling, off South Georgia and the South Shetlands. The *Discovery* was built for Capt. R. F. Scott's first Antarctic Expedition (1901-1904). She is a strong wooden vessel of about 700 tons register, and she has been chosen with special reference to her suitability for ice-work.

Subantarctic whaling commenced at the end of 1904, at a time when the industry was regarded as almost obsolete, owing to the exhaustion of the old whaling fields. It increased with so much rapidity that more than 10,000 whales were caught during the season 1911-12. At first concerned almost exclusively with the humpback, the operations are at present supported almost entirely at the expense of the much larger fin whale and blue whale. Humpbacks showed an alarming decline in numbers after the 1911-12 season, though they have made some recovery during the last two whaling seasons.

It should be realised that modern whaling is carried on by comparatively small steam vessels fitted with appliances for the capture of the whales, the products of which are worked up by factories on shore or by larger steamers, the floating factories. In either case, suitable harbours are required as bases, and the most favourable localities at present known are South Georgia, which lies to the east of the Falkland Islands, and the South Shetlands, which are farther to the south-west. These islands are dependencies of the Falkland Islands, and are accordingly under British jurisdiction.

As the result of several memoranda which were prepared in 1917 by Mr. E. R. Darnley, of the Colonial Office, an Interdepartmental Committee on research and development in the dependencies of the Falkland Islands was appointed by the Secretary of State for the Colonies in 1918; and its report (Cmd. 657) was published in 1920. The report contained a number of recommendations with regard to the investigations which were required; and the purchase of the *Discovery* is the first practical result of these suggestions. It should be mentioned that an earlier Anglo-Swedish scheme for the investigation of the same problems was abandoned on the outbreak of war in 1914.

The object of the projected voyages is to obtain scientific evidence bearing on the whaling problem generally, with the view of ascertaining to what extent protective measures are required. It has to be determined, in the first instance, what are the species of whales which are being hunted. Although known to the whalers as humpback, fin whale, and blue whale, it is uncertain whether these are identical with the northern whales known by the same names. Whales are migratory animals, and there can be no reasonable doubt that they visit the Antarctic Ocean in order to profit by the rich food-supply of its waters, and that they afterwards depart, fatter than when they arrived, to warmer waters, which are probably visited for breeding purposes. More definite information is required with regard to these migrations, and it is hoped that it may be possible to obtain direct evidence by a system of marking individual whales.

The period of gestation, the seasons when pairing and birth take place, and the rate of growth after birth all need further study. The plankton requires investigation, in view of the dependence of the whales on it for food; while the temperature of the water, with other hydrographical questions, has to be studied, in order to ascertain how far these factors influence the movements of whales. There is already some reason to suppose that the position of the northern edge of the Antarctic ice is a factor which is correlated with the success or failure of a season's working. If the summer is relatively warm the ice will be too far to the south and the whales will probably be too distant from the base. If the summer is cold the whales will be too much to the north. It may be anticipated that there is an optimum position for the ice which brings the main stream of whales to the neighbourhood of the whaling stations.

Although whalebone whales all feed on plankton, individual species are known to have a preference for one kind of plankton rather than another. In most localities the humpback consumes a considerable amount of fish, while the blue whale is said to feed exclusively on Crustacea. The distribution and the seasonal occurrence of various kinds of plankton, and the examination of the stomach-contents of whales, are matters with which the expedition will certainly have to deal; and the results may prove to have a