

SPC/Fisheries 6/WP.4
21 June 1973

ORIGINAL: FRENCH

SOUTH PACIFIC COMMISSION

SIXTH TECHNICAL MEETING ON FISHERIES

Suva, Fiji, 23 - 27 July 1973

OYSTER FARMING IN THE NEW HEBRIDES

by

Michel AUTRAND
Fisheries Officer
French Residency
Vila, New Hebrides

ABSTRACT

Two oyster farms are being set up in Santo and Lamap, New Hebrides, using spat of Japanese oysters artificially produced in California. Initial results are encouraging and in Santo, after only six months, marketing operations were started. Attempts to farm local oysters have not been successful, even though to begin with the collection of spat was quite considerable. It would appear that oyster farming in the New Hebrides holds great potential.

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The New Hebrides Group consists of 80 islands and islets of coral or volcanic origin, spread over 900 kms from south-east to north-west. Two islands, Santo and Malekula - with areas of 4200 and 2080 km² respectively - have large rivers and well-protected bays, which make them suitable for oyster farming. This group of islands has been an Anglo-French Condominium since 1906. The main resources are copra and animal production, supplemented by tuna fishing carried out from the South Pacific Fishing Company's base on Santo island.

For about a year now, the French Administration has been interested in developing marine resources in the archipelago. To this end, it enlisted the services of a Technical Assistance Volunteer to provide advice and technical assistance to persons engaged in the farming of edible oysters and prawns, and in the beche-de-mer industry.

BACKGROUND INFORMATION ON THE TWO OYSTER-FARMS IN SANTO-MOUNPARAP
AND MALEKULA - PORT-SANDWICH

Santo - Mounparap

August 1971 saw the first steps taken in this direction by farmers, which consisted of developing suitable collectors for Crassostrea glomerata and C.echinata larvae.

They were encouraged and assisted by Professor Doumenge and from June 1972, a Technical Assistance Volunteer, appointed by the French Administration, proceeded to assess such factors as salinity and comparative growth rate. In November 1972, 20,000 unattached spat of C.gigas from the hatchery of W. Budge, Mariculture Farm, Pescadero, California, was planted in Mounparap after being immersed in New Caledonia for recovery.

Since January 1973, batches of 100,000 C.gigas spat have been coming in every six weeks or so.

The Santo-Mounparap farm came into being through an association of private interests. The venture has recently received financial assistance from the Condominium in the form of a long-term credit.

Malekula - Port-Sandwich

The Port-Sandwich farm was established in April 1973 at the initiative of the French Administration, anxious to promote a new economic activity in an area that had been particularly affected by the drop in copra prices.

165 islanders from 5 villages in the area have formed a company. Its operations during the year 1973 will be financed by the French Administration. Later, the Company will become self-supporting and in future only receive technical assistance from advisers or aquaculture experts, who will stay in the area just long enough to train local technicians.

On 20 April 1973, 100,000 C.gigas seed oysters from the same California hatchery, were planted. The growth pattern is comparable to that obtaining in Santo.

CLIMATIC AND ECOLOGICAL FACTORS

The data given below concern climatic conditions in the two farms over the past twenty years:

SANTO (LUGANVILLE)

AVERAGE HUMIDITY	87.6%
AVERAGE MAXIMUM TEMPERATURE	27.6°C.
AVERAGE MINIMUM TEMPERATURE	21.6°C.
ANNUAL RAINFALL	3101 mm (maximum in February).

LAMAP (PORT-SANDWICH)

AVERAGE MAXIMUM TEMPERATURE	28.8°C
AVERAGE MINIMUM TEMPERATURE	22.8°C
ANNUAL RAINFALL	2085 mm.

Both in Mounparap Bay in Santo, and Port-Sandwich Bay, Malekula, there are considerable variations in water temperature:

Minimum : 25°C; Maximum : 31°C.

Both farms are well sheltered, particularly against depressions coming from North or North-East. They are located on the edge of bays into which fair-sized rivers have their outfall. In both these sites there are natural beds of C.glomerata and C.echinata. However, in Mounparap Bay considerable stratification has been noted with water layers of varying density.

Besides, variations in salinity are much greater in Mounparap than in Port-Sandwich (see diagrams).

Both in Santo and Malekula, the bay-water is very green, abounding in phyto-plankton. Consequently, there is a fair amount of fouling.

FARMING PRACTICES AND RESULTS

Collections of oyster spat from various materials have made it possible for certain conclusions to be made concerning the best type of collectors and the best collection areas. Trochus, giant clams and oyster shells (sometimes coated with lime) proved quite satisfactory - 30 to 50 oysters per shell. The results of subsequent collection tests using bamboo, fibro-cement, coral, mangrove wood etc. were rather poor. Problems presented by stripping and poor survival among 3 or 4 month old oysters, led farmers to discontinue such tests.

C.gigas spat, introduced on 2 November 1972, had a unit-weight of 0.4 g. From June 1973, 800 dozens of 45 - 50 g oysters were marketed:

	Date of planting	Date of sale	Being grown	Mortality
	2 November 1972	1 June 1973	as on 1 June 1973	as on 1 June 1973
Quantity	1700 dz	800 dz	400 dz	500 dz (30%)
Average weight	0.4 g	45 g	varied	-

The farming methods in the case of C.gigas spat, are almost the same as those recommended by J. Glude. The spat is placed in oyster trays (0.50x0.40x0.10 cm), made of a wooden frame covered with mosquito-gauze.

These trays are placed in racks 60 or 80 cm below the surface. The racks are kept afloat by large buoys or polyvinyl tubes. This method, which requires a considerable number of racks and trays is quite a costly one. The spat is kept in oyster trays for 2 or 3 months, then transferred to small plastic bags which are suspended from ordinary rafts or placed on racks around the intertidal zone, thus ensuring that they are constantly under water. The oysters are now repeatedly taken out of the water, a procedure which conditions them for transport prior to marketing.

Roland Bois, a Santo oyster farmer, had placed several racks containing young spat at a depth of fifteen metres. He has observed that under these conditions the growth was quicker and mortality negligible. There was practically no fouling.

The farm at Santo has two covered, concrete ponds measuring 5m x 5m x 0.60, into which water and oxygen are pumped. The trays containing young oysters are placed in these ponds for some weeks. Young rabbitfish (Siganus) are also reared in these ponds.

600,000 C.gigas are at present grown in the Santo farm. The farmers wish to import every year 1 to 1½ million seed oysters annually.

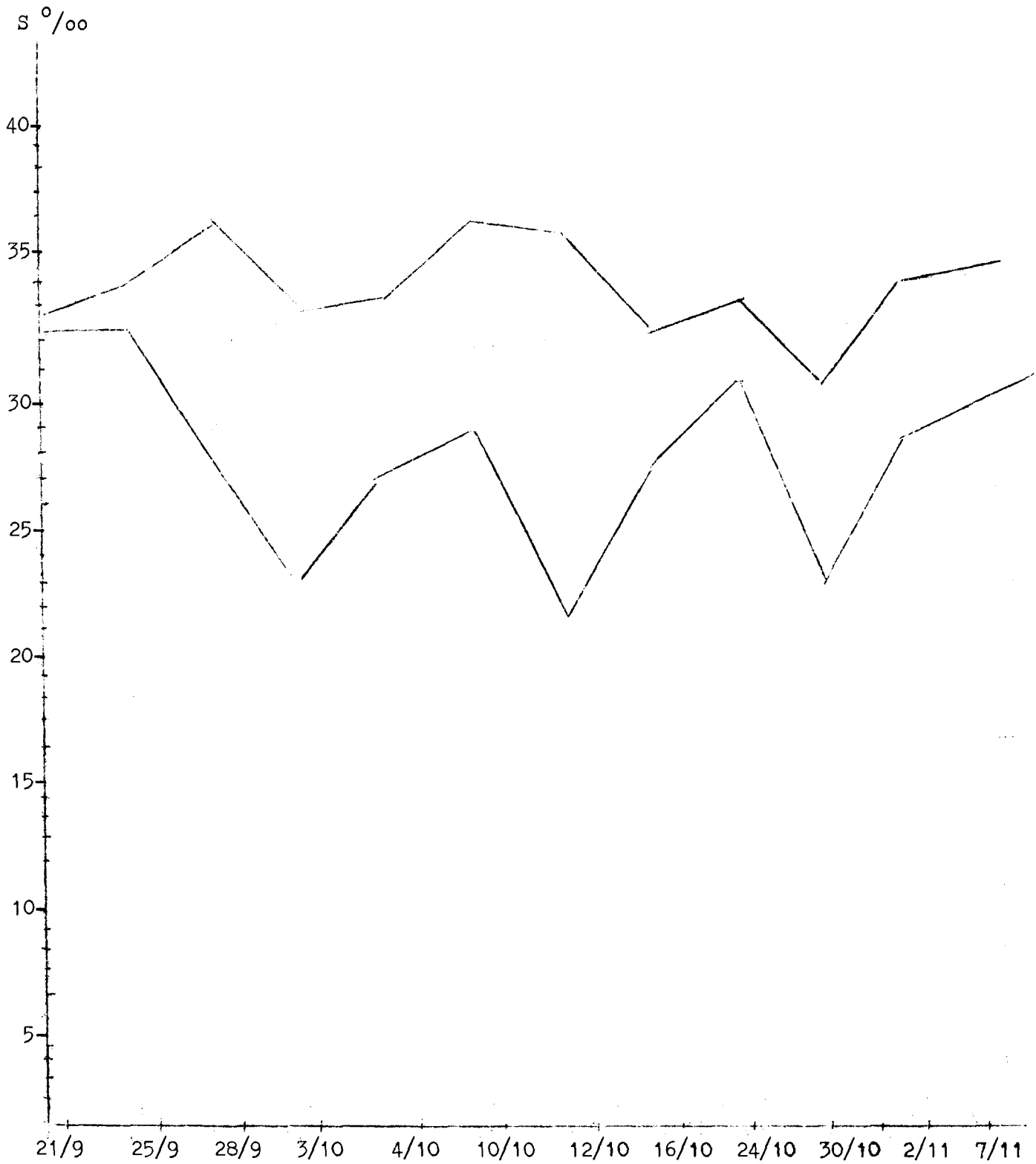
To date, survival seems to be reasonably good both in Santo and in Port-Sandwich. Farmers are striving to reduce to the barest minimum losses due to improper care, faulty assembling of oyster trays and faulty handling. Messrs Bois and Huguet are considering the introduction, in the near future, of other bivalve species.

MARKETING AND SALES

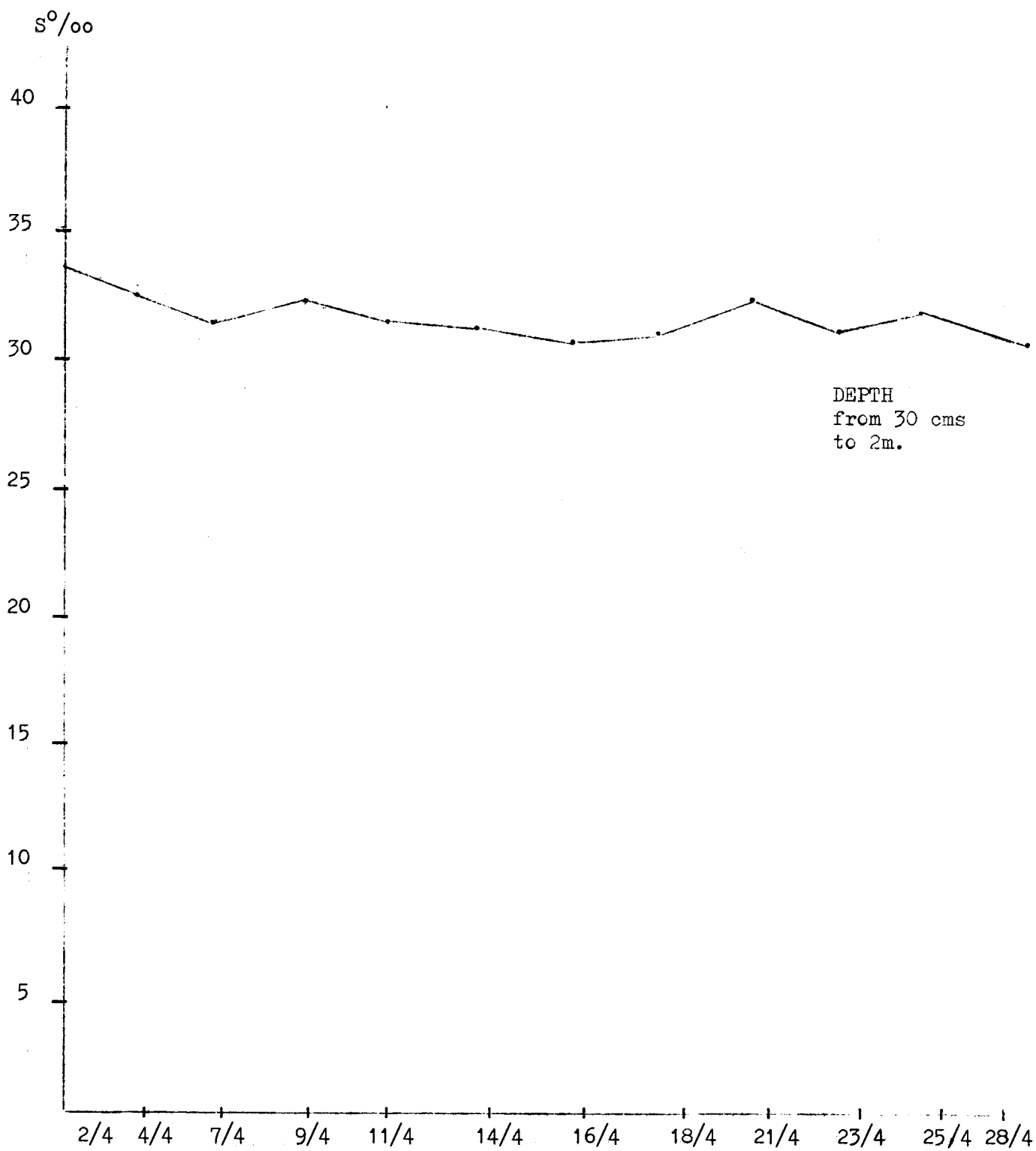
There is no immediate problem of marketing and sales since Luganville and Vila offer ready markets for oysters and considering the New Hebrides tourist potential.

In the two above centres, the present consumption of fresh oysters in restaurants amounts to about 4,000 dozens per month. New Hebridean oysters could compete with oysters coming from New Zealand or Australia, which New Caledonia imports in great quantity.

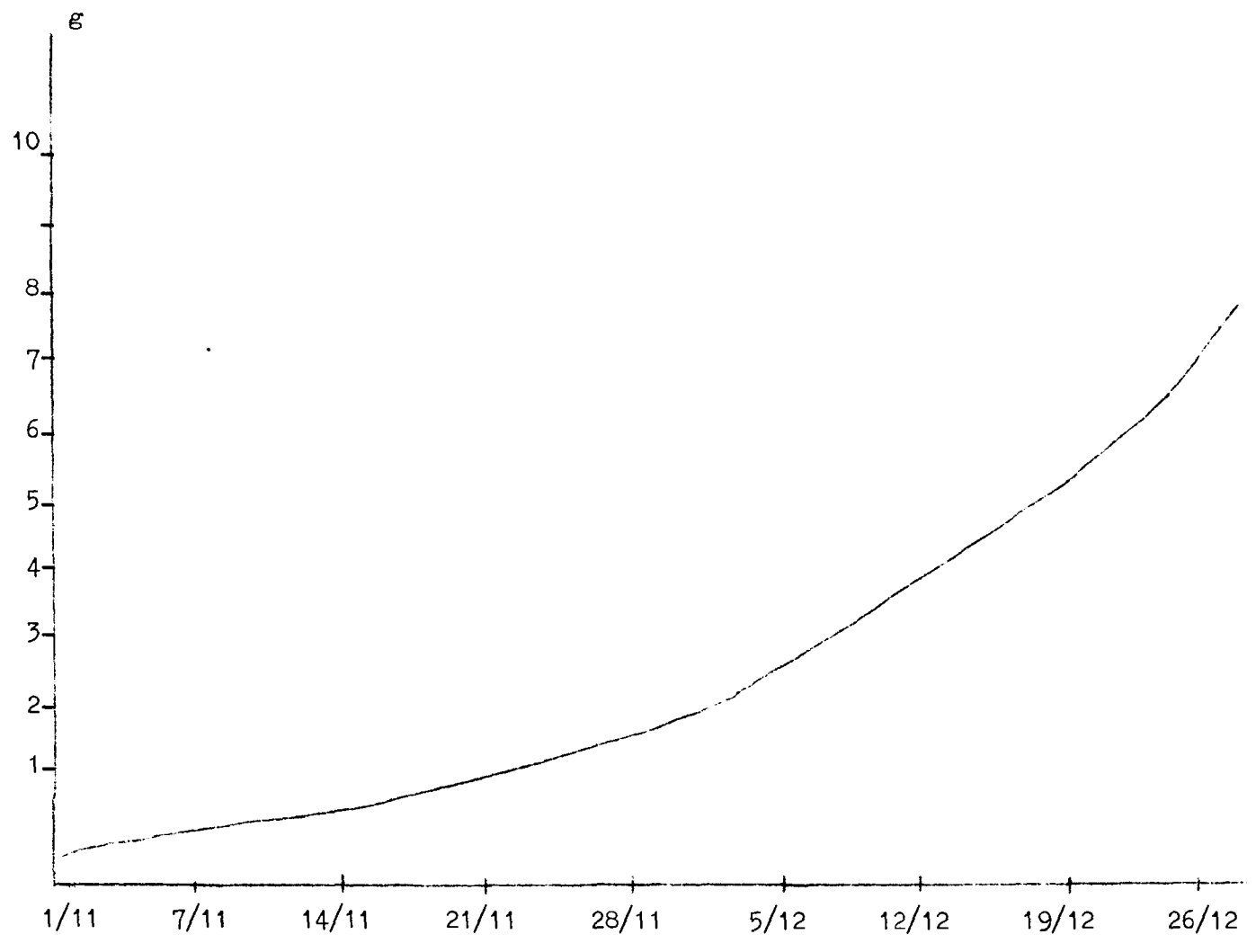
It is relatively easy to arrange for the transportation of these oysters to centres of consumption through domestic airlines, or the innumerable little boats that ply all around the archipelago. Unless something comes up to negate the efforts of the farmers, the two oyster farms in the New Hebrides should be in a position to produce annually 80,000 to 100,000 dozens of oysters.



VARIATIONS IN SALINITY AT 30 cms AND 1.50 m BELOW THE SURFACE
MOUNPARAP FARM - SANTO



VARIATIONS IN SALINITY - PORT-SANDWICH FARM - MALEKULA



GENERAL GROWTH PATTERN OF C.GIGAS

CONTROL BATCH