enhanced absorption of nutrients and germination of seeds, and increased resistance to frost and to phytopathological fungi and insects.

The possible effects on the algal flora of a region in which a discharge of heated water from a nuclear reactor was taking place were described by W. J. North (United States) for Morro Bay, California. The biota of the area was greatly modified. The dominant flora in the discharge canal consisted of symbiotic algae living within the tissues of sea anemones. Beyond the canal the biota was luxuriant and normal to a distance of 150 m. Closer to the canal the distribution of species changed and organisms unable to tolerate undiluted effluent disappeared. This zone was favorable to fishes.

Some algal constituents appear to be able to lower the level of blood cholesterol and of blood pressure in animals and man as reported by Tsuchiya (Japan). Experiments were performed on rats, rabbits, chicks, and humans. Numerous green, brown, and red algae appear to contain this hypocholesterolemic factor. It was located in different fractions obtained from the seaweeds and has only been partially identified as a nitrogenous base given the name of laminine. The common fucosterol in brown seaweeds caused a diminution in the concentration of plasma cholesterol in chicks but not in rats. Carrageenan from *Chondrus* was effective in preventing experimental hypercholesterolemia in rabbits, as were thyroxine and diiodotyrosine in the alkaline hydrolysates of the proteins from *Heterochordaria* in rats. The field holds promise in the treatment of human atherosclerosis and there was a special session under the leadership of S. Skoryna (Canada) on medical applications of algal constituents.

Much interest was shown in the work of Johnston and McCandless (Canada) on the immunochemistry of the carrageenans. Specific antibodies have been obtained to κ and λ carrageenans. Neither antibody reacted with its heterologous antigen which confirms structural differences supported by chemical evidence. Quantitative differences in cross-reactivity to antiserums of λ carrageenan from *Chondrus crispus* by fractions from several species of *Gigartina* are taken to indicate structural specificities.

There were several communications on other algal polysaccharides, such as fucoidan from *Pelvetia*, mannan and xylan from *Codium* and *Penicillus*, agaroses from *Gracilaria*, alginic acids from *Ascophyllum, Laminaria, Eisinia,* and *Ishige*, and sulfated esters in some South African Grateloupiaceae. It appears possible that the composition of alginic acids may vary in continuous spectrum from polymannuronic acid to polyguluronic acid.

In invited lectures Feldmann (France) drew attention to some of the outstanding problems in the reproductive cycle of marine algae, and Levring (Sweden) stressed the importance of the spectral composition of light in relation to growth of sublittoral plants. It was suggested by den Hartog (Holland), in a discussion of the littoral environment between sea and land and between sea and fresh water, that salinity is one of the major factors in controlling zonation.

An unsuspected sensitivity of *Jania rubens* to a relatively high concentration of phosphorus has complicated efforts by von Stosch (Germany) to culture this alga. Germeling gametophytes developed well and fruited abundantly but attempts to effect fertilization artificially between clones has been unsuccessful. In contrast gametophytes of *Corallina officinalis* produced conceptacles with difficulty and have fruited only rarely.

Magne (France) has found that reduction division occurs in formation of the conchospores, and that the leafy thallus of *Porphyra* is the gametophytic stage. However, Dixon (United States) suggested that the basal portions may remain *in situ* after the thallus has disappeared, and that species of *Porphyra* and *Bangia* can perinnate in this manner and need not go through the conchocelis phase. In addition *P. sanjuanensis* apparently forms "carpospores" only, and Krishnamurthy (India) reported that these spores give rise directly to the leafy thallus.

Experimentally induced regenerative buds of *Fucus vesiculosus* appeared to arise from the wounded surface in the region of the midrib, and Fulcher (Canada) suggested a correlation between regenerative ability and the concentration of primary and secondary filaments.

Norton (Scotland) has observed that development of the sporophytes of *Saccorhiza polyschides* occurred whenever conditions were favorable. Development could be inhibited by reducing the light intensity similar to those recorded in the *Saccorhiza* zone during the winter. Low temperatures and short days apparently do not prevent development of new sporophytes during this season.

As in previous symposia there were a number of communications on the growth, regrowth, and distribution of the genus *Laminaria*.

The proceedings will be published in Spain (R. Margalef and J. Seoane-Camba, Eds.). Direct inquiries to O. Rodriguez, Direccion General de Pesca Maritima, Ruiz de Alarcon 1, Madrid 14, Spain. The 7th symposium is scheduled for Japan in 1971.

E. GORDON YOUNG
J. L. MCLACHLAN
National Research Council of Canada, Halifax, Nova Scotia

Calendar of Events

Contract Research Program

The **Center for Population Research of the National Institute of Child Health and Human Development** wishes to identify potential contractors who have interest and capability in participating in a long-term program for the development of a variety of new methods of fertility regulation.

Solutions to worldwide and national problems related to excessive population growth are exceedingly complex but it is generally agreed that the development of new contraceptives is an indispensable adjunct to such solutions. The ideal contraceptive is effective, safe, inexpensive, and acceptable to various population groups. No presently available method fulfills all these criteria. The goal of this new research and development program is the production of a variety of methods which do fulfill these criteria.

The administrators of the program in contraceptive development expect to support scientists from the several disciplines already engaged in this endeavor, including reproductive biologists, biochemists, and pharmacologists. They also intend to involve scientists from disciplines not previously heavily engaged in this field, such as molecular biologists, bioengineers, and systems analysts, since it is recognized that the development of effective new contraceptives will require the attention of many disciplines.

At the present time certain subjects of special interest have been identified. These topics are subject to change and represent selections which are of necessity in part arbitrary. It is important to emphasize that this is not an inclusive list; research in other subject areas directed toward new forms of fertility regulation may be undertaken. The Center is interested primarily (though not exclusively) in studies in the following four areas: (i) maturation and fertilizing capacity of spermatozoa, (ii) oviduct and gamete transport, (iii) function of the corpus luteum, and (iv) biology of the preimplantation ovum.

Interested sources who believe they are qualified to perform this work are invited to submit the following information:

1) Any broad technical approaches which may now be available (but this is not a prerequisite for consideration as a source) and the reason for their selection

in relation to the purpose of this research effort in contraceptive development.

2) The scientific personnel who would conduct the investigation and the qualifications they have for undertaking this work.

3) Facilities currently or potentially available.

4) Consultants needed and/or any collaborative effort planned.

Responses received will be evaluated by the Center for Population Research in accordance with the following criteria: (i) understanding of the factors involved in this research program, (ii) qualification of the personnel who will undertake the investigation, and (iii) the potential of the organization to work effectively in this area.

To insure full consideration, the information requested should be furnished in 12 copies to Philip A. Corfman, M.D., Director, Center for Population Research, National Institute of Child Health and Human Development, Bethesda, Maryland 20014.

National Meetings

March

2–7. Pittsburgh Conf. on **Analytical Chemistry and Applied Spectroscopy**, Inc., 20th, Cleveland, Ohio. (W. M. Hickam, 1969 Pittsburgh Conf., Westinghouse Research Labs., Pittsburgh, Pa. 15235)

3–5. National Conf. on **Underwater Technology**, 3rd, San Diego, Calif. (J. T. Quirk, Ocean Engineering Div., U.S. Naval Civil Engineering Lab., Port Hueneme, Calif. 93041)

3–6. American Assoc. of **Junior Colleges**, Education Material and Equipment Exposition, Atlanta, Ga. (American Junior College Exposition, P.O. Box 1016, Alexandria, Va. 22313)

3–6. **Physiological Concepts of Clinical Disease**, Dallas, Tex. (American College of Physicians, Philadelphia, Pa.)

3–7. Symposium on **Arthritis and Related Disorders**, New York, N.Y. (Office of the Recorder, New York Univ. Post-Graduate Medical School, 550 First Ave., New York 10016)

4–6. National **Space** Mtg. of the Inst. of Navigation, Houston, Tex. (R. H. Battin, M.I.T. Instrumentation Lab., 75 Cambridge Parkway, Cambridge, Mass. 02139)

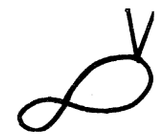
4–7. **Offshore Exploration** Conf., 4th, San Diego, Calif. (OECON IV, P.O. Box 88, Palos Verdes Estates, Calif. 90274)

5–7. **Fundamental Cancer Research**, 23rd symp., Houston, Tex. (D. E. Anderson, Univ. of Texas, M. D. Anderson Hospital and Tumor Inst., Houston)

5–7. **Particle Accelerator** Conf., Washington, D.C. (E. H. Eisenhower, Center for Radiation Research, Natl. Bureau of Standards, Washington, D.C. 20234)

9–11. American Assoc. of **Pathologists and Bacteriologists**, San Francisco, Calif. (K. M. Brinkhous, Dept. of Pathology, Univ. of North Carolina School of Medicine, Chapel Hill 27514)

9–14. American Soc. of **Photogrammetry**, Washington, D.C. (G. L. Loelkes, 8608 Cherry Valley Lane, Alexandria, Va. 22309)



Whales may have the most highly developed brains on this planet. The folds, fissures, and gyri of the whale's brain are far more complicated than those of the human brain and those of other animals. This extreme degree of convolution along with the presence of as many as two voice boxes used for communication plus a third vocalizer used for sonar suggests the existence of high intelligence. Even though the large whales of millions of years ago managed to survive with 2 pound brains, there has been much evolution since then resulting in brains as large as 19 pounds. The sperm whale's brain is six times the size of the human brain. The awareness and consciousness of life of these creatures may greatly exceed that of other mammals.

Scientists are now studying the small whales, the dolphins, because they believe there is a possibility of communicating with them. In the future there may be communication with the larger whales, resulting in a profound insight into an advanced nonhuman mind.

Whales and dolphins lack manual dexterity which prevents them from building an effective defense against the men and machines of the whaling industry. The International Whaling Commission was formed in 1948 to prevent the extinction of the whale. However, the greedy shortsighted whaling industry has succeeded in destroying the effectiveness of the commission by having some of the member nations insist upon catch limits that are far too high for these mammals to replace. At the last annual meeting of the commission, Japan, which has the largest whaling industry, tried to have the allowed kill increased.

At the present time the whaling industry is rapidly wiping out the finback, sperm, and sei whale species by shooting time bombs in them and by poisoning them with curare for the petty purpose of making cheap soap, margarine, dog food, and fertilizer. The other five species of large whale are almost extinct. An example is the blue whale which numbered about 100,000 individuals when the whaling commission was founded. After the allowed slaughter had reduced the number to about 600, the whaling commission finally banned the killing of this whale. However, some countries that don't belong to the whaling commission plus some that do, have taken hundreds since the ban.

Obviously a terrible crime is being committed. Some suggestions to halt the genocide are: a law prohibiting the sale or use of products derived from the bodies of whales, an offer by the U.S. to pension off the whaling industry, and boycotts against the goods of companies and countries that are mainly responsible for the killing of whales. In addition to these suggestions, the use of force against the whaling industry might be of help.

By writing to representatives and editors, more people will be informed of the need for action to save the whales.

MDS