

Mr. Modak's important address suggests several lessons. Bombay has gone ahead of some of the seaside resorts of Great Britain, where it is still the practice to pour untreated sewage into the sea, to the fouling of the foreshore and the discomfort and danger of bathers—although some visitors confuse the sewage smell with that of ozone. Bombay started late and so had the advantage of the great body of research work that has been put into sewage purification in recent years. Much study preceded the choice of plant, and what appeared to be the best was chosen. Yet without the scientific staff and full laboratory facilities (in charge of Mr. Y. N. Kotwal) the institution of the works would have been a disaster for the city, the works being in a residential area. The special local conditions have demanded much study and adaptation to reduce stench and fly breeding. There is no lesson for the man of science in this, but there is one for the town and city councillor. Crude sewages look much alike, but in fact are vastly different and each new industry changes the character to some extent. Each type calls for study and research in local conditions if the best is to be got out of the plant. The authority should therefore not think that when system and labour are provided there shall be no further spending. Sanitation in any of its forms calls for constant scientific guidance and searching for improvements and economies.

Mr. Modak's closing words are worth repeating. "Sewage disposal is a universally repugnant subject and the public conclude that a sewage treatment plant cannot but be a place of foul odours and obnoxious sights, a place only fit for scavengers, a place that must be avoided by respectable persons. A well arranged, clean and landscaped sewage works with trees and lawns has a favourable psychological effect on the workers and visitors. The public will then know that, at a sewage treatment plant, even men, both clean and intelligent like themselves, are working, doing an important job and recovering useful products from human waste." The present writer visits one such place in Yorkshire where broad, gently curving walks are bounded with trees and easy seats, where there is no odour or annoyance from flies. There it is a pleasure to sit and restful to watch the spraying arms move slowly on their inevitable way.

ANTARCTIC RESEARCH

THE most recent volume of the Discovery Reports* contains a station list which is a continuation of that already published in the reports, vols. 1, 2 and 4, and gives particulars of the observations made by the R.R.S. *Discovery II* from October 1931 to April 1933. To the usual hydrological data are added, in part, phosphorus, nitrate plus nitrite, nitrite and silica estimates.

The porpoise described by J. E. Hamilton was in a practically skeletal condition and the paper relates to the skull, ribs, sternum and vertebral column.

* Discovery Reports. Issued by the Discovery Committee, Colonial Office, London, on behalf of the Government of the Dependencies of the Falkland Islands. Vol. 21 (1942). Title Page and List of Contents. Station List 1931-1933 (1941). A Rare Porpoise of the South Atlantic, *Phocaena dioptrica* (Lahille 1912) by J. E. Hamilton (1941). The Echiuridae, Sipunculidae and Priapulidae collected by the Ships of the Discovery Committee during the Years 1926 to 1937, by A. C. Stephen (1941). Phytoplankton Periodicity in Antarctic Surface Waters, by T. John Hart (1942). (Cambridge: At the University Press.)

The Echiuridae, etc., by A. C. Stephen has already been reviewed in NATURE (149, 57; 1942).

The remainder of the volume contains Dr. Hart's valuable monograph on Antarctic phytoplankton. Following his former work ("On the Phytoplankton of the South-West Atlantic and the Bellingshausen Sea, 1929-31", Discovery Reports, 8; 1934) it amplifies this enormously, and the whole scope of the work during the earlier commission is greatly enlarged with the expansion of modern whaling during 1928-31, and after. His present work covers a vast area, his aim being to provide a picture of the major differences in phytoplankton distribution at different times of the year throughout the whole of the Antarctic zone of the Southern Ocean. It is very satisfactory that his earlier predictions have been in most cases fully confirmed.

This research, necessarily limited in scope, deals mainly with the larger qualitative and quantitative differences in the phytoplankton, at as many stations as possible, and the changes throughout the year in single areas where conditions seem to be typical. To facilitate this study the author divides the Antarctic zone into regions and special areas based mainly on the degree of neritic influence and the northward extent of the Antarctic surface waters in the longitudes concerned. The diatoms themselves, much the most important of the phytoplankton organisms, are grouped on a system taking into account their general distribution, seasonal and geographical.

Although a certain number of counts with centrifuged samples were made, by far the greater part of the work was done by the estimation of pigment contents of the catches by Harvey's (1934) method, the results being expressed in arbitrary colour units per cubic metre and the catches from 50 m. to 0 m. made with a vertical net fitted with a meter recording the volume of water filtered—a method which was found most effective.

Polar conditions extend much farther towards the equator in the southern than in the northern hemisphere and there are great differences in climate and hydrological conditions. Antarctic surface waters are much richer in nutrient salts and in phytoplankton. In corresponding latitudes the main increase is relatively later. Light, the degree of stability of the surface layers and the interrelated effects of pack ice, appear to be the most important factors in determining the course of phytoplankton production within the Antarctic zone, but the post-maximal summer decrease in the more northerly Antarctic waters and the very much greater production in neritic as compared with oceanic areas must probably be explained by chemical and biological factors. Here the reduction of silicate in the more northern parts of the Antarctic zone is a likely cause of decrease in diatoms, and the immense numbers of faecal pellets of diatom-eating animals which accompany the comparatively poor phytoplankton during the decrease suggests that heavy grazing by the zooplanktonic herbivores was in part responsible and possibly the most important biological factor influencing production. The much greater richness of diatoms in the neritic areas as compared with the oceanic regions offers a different problem and here there may be, as suggested by Hardy, backed by a certain amount of evidence, the converse of grazing—that of animal exclusion. It is possible that the enormous masses of diatoms exclude the presence of zooplankton. To account for these huge masses of neritic diatoms recent work tends to show that extremely small amounts of organic

compounds, iron and manganese, derived from the land, exert a strongly favourable influence on phytoplankton production.

The importance of the pack-ice in maintaining the flora within the Antarctic zone is much emphasized. It is even more marked than earlier observations suggested. By means of the pack-ice neritic species are maintained very far from land and flourish for short periods when the ice disperses.

It is here confirmed, as is already noted by former observers (Marshall, Gross and others), that Calanoids are capable of triturating and swallowing the larger spiny diatoms as well as ingesting the smaller species entire. The author's examination of stomach contents showed that in addition to *Euphausia superba*, other Euphausiids, some of the most important Calanoids and some of the more abundant Pteropods, all feed extensively on diatoms.

INTERNATIONAL LAW AND MORALS

PROF. MORRIS GINSBERG wisely chose for his presidential address to the Aristotelian Society* a theme relevant both to his own distinguished work as a sociologist and to the world crisis which perforce dominates public attention at the present time. He sets himself to show how the trend towards an individualist doctrine in ethics is discernible also in recent developments of international law, attended there by "a certain lag in applying the criticisms which in the course of the nineteenth century were directed against the principles of individualism" (for example, the right of property and freedom of contract) in the internal economy of States, to the problem of the relations between States, a lag that is in no small measure responsible for our present international troubles and calls urgently for rectification. The only remedy, he contends (and the contention is supported by much judicious illustration), lies in the establishment of an effective supra-national authority. It makes little difference to this conclusion whether a utilitarian criterion or a doctrine of natural rights be adopted as the basis of the theory of international law; for the advocates of both these positions have carried the individualist interpretation to an extreme that precludes any satisfactory solution of international problems. Prof. Ginsberg's discussion of the concepts of equality, freedom and self-determination and of the difficulties provoked by each when held to be natural rights is perhaps the most masterly section of his address.

Three points in his review call for special notice. Not only is he convinced that the problem of international relations is a moral one; but it is so regarded by public opinion, both at home and, as has erroneously been questioned, in enemy countries. Nazi propaganda has won its way in Germany by an appeal to justice and denunciation of the alleged injustice of which Germany has been the victim. The theorists of the movement "even go to the length of claiming that they have bridged the gulf between law and morals and that their law alone is *richtiges Recht*". It is vitally important for us all to realize that the conflict in which we are engaged is being fought out

on ethical terrain by both sides. It is a conflict of one set of moral principles against another.

Secondly, on both sides, the ethical concept of justice is in the forefront. Prof. Ginsberg follows Sidgwick in holding that the principle of seeking happiness needs supplementing by that of just distribution. So, again, there can be no peace among the nations without justice, and justice implies positive co-operation for common ends. Lastly, he has some interesting remarks towards the close on the error, into which many thinkers on politics have fallen, of presenting the issue now before the world as whether the individual exists for the State or the State for the individual. To posit the antithesis thus is to over-simplify the real problem. "There is clearly a need," he says, "for a great variety of corporate bodies to mediate between the mass of individuals and the community of mankind." This need is increasingly urgent in the larger among modern States, and is winning recognition in federal communities like the British Commonwealth, the American Union and the U.S.S.R. A great deal of the work of self-government is carried on, not within the bounds of constitutional machinery (where the individual citizen scarcely counts, even when he is voting), but through participation in non-official groups, churches, universities and learned societies, professional organizations and trade unions.

We are duly grateful to Prof. Ginsberg for directing attention to the part such groups may play in the solution of international problems.

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CIVILIAN CONTRIBUTION TO EDUCATION IN H.M. FORCES

THE report of the Central Advisory Council for Adult Education in H.M. Forces for the period April-September 1942 reflects great credit on all the civilian authorities who constitute the Central Advisory Council. The launching of the educational scheme in the Forces could scarcely have been possible without the active participation of the Central Advisory Council, while any success it may have achieved is due in large measure to the substantial assistance provided by the regional committees of the Central Advisory Council in the various administrative areas. It is early yet to assess the real worth of this tremendous educational experiment, but already there is sufficient evidence to show that, by means of talks and discussions on various aspects of citizenship, those who have been responsible for the development of education in the Fighting Services have done much to develop a sense of civic awareness and responsibility among the people who are the potential citizens of Great Britain. Despite the difficulties of travelling in the black-out, the geographical isolation of Army and Air Force units, the cancellation of lectures at short notice owing to military exigencies and other factors which give rise to a considerable amount of exasperation and frustration, civilian lecturers have steadily continued to offer their services under the Scheme for Education in H.M. Forces. The statements in this report bear testimony to their achievements.

An analysis of the statistics brings out some interesting observations. During the period under review (April 1942-September 1942) the Central Advisory Council arranged some 44,695 single

*"The Individualist Basis of International Law and Morals", by Morris Ginsberg, being the Presidential Address to the Aristotelian Society, 1942-3.