

Greenland Hydroids

DR. P. L. KRAMP in two recent papers * discusses the hydroids of Greenland. The area investigated in the first is extensive, comprising the entire west coast of Greenland from Cape Farewell to Etah in the narrowest part of Smith Sound, and several series of stations laid from the Greenland coast across the Davis Strait and Baffin Bay as far west as possible; in several places the investigations being carried through to the coasts of Labrador.

The second paper deals with the hydroid fauna of representative fjords belonging to two groups, the so-called 'Atlantic' and 'Arctic' types. The difference between these two types is that in one the entrance is deep enough to allow the comparatively warm water of Atlantic origin in the deeper parts of the Davis Strait to come into the fjord, in which the bottom water, therefore, has a fairly high temperature. In the other, a threshold at the entrance prevents (or prevents for most of the year) the Atlantic water from entering the fjord, in which the bottom water is therefore very cold. North Strömfjord, investigated by Dr. V. Nordmann in 1911, was selected as the representative of the arctic type; and in the summer of 1912, Dr. K. Stephensen investigated Kvanefjord near Frederikshaab, Bredefjord, north of Julianehaab, and Skovfjord, six miles farther south, as representative of the Atlantic type.

It is an interesting fact that each zoogeographical group of species of hydroids has in all essentials the same bathymetrical distribution in both types of fjord, which agrees with the ascidian fauna as found by Hartmeyer. Stephensen found, however, that the crustaceans, pycnogonids, and echinoderms in North Strömfjord consist entirely of arctic and arctic-boreal species, whereas several boreal and Atlantic forms occur in the southern fjords. The only exception in the hydroids is that the abyssal Atlantic species are wanting in the North Strömfjord; otherwise in both types there are arctic, arctic-boreal, boreal, and cosmopolitan species in almost the same proportions at similar depths.

Species of all the zoogeographical groups, even

* Kramp, P. L. The Godthaab Expedition 1928. Hydroids. *Medd. om Grønland. Komm. for Vidensk. Undersøg. i Grønland.* Bd. 79, Nr. 1, 1932. Hydroids collected in West Greenland Fjords in 1911 and 1912, *ibid.*, Bd. 91, Nr. 3, 1932. (København: C.A. Reitzels Forlag.)

boreal forms, were found at considerable depths and at low temperatures in North Strömfjord, but Dr. Kramp is of the opinion that the late summer and autumn temperatures in deep water rise to fairly high values. Stephensen and Hartmeyer emphasise the constantly negative temperature of the water at all depths from about 60 m. downwards, but Dr. Kramp observes that some hydroids are able to live for a long time under very unfavourable conditions of temperature if there is a short period when conditions are favourable. If the temperature rose sometimes to one or two degrees above zero, the presence of these boreal species would be quite explicable. On July 31, 1911, the bottom temperature at one of the stations near the entrance to the fjord at a depth of 170-200 m. was 1°-2°, and later in the year, according to Dr. Kramp, it will probably be higher, and this comparatively warm water will enter the fjord and mix with the other water layers, causing a rise in temperature for a time. As he suggests, the positive temperatures sometimes noted from these depths in Dr. Nordmann's journal, and considered erroneous, may not be altogether wrong, and there is no doubt that the violent currents cause a fair amount of mixing of the water layers. Thus the author explains the presence of some boreal species of both hydroids and ascidians which are able to propagate and grow at intermediate depths in North Strömfjord as due to the combined action of the influx of Atlantic water from the outside and of the vertical movements which bring down the surface water, heated during the summer, resulting in an increase of temperature in the deeper strata at certain periods of the year.

Dr. Kramp has also recently published "A Revision of the Medusæ belonging to the Family *Mitrocomidae*". † As medusæ are of considerable use as indicators of sea-currents, it is important to be certain of the species with which we are dealing, and the memoir is very helpful in enabling us to distinguish the members of this family, at the first glance so similar to one another.

† Reprinted from Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening, vol. 92. Pp. 303-387. (København: Bianco Lunds Bogtrykkeri A.S., 1932.)

Megalithic Monuments of Brittany

IT was to be expected that megalithic monuments, and in particular circles, stone or other, would occupy much of the attention of the International Congress of Prehistoric and Protohistoric Sciences, recently held in London, especially as arrangements had been made to give many of the overseas members their first opportunity to view the site of the wooden circles at Woodhenge and 'The Sanctuary'. In fact, two whole sessions of Section III.A of the Congress were devoted to the subject. Among the communications then presented, special interest is attached to that of the veteran field archæologist, M. Z. Le Rouzic, whose prolonged and practical acquaintance with the problem of the megalith in Brittany gives him unquestioned authority on the subject chosen for his communication: "Morphologie et chronologie des monuments sépultureux de Morbihan".

M. Le Rouzic classifies the megalithic monuments into ten groups as follows:

(1) Dolmens with rather irregular chambers and corbelling and an entrance passage roofed with small blocks; the whole is buried in a tumulus with a limiting circle of upright stones. Associated are

polished axes, some small and votive, fine flint arrow-heads with barbs and stem, flint scrapers, borers, etc. The pottery is both fine and coarse; with these are pot spindle whorls and stone beads. An example is Parc Guren (Crac'h).

(2) Dolmens with long entrance passage and side chambers, built of large blocks. Also '*allées couvertes*' with port-holed supports. Corbelling is usually above large block-uprights. The monument is embedded in a cairn and often surmounted by a menhir. Uprights are often engraved. Associated are bell-beakers, 'bowls-with-support', beads of callais, etc., ornaments of hammered gold, as well as objects of Group 1. There are a few foreign types of fine flint work and copper or bronze daggers. Both burials and cremations are found—Kercado, Mané Lud, are good examples; also some '*allées couvertes*' of elbowed form (Le Pocher, Plougoumelen). Kerlescant '*allée couverte*' formerly had a port-hole. Île Longue is the finest corbelled tomb in Brittany.

(3) Tumulus with quadrangular cist, or cists of blocks or dry walling with hearths inside them. Purely neolithic associations. The second tumulus of

Le Manio contains 39 cists. There is a decorated menhir above it.

(4) Dolmens in a tumulus with contemporary cists. This is probably a combination of Nos. 1 or 2 with No. 3. No. 2 is probably an intrusive culture, No. 1 an impoverished local form of No. 2, and No. 3 either another local form based on No. 2 or an intrusive type of some other origin.

(5) Monuments containing a closed dolmenic chamber, often built with dry walling. (a) Yield fine jadeite, etc., axes, some very small and provided with suspension holes, ring-discs, many callais beads, but very little pottery; for example, Mt. St. Michel (Carnac) and Ker Lud. (b) Yield no callais but have arrow-heads of translucent flint, copper or bronze daggers, halberds, and flat axes. The chamber is somewhat sunk; originally it had wood-covered walls. None of these monuments are found in the sacred Carnac region. They are probably the work of invaders or strangers. Examples are Mané-er-Loh, Mané Roullarde, Mané Kervilor.

(6) Tumulus enclosing a closed dolmenic chamber and stone cists (compare No. 4, but in this case a hybrid of 3 and 5), handled pots. The dating is early bronze age; examples are St. Germain, Erdeven.

(7) Tumulus with rectangular dry-walled cists. Associated are lances and blades of bronze. These are probably the poor successors of 5b and 3 crossed. Mané Rumentier is an example.

(8) Tumulus with six-slatted cists. With these are bronze pins and black pottery. The dating is iron age; example, Mané Bekernoz.

(9) Tumulus with rectangular fossa in a circular enclosure with four-handled pots, objects in bronze and iron, and beads of blue glass. No. 7 at Le Rocher (Plougoumen), Hallstatt and La Tène periods.

(10) True La Tène burials in subterranean chambers are found only in La Tène III.; for example, Kerfraral. To the same period belong tumuli with small entrance passages. They are often filled with black earth and charcoal and contain a hearth. Examples are

Mané Roullarde, Mané Bras de Kervilor. No. 10 indicates the persistence of the influence of Nos. 1 and 2.

A second communication dealing with megalithic monuments in Brittany was presented by Prof. C. Daryll Forde on "The Typology of Megalithic Monuments in Brittany". Prof. Forde pointed out that Brittany contains a very complete range of megalithic and associated tombs from corbelled and rock-hewn chambers to small cists and coffers. The passage chamber is the basic form, and it is probably both relatively and absolutely most abundant in south Morbihan. It is usually truly megalithic. The Breton tombs show close parallels with the southern Iberian. The development of a multiple passage tomb in south Morbihan may have been the starting point for the rough grouped chambers found outside that region, and may have been the model for some of the tombs in the English long barrows.

Angled galleries and large closed chambers are specific Breton types, rare outside the peninsula, and mostly confined to the south. The covered gallery ('*allée couverte*'), in form, distribution, and some characteristic grave-goods, indicates connexions with north-east France; but its contemporaneity with other tombs is shown by the presence of the bell-beaker. A number of auxiliary grave types are associated with the larger tombs: small coffers of heaped stone fragments, stone cists, and trench graves. These are sometimes found under the same tumuli as megaliths without suggesting secondary interment.

The material from tombs of different type does not show much variation. While certain objects have a restricted geographical range, they are not confined to a single type of tomb. The concentration, fine construction, and abundance of Iberian parallels in southern Morbihan indicate that this was the first centre of megalithic construction in Brittany. The culture stagnated after the first diffusion, while the Armorican graves of the late bronze age show a very complete break with the tradition of the megalith builders.

British Phenology

THE Phenological Report, 1931, issued as a special number of vol. 58 of the *Quarterly Journal of the Royal Meteorological Society*, is the forty-first report of this kind. It deals primarily with variations in different parts of the country in the dates of the first appearance of certain birds and insects, of the first singing of various species of bird, and of the date of commencement of flowering under natural conditions of various plants of the country-side; it is consequently mainly in the form of statistical tables. Observers increased from 500 in 1930 to just over 600 for this issue, mainly as a result of broadcasting; while the south is well supplied with observers, there is still opportunity for more in the more remote areas, especially Wales, Scotland, and Ireland.

This particular number does not differ much in form from those for other recent years, although it contains a new feature in the form of a map showing what are described as average spring migrant isophenes—a system of lines of equal average date of arrival of twenty species of migratory bird based on records obtained during the seventeen years 1914–30. The dates are in the notation generally adopted in phenological work, that is, they are expressed as the serial number of the day in question, Jan. 1 being taken as 1, Feb. 1 as 32, and so on. Such a map of normal dates of arrival can be used when it is desired to know to what extent a particular year is abnormal in regard to the average time of arrival of migrants, and also may give information

about the nature of bird migration to anyone capable of interpreting the figures; for example, the existence of closed areas of relatively late arrival superimposed upon a general retardation from south to north (the latter exceeding a fortnight as between southern England and northern Scotland), often corresponding roughly with elevation of the land, suggests a secondary feature of the migrational movement connected no doubt with the well-known backwardness of plant and insect development in higher and therefore colder localities, complicated by other factors if the lines are to be trusted.

A weather summary based on the published records of the Meteorological Office is included to enable the student to trace the effects of the weather upon the phenological records, and a table which appears for the first time in the present Report is Table I.D., showing the number of *weeks* with 'decided' and 'excessive' divergences of the three main weather elements, based on unpublished weekly weather returns. Table VI. includes *decade* means of the thirteen plants used in the records for comparison. The unique series of observations of trees and shrubs taken at St. Michael's, Tenbury, Worcestershire, in Table VII., and those of plants and birds taken at Hevingham, Norfolk, in Table XIV., are making their last appearance owing to death and infirmity.

The year 1931 was particularly interesting on account of the severe frosts in March and October, and much dull weather in the late summer.