

the financing, management and use of the INTELSAT system.

These two new agreements replace the interim arrangements arrived at in 1964 by the Organization's ten founding members, of which Canada was one. The present membership is 79, 40 of them receiving telephone, telex, data-transmission and, occasionally, television service from INTELSAT satellites in synchronous orbit over the Atlantic, Pacific and Indian Oceans. Fifty-four countries are expected to be using the system by the end of 1972, and 62 by the end of 1973. Under the new arrangements, the American Comsat Corporation will continue to be responsible for the technical aspects of management over an interim period of six years, after which an international manager will assume this function.

The Canadian Overseas Telecommunications Corporation has been using the Atlantic Ocean segment of the INTELSAT system since October 1966. Through its two earth stations at Mill Village, Nova Scotia, the Corporation has established links with 19 countries in that part of the world. Facilities now being built at Cowichan Lake, British Columbia, will become operational in 1972, and will then provide direct links with countries on the Pacific "rim". The COTC is the fifth-largest user of the INTELSAT system.

## FEWER PHOSPHATES IN DETERGENTS

Canadian manufacturers are complying with government regulations on phosphate-content in detergents, according to tests carried out by the federal Department of the Environment.

A chart issued recently by Minister of the Environment Jack Davis gives the before-and-after picture of Canadian detergents, dating from August last year, when government regulations went into effect.

The Phosphorus Concentration Control Regulations, which became law at that time, stated that a maximum of 20 percent phosphate-concentration could be carried in detergents on the Canadian market.

Phosphates have been shown to enrich water and contribute to massive growths of aquatic vegetation. Decay of this vegetation depletes the water of oxygen. This makes it uninhabitable for some fish, and unfit for recreation.

Before the regulation, phosphate-content in Canadian detergents ranged from 1 to 38 per cent. The latest tests show a 1-to-20 percent content in 70 brands, with three brands testing 21.0, 21.5, and 22.1 percent content of phosphates. Where the content is more than 20 per cent, additional samples are being analyzed to determine whether firms will be prosecuted for non-compliance.

Samples were also analyzed by x-ray diffraction to obtain information on substitutes for phosphorus and on other constituents used in laundry detergents.

Because some manufacturers use nitrilotriacetic

acid (NTA) as a substitute for phosphorus in laundry detergents, percentage content of this substance is also shown in the data collected.

Through this information and the identification of chemical additives scientists will be able to evaluate their potential effect on the environment. The tests were carried out in the Water Quality Division laboratories of the Inland Water Branch of the Department of the Environment.

Environment Minister Davis said that the present 20 percent maximum for phosphate in laundry detergents would be cut to 5 per cent by December 31, 1972.

## AGRICULTURE AND THE ENVIRONMENT

Chemical fertilizers used by farmers do not contribute to pollution of lakes and streams says R.A. Milne, a soil scientist with the Canada Agriculture Research Station at Lethbridge, Alberta. But the results of studies carried out by Mr. Milne have isolated soil-erosion and liquid runoff from livestock feedlots as factors in the problem.

Chemical fertilizers have been accused of contributing to increased levels of nitrogen and phosphorus in waterways. These nutrients spur growth of aquatic plants, with the result that a lake or stream may eventually become choked with weeds. Mr. Milne, however, believes the charges to be unfounded. His findings followed studies of the movement of chemical plant nutrients in the soil and the extent to which nitrogen and phosphorus find their way to surface-water and to ground-water. "The results of the studies show that the movement of these nutrients has not contributed to pollution," he declares. "Any phosphorus that was not used by the plants was held firmly in the soil and the soluble nitrates were either taken up quickly by the plants or converted to other forms that do not cause pollution."

Effluent from feedlots has been considered a potential pollutant. But this isn't always the case. In the studies, the soil and ground-water under and near feedlots were found to have a high phosphorus and nitrogen content. But rarely did these nutrients spread in the ground for a distance of more than 400 feet. Mr. Milne attributes this to adsorption of the phosphorus by the soil and the transformation of nitrates into less soluble forms of nitrogen.

The danger from feedlots arises when liquids are allowed to run off into streams, temporarily raising their levels of nitrogen and phosphorus. To prevent this, the runoff should be diverted away from a stream and allowed to seep into the soil. In winter, a storage basin should be used to help the runoff until it can be disposed of when the ground thaws.

Manure from feedlots can be spread in fields for disposal without incurring a risk of pollution, Mr. Milne reports. In the studies, it was found that even in heavily-manured fields the accumulation of nutrients in the soil and ground-water was negligible.