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8. Control Measures.

It has now been shown that between 1945 and 1970 production of fish increased greatly; the wages of fishermen increased; and the capital invested in the industry grew. In most industries, these sets of facts alone would be sufficient to show that the industry was developing in what most people would regard as a "satisfactory" manner. But in fishing there is always another aspect to be borne in mind: because the fishery resource is capable of being used up, and because it has not the protection that public or private ownership might give it, there is always the danger that the resource on which the industry is based may be destroyed, or, if not totally destroyed - probably an impossibility, even with modern catching techniques - at least rendered economically valueless for a long time. Therefore an enquiry into the development of a fishing industry must include an assessment of the methods being used to protect the resource on which the fishery is based, and the apparent success of the methods being used. In fact, the "success" or "apparent success" of fishery control is by no means easy to judge, and even the theoretical standards by which it ought to be judged are not clear. It is evident that the preservation of the resource on which the fishery rests is a basic aim; but there are other factors which must also be taken into consideration. One is the cost of control; it is conceivable that the cost of effective control measures could be greater than the value of the fishery - in which case, presumably, fishery control would not be economically worthwhile. On the other hand, over-effective control may reduce catches far more than is necessary to preserve the resource; such control would clearly be economically wasteful. Factors that a control programme should take into account are resource preservation, maximum permanent productivity, maximum permanent commercial surplus, and possibly also the development of geographical areas and social groups. These concepts

will now be explained; an attempt will then be made to show what control measures were, in fact, introduced in Southern Africa between 1945 and 1970, and with what success.

- ① Resource preservation is of course the simplest aim of control; exploitation must not be allowed to destroy the resource; it must be allowed to breed so that it is not reduced. This demands no more than a biological knowledge of the resource.

"Maximum permanent productivity" is the maximum degree of exploitation which will not permanently reduce the resource. It is important to the fisherman, and it demands a knowledge of the "population dynamics" of the species concerned - a knowledge which, despite considerable research, does not yet exist in South Africa.

"Maximum permanent commercial surplus": the maximum degree of physical exploitation which a resource can sustain may not be the most profitable rate of exploitation from the point of view of the fisherman, or from the point of view of society as a whole. To discover this "maximum permanent commercial surplus" demands not only a biological knowledge of the species being exploited and of its "population dynamics"; it also involves a knowledge of the costs of different degrees of exploitation, and of the market prices obtainable for varying quantities of product. In other words, the maximum permanent commercial surplus, which should be the usual aim of control measures, demands not only biological, but also economic knowledge.

And even this may not be enough; because society may have aims which go beyond making the maximum economic use of the fishery resource. There may be a desire to develop a particular geographic area, or to improve the economic circumstances of a particular group of people. (In the

debate on the Act of 1944, the need to improve the living standards of isolated fishing communities was often mentioned; this was an aim quite separate from the most economical use of fish).

These, then, are some of the aims which fishery conservation might have. The methods which might be used have already been described in Chapter II, section 14; they include limiting the catch, limiting the exploiters, limiting capacity, limiting techniques and equipment, setting a minimum size for fish, limiting catching seasons, and limiting catching areas.

In South Africa, early efforts at control seem to have had the preservation of the resource as their aim. This is true both of the restrictions on trawling in the 1930's and on rock lobster fishing in the 1940's. The rapid expansion of shoal fishing in the late 40's and early 50's led to a demand for more controls. It was about this time that the California sardine fishery was collapsing; some experts believed overfishing had caused the collapse; it was natural that the authorities in South Africa should be concerned that a similar collapse should not occur in the South African industry. So it would seem that the controls on shoal fishing which began in the 1950's also started simply as efforts to preserve the resource.¹⁴⁹

Later, control policy aimed at something like maximum permanent commercial surplus ("To maximise the sustainable catch and at the same time to keep inputs to a minimum," as the Director of Fisheries put it in 1961)¹⁵⁰ In fact, the authorities lacked the information needed to achieve this aim with accuracy. But its policy aims appear to have been, first, to preserve the resource, and secondly, to reach maximum permanent commercial surplus.

The years 1945 to 1953 were years of rapid growth, especially in shoal fishing. They were followed by a period in which

the need for control was increasingly felt, and during which quotas and other limitations came to be increasingly applied.

As already explained, the authorities used several types of control in the fishing industry. The legal apparatus by which the more important of these controls were enforced was a licensing system. It may therefore be worth while to say something about this system, how it came into being, and how it worked.

When, at the end of the 1940's, the need to put some sort of brake on shoal fishing became apparent, the most obvious method would have seemed to have been to set a limit to the total catch. This was done, in fact, in 1953.¹⁵¹ But catch restrictions would not have prevented new entry into this highly profitable industry, causing an uneconomic concentration of effort. The authorities therefore decided to control production by making use of an existing licensing system. In South Africa, as in other countries, licences are required in many activities. Usually the licence is a revenue-raising device, or is intended to facilitate law enforcement. Often it combines both aims; motor car licences are an obvious example.

In the fishing industry, licences had been required for fishing boats and fish factories. It was possible, therefore, to limit the catch, or the product, by refusing to issue a licence, or by making the issue of a licence conditional on some restriction of production. This is what was done. The details of the licensing system were complex; a brief resumé, in tabular form, of some of the licensing restrictions in the shoal fishing industry may serve to show how the system worked:¹⁵²

LICENSING RESTRICTIONS ON S.A. SHOAL FISHING
1949 - 1970

Restrictions on reduction plants	Restrictions on canneries	Restrictions on boats
1953: Number and capacity restricted to those in existence. Total capacity about 240 tons per hour.	1953: Number and capacity restricted to those in existence.	1953: Shoal fishing fleet restricted to existing capacity.
	1954: Existing canneries allowed unlimited output.	
1959: New Gansbaai factory allowed, with capacity of 15 tons per hour.		1957: Every boat had to be attached to a specific factory: factory fleets were "pegged", but an increase of 20% in hold capacity was allowed.
1960: Fish cannery gets 5-ton per hour reduction licence.		1962: New boat licences allowed for Gansbaai factory.
1963: Total capacity about 262 tons per hour.		
1965: 20% increase all round allowed: total capacity now 314 tons per hour.		1965: 20% increase all round in hold capacity allowed.
1967: Two factory ships allowed. Big increase in capacity. Factory ships withdrawn in 1970.		

This presentation of licensing restrictions in tabular form makes it easier, perhaps, to discern the general aims of government policy. It becomes clear that, between 1953 and 1970, the total capacity of reduction plants was allowed to increase by a little over 25% - from about 240 tons per hour in 1953, to about 314 tons per hour in 1970. The factory ships, which started to operate in 1967, considerably increased total capacity for a short time: but they withdrew in 1970. To parallel the increases in factory capacity, similar increases in boat capacity were allowed: new boats for the Gansbaai factory in 1962, followed by a general increase of 20% in boat capacity, in 1965, to fit in with the 20% increase in factory capacity made at the same time. (The increase in boat capacity in 1957 was perhaps offset by the decreased mobility of boats through being attached to particular factories). The general policy was to restrict the output of the reduction plants, and to keep the fishing fleet to a size which could economically produce the fish needed for this output.

There are a few points about these licensing restrictions that are perhaps worthy of comment. The first restrictions of this type were introduced in 1949, when the number and capacity of reduction plants was restricted to those actually in existence. But later the authorities agreed to allow production by plants that had been ordered or were in process of being built in 1949. By 1953 all these plants had been completed, and production was then 'pegged' at the 1953 level.

The Gansbaai factory that was licensed in 1959 (and started production in 1963) was on the south coast; it was therefore held that fish for this factory would not come from the west coast - where the other reduction plants were situated - and would not affect the fishery resource of the west coast.

The 20% increase allowed to the reduction plants in 1965 can probably be accounted for by the fact that the catch of shoal fish had then been increasing for nearly 20 years; so it might have been argued that the resource appeared able to withstand increased exploitation. Gertenbach¹⁵³ says that it was the appearance of the Cape anchovy in the catch that motivated the authorities to agree to a larger catch; if so, this was a rapid reaction by the authorities, since the first significant catch of anchovy (95,000 tonnes) was only made in 1964.

The decision in 1954, to allow existing canneries unrestricted production is on the face of it surprising. The rationale behind the decision is perhaps to be found in the fact that usually only a small part of a fish catch is suitable for canning, and in any event the offal cannot be canned. It would seem to follow that canneries which are not combined with reduction plants cannot compete successfully with plants that are so combined, since the reduction plant can use profitably all that part of the catch which the cannery cannot use. Thus a limit on the capacity of a reduction plant, it may be argued, will itself set a limit to the output of the cannery.

It is difficult to know what validity there is in this line of argument. The Board of Trade and Industries, in a report prepared in 1952-3, had this comment:¹⁵⁴ "If (control) is at all necessary, it should be extended to include the canneries. In a pilchard conservation program every significant user of fish should be controlled.... For the time being, it would seem, no independent new canneries should be established; but there could be no objection to an extension of canneries attached to already existing reduction plants, provided the intention was to can a larger proportion of the fish which would in any case be taken."

The thought behind the last sentence is not clear. If a cannery is combined with a reduction plant, and the output

of the reduction plant is restricted, - in effect, fixed - then an increase in the proportion of the total catch used by the cannery would apparently lead to an increase in the total catch used by the cannery and the reduction plant combined.

The reference to the possible establishment of new canneries shows that the Board did not accept the view that independent canneries would be unable to compete successfully; or at least that entrepreneurs would not be deterred by the prospect of competing against canneries which were combined with reduction plants.

As already explained, control by licence was only part - though probably the most important part - of the controls in the fishing industry. These controls will be considered in the next section.

In practice, the more important and complex controls were those on shoal fishing and on rock lobster fishing. (The controls on ocean trawling, though perhaps important, were relatively simple). The question is further complicated because different regulations were applied in the Republic of South Africa and in South West Africa. There are, therefore, four major sets of regulations to be considered: (1) on shoal fishing in South Africa; (2) on shoal fishing in South West Africa; (3) on rock lobster fishing in South Africa, and (4) on rock lobster fishing in South West Africa.

Shoal Fishing in South Africa.¹⁵⁵

(1) Limitations on catch. From 1953, the total catch of shoal fish was limited to 250,000 short tons. There was however a proviso that should the quota be reached before the end of August, fishing could nevertheless continue until August 31st. For this reason the quota was, in fact, exceeded in 1959 and 1960; and in 1961 it was abolished altogether. No catch quota was set again until 1971, when it was put at 400,000 short tons.

(2) Limitation of exploiters. The rapid growth of shoal fishing during the 1940's, and its great profitability, had the result that numbers of non-fishermen began moving into the industry. Established fishermen asked for government protection against this intrusion, and in 1953 a Boat Limitation Committee was formed. The policy of this committee was to permit no increase either in the number or in the total hold capacity of shoal fishing boats. In fact, the committee was not entirely successful in getting its policy adopted (it was only an advisory committee), but it was apparently successful to the extent that the total number of shoal fishing boats was reduced, though they tended to become larger in size.

(3) Limiting productive capacity. When catch limits were imposed in 1953, the building of new or enlarged fish factories was also forbidden. This restriction was somewhat relaxed in the middle sixties, when an increase of about 20% in total factory capacity was allowed - an increase that was supposed to be linked with an increase in catching capacity. At about the same time, a far more important increase in productive capacity was allowed, inasmuch as the factory ships "Willem Barendsz" and "Suiderkruis" were permitted to operate in South African waters. (The restriction that they must remain more than twelve miles from shores seems to have been of little practical significance).

(4) Limiting equipment and technique. In 1950, a minimum size of 38mm was prescribed for the mesh of nets used by shoal fishing boats. The Du Plessis Commission was unable to establish the exact reason why this size was chosen, but clearly the general aim was to avoid catching undersized or immature fish. During the 1960's, the pilchard catch was falling, but increasing quantities of anchovy appeared to be available. The anchovy is a smaller fish than the pilchard. Accordingly, during the late 1950's and the early 1960's, the regulations governing mesh sizes were progressively amended, so that by 1965 all shoal fishing

boats were allowed to use anchovy nets with a mesh size of 12,7 mm. And from the beginning of 1966 fishermen were allowed to use these nets to catch not only anchovy, but all species.

(5) Closed catching seasons. The regulations have varied from year to year. In the early 1950's there were some years in which September and October were closed months for pilchard, or maasbanker, or both. In 1958 there was a four-month closed season, and in general the four-month closed season remained in force until 1970, with certain variations from year to year.

These were the main limitations set to shoal fishing in South Africa; there were a few additional minor ones - such as, for instance, restrictions on shoal fishing in False Bay, in order to protect the sport fishermen - which will not be considered here.

Limitations on Shoal Fishing in South West Africa.¹⁵⁶

In 1954 the quota of shoal fish for South West Africa was set at 250,400 short tons. This figure was probably based on the South African quota of 250,000 tons, introduced the year before. In the years that followed, the quota was easily fulfilled, and there was continuing pressure from fishermen to be allowed to catch more. As a result, the quota rose from year to year until by 1968 it was more than 1,000,000 tons. The position was further complicated by the fact that in 1968 (and 1969) two factory ships were operating off the coast of South West Africa, under licence from the South African Government. Although they were supposed to fish only outside the 12-mile limit, this rule was difficult or impossible to enforce, and, in any case, the fish freely crossed the 12-mile line, so that the factory ships were exploiting the same populations as the land-based fishing boats. As a result of all this, the official catch in 1968 was more than 1,700,000 tons. In fact, the total catch in

this year may have been considerably higher than this, for three reasons. First, there were many foreign fishing vessels operating in the area at the time; second, according to evidence given before the Du Plessis Commission, many "surplus" fish were thrown back into the sea (some witnesses said 10% of the total catch; others, 50%); thirdly, many witnesses who gave evidence before the Du Plessis Commission said factories did not give true figures of their catches, and that the actual catches were higher than the official figures.

In 1970, the two factory ships were asked not to fish off South West Africa. At the same time, the quota was set at 830,400 tons. However, owing presumably to the heavy fishing of the previous two years, fishermen were not able to catch even this reduced quota, and the actual South West African shoal catch for 1970 was less than 700,000 tons.

(2) Limiting the number of exploiters. This took the form, in South West Africa, of trying to limit the number of shoal fishing boats. In fact, the fishing fleet had grown rapidly between 1948 and 1954; thereafter it grew more slowly; in 1968 the South West Africa Administration laid down that no factory might have more than 14 boats fishing for it; in 1970 the number was reduced to 12; but since new factories were still being licenced, this did not set an absolute limit to the size of the fishing fleet, though it did set a limit to the rate at which it could grow. In 1968 a "Boat Limitation Committee" was set up, with the general aim - as in South Africa - of fewer and larger boats.

(3) Limiting capacity to exploit: This meant essentially limiting the number and the size of fish factories. In South West Africa it was the custom to allot catch quotas, as well as to control the output, of individual factories. Therefore the whole question of limiting capacity to exploit was directly connected with total catch quotas. When new factories were granted licences, increased catch quotas followed as a matter of course.

In 1954, there were six fish factories in South West Africa, all of them at Walvis Bay. Four of them were large factories, two small. In that year the South West Africa administration forbade the opening of new fish factories. However, in 1961 the two smaller factories were allowed to increase their capacity to that of the larger factories; and the catch quota was increased to allow for this greater capacity. In 1963, permission was given for two new factories to open, one in Luderitz and one in Walvis Bay; this led, naturally, to increased capacity, and, again, a larger catch quota. In 1967, the administration agreed to a new factory being built in the far north; in fact, since funds were not at once available to build this factory, the quota which it had been allotted was simply added to the existing factories at Walvis Bay. And in 1968 a licence for an additional factory in South West Africa was granted to a trawling consortium. Later the concession to the factory in the far north was withdrawn. In general, the picture is of an administration that tried to control capacity to exploit, but which after 1966 allowed probably too much capacity, and later withdrew some of the "surplus" capacity that had been allowed.

(4) Limiting equipment and technique: A minimum net size was set in 1949; but this fell away as anchovy fishing became more important - a similar process to that which took place in South Africa.

(5) Closed fishing seasons: Although an official closed fishing season was only introduced in 1971 (when it was decided that there would be no shoal fishing between September 1st and February 28th), in fact, an unofficial closed season had existed for a long time. This was partly because the fish are in poor condition in spring and early summer, so that there is relatively little inducement to catch them then; and partly because, so long as the quotas were easily filled, fishermen had caught their quotas by September or October, and had no reason to fish longer. It was only at the end of the sixties, when fishermen began to find it harder to fill

their quotas, that there was reason for them to fish later than October; and this was, no doubt, the reason that an official closed season was declared in 1971.

Limitations on Rock Lobster Fishing in South Africa.

(1) Limitations on total catch. Since the actual catching of rock lobster is done by many small independent operators, while the production of canned or frozen rock lobster has always been a comparatively large-scale operation, the quotas have been on production or export rather than on catches; but the effect has been that of a catch quota. Export quotas were introduced in 1946, when local consumption was not important. In the 1960's, when local consumption began to increase, the export quota was replaced by a production quota; but the effect was similar in each case to a catch quota. In fact, the quotas (see Table III) were fixed too high. Quotas were filled - except for 1956-1957 and 1957-1958 - until the middle sixties, when catches began to drop sharply. In 1968-1969 production was only just over a million lb., whereas the quota was more than five million lb., and had been nearly seven million lb. for years past. In the early 1970's the quota was sharply reduced, and the resource seemed to be recovering. ¹⁵⁷

(2) Limiting number of exploiters: There was no direct limitation of the number of exploiters; but in 1970 the use of new additional boats for catching rock lobster was forbidden. Since then a Boat Limitation Committee has been set up in the rock lobster industry. ¹⁵⁸

(3) Limiting productive capacity: This form of limitation has never been practised in the South African rock lobster industry. It was felt to be unnecessary while a production quota was in force. It is, however, probably true that a limit on productive capacity, even if difficult to enforce, would prevent the waste that occurs at present, since many rock lobster canners have "surplus" capacity which the production quota does not allow them to use.

(4) Limiting equipment and technique: Rock lobster are normally caught in traps, set from ~~dinghies, motorized small~~ boats. In the 1950's many former perlemoen divers began diving for rock lobster. The trappers protested against this "unfair" competition, and in 1961 commercial diving for rock lobster was forbidden. It is rather difficult to understand the reason for this ban, apart from the desire to protect an established fishing community. One of the objections to the traps was that they caught small as well as large rock lobster; and even if the small ones were thrown back into the sea, it was suspected that many did not survive catching and being thrown back. Divers could be more selective. In 1967, trawling for rock lobster within five miles of the West Coast was forbidden, following attempts at trawling for rock lobster which had brought up chiefly undersized fish.

(5) Limiting the size of the fish caught: In 1940 it was forbidden to bring ashore rock lobster with tails less than $3\frac{1}{2}$ inches long. The rule aimed at preventing the catching of immature rock lobster, and at giving them the opportunity to breed before they were caught. At Port Nolloth, this rule was relaxed in the 1960's, the limiting size being reduced to three inches. Catches at Port Nolloth fell so sharply after this that the factories were closed; probably the relaxation of the $3\frac{1}{2}$ inch rule was partly responsible for the fall in catches.

(6) Closed catching seasons: The aim of closed seasons is to disturb the rock lobster as little as possible during breeding times; and it is not in the best condition for freezing at this time, either. Closed seasons - during winter and early spring - were introduced in 1961. Since then, the dates have been altered from time to time, but the system has been continued.

(7) Closed fishing areas: Rock lobster reserves were proclaimed for the first time in 1940. Since then, there

have been some changes in the areas proclaimed; the general tendency has been to enlarge the areas in the south, since it is believed that currents carry the larva northwards; hence a reserve in the south can repopulate the whole of the West Coast.

There are many additional regulations regarding the catching of rock lobster in South Africa; but the additional regulations have as their main purpose to make it possible to enforce effectively the limitations already mentioned.

Limitations on Rock Lobster Fishing in South West Africa.¹⁵⁹

(1) Limitations on catches. There was never a limit to the catches as such, but from 1940 there was an export quota which acted as a catch quota. From 1950 this quota was set at just under 4 million lb; in 1955, the quota was reduced to 3.6 million lb. At that time, virtually all the rock lobster fishing in South West Africa was carried out by two groups operating from Luderitz; and the quota of 3.6 million lb. was divided equally between these two groups. In 1963 a third group began operating from Luderitz, and this group was given the same quota as the two existing groups; the quota therefore jumped from 3.6 million lb. to 5.4 million. This increased quota was fulfilled until 1969, when the catch began to drop; in 1970 the catch was just under 2 million lb., considerably less than half the quota. In the opinion of the Du Plessis Commission, the quota from 1963 had been unrealistically high.

(2) Limitations on number of exploiters. Boat limitation was enforced from 1966. In 1970, 75 motor boats and 400 dinghies were allowed.

(3) Limitations on productive capacity. There have never

been such limitations in South West Africa.* The export quota prevented excessive production; but the increased quota in 1963, followed by the sharp drop in the catch some years later, did lead to a considerable excess capacity in the industry.

(4) Limits on equipment and technique. South West Africa followed South Africa in prohibiting the commercial diving for rock lobster, and also trawling for rock lobster.

(5) Limitations on size of fish caught. Since 1950, a size limit was generally imposed; it varied between $3\frac{1}{4}$ inches and $2\frac{1}{2}$ inches. But in 1968 and 1969 the size limit was abolished altogether. The sharp fall in the catch following the abolition of this limit may have been a demonstration of its value.

(6) Closed fishing seasons. For many years there had been closed seasons for rock lobster fishing in South West Africa. The closed seasons varied between different areas. In 1970, all rock lobster fishing areas were closed from July to December, inclusive.

(7) Closed fishing areas. Two small rock lobster reserves were declared, one in 1951 and one in 1954.

(8) As in South Africa, these regulations were supplemented by a number of additional regulations, the aim of which was to enable the main regulations to be effectively enforced.

* The reference here is to factory capacity. The limitations on the number of boats might perhaps more logically be considered as a limitation on capacity, though its aim at the time was to limit the number of exploiters.

Limitations on Trawled Fish.

The only limitations placed on trawling was regulation of the sizes of the mesh used in the trawling nets.¹⁶⁰ These regulations were introduced during the 1930's; they apply both to South Africa and to South West Africa, though there are differences of detail between the regulations as applied to different parts of the coast. The aim of the regulations is, of course, to prevent the catching of immature fish.

These were some of the more important controls imposed by the authorities on fishing in South Africa and South-West Africa, between 1944 and 1970. The impact of these controls will now be considered, and from three aspects:

- (1) How far were they successful in preserving the fishery resource from over-exploitation?
- (2) What effect did they have on the structure of the industry?
- (3) To what extent did they prevent the appearance of excess capacity in the industry?

The first question, how far controls protected the fishery resource, is not easy to answer. One reason for this is that the growth of the resource does not depend solely upon the degree of exploitation. Growth may vary from year to year as a result of changes in currents or in the natural habitat; so that a degree of exploitation that would reduce the fish resource dangerously in one year, might have no such result in another year. A second reason is that the regulations applied only to South African (or South West African) fishermen; whereas during the 1960's increasing numbers of foreign fishing vessels exploited the fishing grounds used by South African fishermen. In 1962 it was estimated that

15 foreign fishing boats fished in "South African" waters; in 1968 the number had risen to 100.¹⁶¹ In 1950, the total catch in the South East Atlantic was 438,000 tons, of which South African boats caught 308,500 tons, and boats from Angola, 129,500 tons.¹⁶² In 1965 the "foreign" catch was 974,000 tons, the South African catch 1,236,000 tons. By 1970 the Southern African and foreign catches were approximately equal. In 1972, the Southern African catch had dropped well behind - 1,113,000 tons, as against 1,817,000 tons.¹⁶³ The foreign ships were mainly Russian, Japanese, and Spanish. It was obvious that these large catches, unaffected by South African regulations, must to a large extent nullify the attempts of South African conservationists to preserve the resource against over-exploitation.

Having said this, it is still possible to make some attempt to assess how far the limitations set to fishing succeeded in protecting the resource. One method of assessment would be simply to consider the quantities caught. If we consider first shoal fish: In South Africa, the total of shoal fish caught was maintained pretty well to 1970, with, certainly, variations from year to year. If one looks at the species making up the total, a somewhat different picture emerges. The catches of pilchard, which in the early 1960's made up by far the greater part of the catch, fell steadily (from 452,382 tons in 1962 to 45,260 tons in 1970) while the catches of anchovy rose from a negligible quantity in 1962 to 236,680 tons in 1970. The mesh size was reduced in the middle 1960's to allow more anchovy to be caught. It can therefore be argued, either that anchovy simply replaced pilchard, and the total stock is undamaged, or, that the pilchard stock was first reduced by a net which did not catch anchovy, and that the total stock will in due course be reduced by the smaller-mesh net which catches both anchovy and pilchard. It is not possible at this stage to be sure which of these two views is correct. One cannot say with certainty, therefore, whether South Africa's shoal fishing resource was successfully protected or not.

As regards shoal fishing off South West Africa, the picture is that the total catch grew every year up to 1970; in that year it fell from a total of 1,475,000 tons to 776,600 tons.¹⁶⁴ This was partly due to the fact that two factory ships which had been operating off South West Africa in 1969 were no longer operating there in 1970; but apart from this, the shore-based fishing boats, for the first time, failed to reach their catch quota (which had, in any event, been reduced from 1969). These figures alone suggest that the shoal fish off South West Africa had been over-exploited in the last years of the 1960's; and this was a view that was also held by the Du Plessis Commission.¹⁶⁵

It would seem that the decision by the authorities to grant licences to two factory ships to operate off the South African coast was, from the point of view of resource preservation, simply a mistake. The first factory ship began to operate off the coast in 1967; the ships were asked to fish elsewhere from 1970; this was a tacit admission by the authorities that the earlier decision to grant them licences had been a mistake.

The position with regard to rock lobster in South Africa was as follows: the catch had been growing fairly steadily apart from one or two exceptional years, from 1940. It continued to maintain itself at about 7 million lb. a year until the middle 1960's, when it began to fall. In the 1968-1969 season the catch fell catastrophically - to 1.1 million lb. It was obvious that the resource had been over-exploited. The quota was drastically reduced, and the resource did recover to some extent. (See Table III).

The catches of rock lobster in South West Africa followed a not dissimilar course. From the 1940's there was a generally upward trend in catches; until finally in 1970 exports

dropped sharply - from 4,431,994 lb. in 1969 to 1,912,815 lb. in 1970. At that time the export quota was 5,493,600 lb. - and the export quota, as already explained, acted in effect as a catch quota. The Du Plessis Commission had no doubt that the export quotas during the period 1968 to 1970 had been "unrealistically high", ¹⁶⁶ and to this extent the limitations had failed to protect the resource successfully.

As regards trawling: the catches of South African deep-sea trawlers off the coasts of Southern Africa were maintained throughout the 1960's at something over 100,000 metric tons a year. From this point of view, therefore, there was no reason to suppose that the fishery resource was being over-exploited. There are, however, other ways in which the exploitation of a resource can be judged; to one of these we will now turn.

The fact that catches have been maintained over a long period, or recover quickly when fishing is reduced, might suggest that the resource is not being over-exploited. But this conclusion need not necessarily be true. In the first place, an over-exploited resource, even if it is growing smaller, may continue to yield a steady catch for a long time, especially if increasing effort is put into fishing. In the second place, a stock which is yielding a steady catch may still be over-exploited, in the sense that if fishing effort were reduced, and the stock allowed to increase, the same catch could then be made with less effort on the part of the fisherman. How is a fisherman to know whether a particular stock of fish is declining in size, or could be more economically exploited with a reduced fishing effort? One answer is that if the time taken for one trawler to catch, say, 100 tons of fish, is increasing, then probably there are fewer fish about; in other words, the fish population is declining. This line of argument leads to the concept of the "catch per unit

of effort," in other words, the quantity of fish caught by a defined output of labour and capital. This is one of the most reliable indicators of whether a fish stock is being over-exploited.*

Unfortunately, while the concept is simple enough, its application in practice is complex. The "unit of effort" in fishing involves not only the hours of work by the fisherman and the length of fishing time of the boat. There is also the size of the boat to be taken into account, as well as the type of equipment being used: nets with meshes of different sizes, types of trawl gear, echo sounders, and so on. Efforts are now being made by scientists of the Sea Fisheries Branch** to define a unit of fishing effort for South Africa; but this work is far from complete. There have been, however, attempts on a semi-scientific basis to calculate the catch per unit of effort in trawling for hake and in rock lobster fishing.

One analysis of hake catches in the Western Cape grounds between 1940 and 1972 gave the following results:¹⁶⁷ between 1940 and 1947 the average catch per unit of effort was 14.2. In 1955, it was 12.45; and thereafter it fell fairly regularly until by 1972 it was 4.9. (The full figures are given in Table VI). The unit of effort was defined as a "standard trawler day", and made allowance for the size of the trawler. It did not, however, make allowance for the fact that equipment in the 1970's was more sophisticated and efficient than it had been in the 1940's. Were it possible to make a more accurate analysis, it seems likely that the catch per unit of effort would have been found to have fallen even more sharply than the figures here suggest.

* But, as pointed out in Chapter I, it is reliable if the number and size of ships engaged in fishing is not increasing. If the number and size of ships are increasing, then the reliability of catch per unit of effort indicating changes in fish population is more doubtful.

** The new name taken by the Division of Sea Fisheries.

At attempt was also made to estimate the catch per unit of effort in the rock lobster industry of the Western Cape. The estimate was based on the number of rock lobster caught by a standard trap used for a standard day, and therefore avoided the possible inaccuracies resulting from changes in fishing techniques. Two of the areas chosen were the Dassen Island grounds and the Cape Peninsula grounds. The results were:¹⁶⁸

Season	<u>Dassen Island</u>		<u>Cape Peninsula</u>	
	C.P.U.E.	%	C.P.U.E.	%
1968-1969	20.4	100	-	-
1969-1970	12.9	63	9.2	100
1970-1971	8.3	41	9.1	99
1971-1972	12.2	60	8.9	97
1972-1973	13.6	67	13.7	149

It is difficult to know what to make of these figures. The base year chosen for the Dassen Island ground is 1968-1969, that is exactly the season in which the very lowest catches were recorded. It would seem likely, therefore, that the catch per unit of effort in that season would have been lower, even considerably lower, than the corresponding figure for earlier years, when a comparable effort had yielded a catch four or five times bigger. If, as the Dassen Island figures suggest, the catch per unit of effort sank even lower in the following years, then this would indeed suggest that the rock lobster resource was being over-exploited. However, the Cape Peninsula figures suggest a different story; here, although there are no figures for 1968-1969, in the following years the catch per unit of effort sank only very slightly, while in the 1972-3 season it rose considerably. The only sensible conclusion from all this is that the figures are too fragmentary and too contradictory to allow any reliable deductions to be made.

If one were to attempt to summarise very briefly the effectiveness of the chief controls in protecting the resource, one might say:

(1) The controls on shoal fishing seem to have been effective in the sense that no clear evidence of over-fishing appeared until about 1970, after the factory ships had begun to operate; and as soon as it was realised that the factory ships were threatening the resource, they were asked to fish elsewhere.

(2) The fall in the rock lobster catch, in both South Africa and South West Africa, at the end of the 1960's and the first years of the 1970's showed that controls had failed to protect the resource; although one should add that the resource might have been more severely damaged - and recovered more slowly - had there been no control.

(3) Trawl catches were maintained throughout the period under review: but the fall in the catch per unit of effort did suggest that the fish population was being reduced.

So much for the first question asked about controls, on how successfully they protected the fishery resource. The second question asked was: what effect did controls have on the structure of the industry?

X In general, the effects of controls seem to have been that they encouraged co-operation, mergers, oligopoly and one-channel marketing. The shoal fishing industry provides an example of this. When the system of restricted licences was introduced, licences acquired a commercial value; the possession of a reduction licence became the basis on which shoal fishing operations could be carried out.

Only a few licences were in fact issued; through mergers and combinations among the various parent companies, these licences were eventually acquired by a few large fishing groups.¹⁶⁹ The Board of Trade and Industries, in the 1953 report already mentioned, had this comment on the monopoly effects which had arisen, it believed, at least partly on account of the methods of control:¹⁷⁰

"Measures such as those taken in 1950* could have various restrictive effects. First, by limiting the entry of new firms, as well as the capacity of existing establishments, they directly restrict output. Secondly, by limiting entry they might encourage an esprit de corps among those privileged to be in the market, causing them to exchange shares in subsidiary firms operating at different places, or jointly to participate in the establishment of new undertakings in regions still in the course of development, as has happened at Walvis Bay. Thirdly, they are bound to have a monopolistic effect in the sphere of income distribution, permitting as they do only those already in the industry to share in the earnings to be made."

Price control of fishmeal also encouraged co-operation rather than competition among those in the industry. The system was that producers had to satisfy the domestic market, at prices below the world price, before the 'surplus' not required by the domestic market could be exported. This encouraged fishmeal producers to co-operate in a one-channel marketing system, so that each individual producer could get a 'fair' share of the more valuable export market.

NB It seems likely - to turn to another aspect - that controls did encourage the industry to instal the most modern reduction plants, able to make the fullest use of such fish as they were permitted to process. Stickwater plants are a case in point: there might have been less incentive to make the fullest use of each ton of raw fish, had the plants been allowed to increase their intake without limit.¹⁷¹

However, it cannot be assumed from what has just been written that controls caused monopolistic conditions in the shoal fishing industry. Factors encouraging monopoly

* The measures were promulgated in 1949 and came into effect in 1950.

were present, quite apart from controls. "Where the members of an industry produce fairly homogenous products, as crude oil and fishmeal are, there is as a rule a tendency towards combination."¹⁷²

In the shoal fishing industry, this general tendency was reinforced by the way in which the industry had developed. Potential profits were high, but the required investments were substantial. Only a relatively small number of fishing concerns were large enough to enter the field. Their financial support came from a relatively small number of financial institutions. Where dominant interests are few, co-operation comes easily. So it may have been that monopolistic conditions would have appeared in the shoal fishing industry, whether or not government controls had been imposed. (Indeed, the absence of government controls might have been an inducement to existing firms to combine in order to impose controls on themselves!)

It is difficult to know what effect boat limitation had on the structure of the shoal fishing fleet. During the period under review, the trend was towards larger and more economical boats. The fact that boats had to go further for the fish encouraged this trend. It may be that the change would have taken place more quickly if new boats had been able to enter the fishing fleet freely; but one cannot be sure of this.

In the rock lobster industry, as already pointed out, the main method of control was to limit the quantity that could be sold; and it was precisely in selling that the rock lobster producers worked together most closely. The South African Frozen Rock Lobster Packers (SAFROC) was essentially a central selling organisation, as was the similar organisation in South West Africa. SAFROC had close ties with the shoal fishing industry.¹⁷³ It seems that here too the effect of controls was to encourage monopolistic tendencies.

The third question asked about controls was whether they prevented the appearance of excess capacity. The short answer is that they did not.

"Excess capacity" is here used, not in the sense that the industry produces more than the fishery resource will stand, if continued over a period of years, but in the sense that the industry is capable, with its existing equipment, of producing more than in fact it does. In this technical sense the shoal fishing industry seems to have possessed excess capacity almost from the start. However, this was technical excess capacity; if the reduction factories could have run at full capacity, they would have produced very much more than they in fact did.

The Board of Trade and Industries, in its report on the Marine Oils Industry, produced figures to show that in 1951 the reduction factory at Saldanha Bay produced only 19.1% of capacity, the factory at St. Helena Bay only 35.9%, the factory at Lambert's Bay only 20.4%, and the factory at Walvis Bay 64.8%.¹⁷⁴ The figures were supplied by the manufacturers, and it is difficult, from the details given, to be sure precisely what they mean. But they undoubtedly suggest a considerable degree of excess capacity.

There is, however, an obvious reason why fish processing plants cannot run continually at full capacity: the supply of fish is too irregular. There are seasonal, monthly, and accidental fluctuations in the supply of fish. Fish "run" in different areas at different times of the year; but in any given year they may be "early" or "late".

Pilchard catches depend to a certain extent on the moon, since pilchard are caught at night, and phosphorescence betrays their presence. (Although echo-sounders are changing this; they can locate fish by day or night). Accidental factors -

the weather, or the condition of the sea - affect the catch. There are also artificial factors which interrupt catching operations - closed seasons, or holidays. As a result of all these factors, reduction plans can only use their technical capacity on something like half the days of the year. (In 1951, there were 161 fishing days at Saldanha Bay, 142 at St. Helena Bay, 143 at Lambert's Bay, and 214 at Walvis Bay).¹⁷⁵

The Board of Trade and Industries summed it up in this way: "It has been shown that the reduction plants operate far below technical capacity. What may be termed economic capacity is naturally considerably less. Even at the peak of the season, reduction plants would appear to operate below technical capacity, and when the fish do not run in large numbers or the weather is unfavourable, they operate very much below that capacity. Given existing methods of fishing, therefore, utilisation of capacity could probably not be increased very much."¹⁷⁶

The last sentence of this quotation is revealing. It suggests that while theoretically there was technical excess capacity, in reality, under the conditions that existed in the industry, the existing factories could not produce very much more than they did. In this sense, there was not much excess capacity. And the addition of the word "probably" - indeed, the wording of the whole sentence - suggests that the writer was not very sure of his conclusion, and that the whole question of excess capacity in the fishing industry was to some extent a matter of judgment.

This rather vague conclusion is reinforced by a reply given recently by a leading industrialist in the rock lobster industry. Asked if there was excess capacity, he replied that he believed there was an excess capacity of about 40%¹⁷⁷ But he added that this was merely his

"feeling". He had no figures with which to back up his view, and he was doubtful if there was any scientific way in which excess capacity in the rock lobster industry could be measured. (Technical excess capacity could perhaps be estimated; but, as already suggested, this would be of theoretical rather than practical interest).

9. Rock Lobster Fishing : a close-up view.

This chapter so far has given a general picture of the development of the South African fishing industry from the middle 1940's to 1970. It is, however, often helpful to the understanding of an industry - or, indeed, of any subject - to examine one small part of it in detail. This section, accordingly, will consist of an examination, as detailed as the records allow, of a small rock lobster fishing business. It may be that in the examination of a small business - by what might be called the micro-economic approach - aspects that might have been overlooked in a wider picture will become evident; facts that in a whole industry might have lain concealed behind columns of figures or the complexities of organisation, may be more clearly revealed.

The rock lobster catching business which is to be described is situated on a small stretch of beach on a rocky inlet on the Cape West Coast. There is a total staff of just over 60. Two are Europeans: the owner-manager of the business, and his wife who helps with part-time secretarial work and occasionally does other work in emergencies. (It is even doubtful if she should properly be regarded as a member of the staff). The rest are the fishermen, African migrant workers from the Transkei. The business premises consist of a large concrete shed, with rock lobster tanks; and a small cold store. Outside the shed the 30 odd dinghies used for catching the rock lobster are drawn up on the beach, when not in use. The African fishermen go out in the dinghies at first light each morning - provided the weather is suitable - and fish until

about lunch time. Their day's work is then over, and they return to their living quarters, about a mile from the factory. The rock lobster are collected in trucks sent by the buyers; about half are sold dead, for export as frozen tails, and half live, to be flown to Europe. During the six month season of 1970-1971 (the period to be described) the catch, said to be a "good average" by the owner-manager, was about 100,000 rock lobster, and was sold for about R40,000.

In 1970 there were 59 African workers. Of these 57 came from the Transkei under contract to work as fishermen for six months - November to April inclusive. The terms of their contract* give some idea of the job and the conditions under which they worked:

"1. Remuneration. Each Bantu is allocated as a member of a two-man crew of a dinghy, with a specific registration number. Payment is based exclusively on the number of kreef legally caught and landed by such two-man crew, and is divided equally between them according to the following:-

"Each member of the crew is allocated 5 cents** for every kreef landed that complies with the legal requirements (i.e. not in berry, soft-shelled, undersized, etc., as these must be returned to the sea). In addition, a further one cent per kreef, for catches in which he has a share, will be paid to each crew member upon completion of the full contract period.

* The contract is in an agreed form, drawn up by the employers of various rock lobster fishing enterprises acting in concert. The pay is on an agreed scale. As will be shown later, payment in the enterprise here described was not exactly in the form laid down in the contract, and certain extra payments ("bonuses" and "presents") not mentioned in the contract were also made. The owner of the business explained that other employers did not appear to object to the extra payments, provided the basic rate was adhered to. A full copy of the contract is included after Table XVIII.

** In 1970: in 1975 the price was 7½ cents.

"Or, where the practice of the firm is to pay by weight of the catch,* each member of the crew is allocated $15\frac{1}{2}$ cents per kilogram of whole kreef (excluding illegal kreef) in which he has a share at the end of the pay-week concerned. In addition, a further 2 cents per kilogram of such whole kreef will be paid to each crew member upon completion of the full contract period.

"2. The employer undertakes that, if so requested by any Bantu rock lobster catcher, he will advance up to R1 per week during the contract period, which will be recoverable from future earnings.

"3. Hours of work. Because opportunities for fishing are entirely dependent on weather and sea conditions, there are no set hours of employment and no prescribed holidays or days of rest.

"4. Accommodation: Suitable accommodation is provided by the employer against payment by the worker of a sum equivalent to one cent per kreef or two cents per kilogram of whole kreef, whichever basis is used for the calculation of his normal earnings. Payment will be effected by direct deduction from earnings at the end of each pay day week.

"5. Injury or disablement. For the period of the contract the employer shall provide free medical attention to a maximum of R200.00 per Bantu worker in respect of all injuries sustained at sea and/or arising out of and in the course of authorised employment. In the case of death or permanent total disablement (District Surgeon's certificate required) whilst at sea or arising out of and in the course of authorised employment, the employer shall pay to the next-of-kin of the deceased (or to the disabled worker) the sum of R500.00.

"6. Use of facilities and bait. The employer shall provide for the use of each two-man crew a dinghy and nets free of charge, and shall likewise at his own expense provide bait.

* This was not the practice in the firm here described.

"7. Rail fares: The employer shall bear the rail costs both between the homelands and his factory or works and back to the homelands upon completion of the contract period (or earlier with the employer's consent) or he may make alternative transport arrangements satisfactory to the Bantu Affairs Commissioner also at his own expense.

"8. All legally caught kreef are the sole property of the employer and may not be sold or otherwise disposed of, and shall be landed only at such points as directed by the employer."

A contract of this type was signed by each migrant worker before he left the Transkei. It may be doubted whether many of those who signed it had more than a very rough idea of its content, although it was explained to them by an official before they signed it. It would, in any event, be difficult to describe the life of a rock lobster fisherman to an illiterate African who had never seen the sea. Probably most of those taken on had found out about the work from friends who had done it before. The owner of the business uses his workers as recruiters, and rewards them when they bring new workers to the factory. Some of his workers return year after year, bringing friends with them. In this way the work force is kept up; but it is kept up only with some difficulty, since fishing for rock lobster is hard and often rather uncomfortable work.

Although the pay was set out at five cents to each member of the two-man crew, plus one cent bonus at the end of the season, in fact they were paid four cents plus one cent bonus. On the other hand, they did not pay the one cent per rock lobster for accommodation, as laid down in the contract. The result was exactly the same.

The rather peculiar method of paying for accommodation appears to be an example of a type of monopoly pricing. The fishermen

have to live in the compound: no alternative accommodation is available to them. If each paid a flat rate, it could not be more than those who caught fewest rock lobster, and therefore earned least, could afford to pay. The actual method of payment ensured that those who earned most paid more than those who earned less. Thus in the 1970-71 season, the fisherman who earned most (Xazalini) paid R72.14 for his accommodation for six months - roughly R12 a month. At the other extreme, Douglas paid only R13.09, or a little over R2 a month (see Table XVIII). If the deductions had been made weekly at the pay table, it would have been obvious to the fishermen that they were paying differential rates for their accommodation, and there might have been objections and arguments. The actual method of payment produced exactly the same result with less likelihood of friction. In fact, one might even wonder whether they were paying differential rates. If payment of 5 cents for each rock lobster caught had never been mentioned, would it have occurred to anybody that the fishermen were paying differential rates for their accommodation?

The idea of a bonus at the end of the contract period is, of course, to dissuade the Africans from leaving before the contract period is over. Nevertheless, the workers do tend to become restless towards the end of the contract period, and there are occasional desertions.

The rand a week that the employer agreed to advance was for food money. There were occasional weeks in which the weather was so bad that little fishing could be done, and some workers earned practically nothing. If it had not been for the rand a week, they might have gone hungry. Although it was laid down that this rand would be deducted from total earnings at the end of the season, in fact this was not done; the rand might therefore be regarded as a basic salary or as being in the nature of a retainer.

Hours of work were not stipulated, but in fact each worker worked, on the average, five or six days a week. The busy and slack times were quite irregular; sometimes there would be work day after day without a break for several weeks; then a period of perhaps almost a week when the weather made fishing impossible. (Such times were bad times for desertions). On the other hand, for some workers the variable hours were an attraction; or perhaps it would be more correct to say, not such much the variable hours themselves, as the fact that each worker could choose when and whether to work; there was no "boss boy" to organise them at set hours. Nevertheless, successful fishing demands an early start, and the usual hour of rising was 4.30 a.m., at least in mid-summer.

The "suitable accommodation" was a compound consisting of several asbestos cement sheds surrounded by a barbed wire fence. This compound was put up jointly by five local fishing enterprises to provide housing for their workers; and there was room for about two hundred of them. The area tends to be rather bleak and windswept. The compound was not an attractive place. There were no trees. There was a piped water supply; but the compound appeared to offer few facilities for comfort or recreation. The workers did their own cooking on primus stoves, which they had to obtain for themselves.

Bait was one of the major expenses of the enterprise, and cost nearly R4,000 in the 1970-71 season - that is, something like R25 for every working day. According to the owner, the workers are careless with the bait and waste a good deal of it. But he did not think this problem could be solved by paying the workers more for each rock lobster caught, while requiring them to supply their own bait, because after a lean spell of fishing the workers would simply have no money to buy bait. (The bait was fish or pieces of fish; there was no way to obtain it apart from buying it).

To give a brief history of the business: the owner, before he started it, had worked as an accountant for a big fishing company. About 1960 he decided to set up on his own, bought some dinghies, and started fishing for rock lobster. His first location was some km. along the coast to the North of his present fishing site. He used first Coloured and later African fishermen. Soon after, he found the present site of his factory and after some delay obtained permission to put up buildings there to house his fishermen and keep the rock lobster. He built some corrugated iron huts for the fishermen, and some concrete tanks for the rock lobster. These are still standing: but the corrugated iron huts are now used for storage, except for one that is used as an office.

In 1965, when the business was more firmly established, the owner built his present "factory", at a cost of R11,500. This consists of a large concrete building with an asbestos-cement roof. Within it are about twenty concrete tanks, each one rather more than two metres square and one metre deep. The tanks are arranged in two rows, and each tank in the row is a little lower than the tank next to it. (The building is built on land that slopes down to the sea). A pump in one corner of the building pumps sea water into the two highest tanks; the water overflows into the lower tanks, in order, and finally runs back into the sea.) In this way there is a constant flow of sea water through the tanks, and several thousand rock lobster can be kept alive for a week or more. Since it is not always possible to carry away the rock lobster at once, and since it is also necessary that rock lobster that are to be exported live should be "purged" - that is, kept for some time without food - these tanks are an essential part of the operation. It might be added that the owner has no quota for rock lobster (it is, of course, illegal to sell rock lobster to the public without a quota). But he is an established supplier to exporters who do have quotas, and this fact, he considered in 1965, gave him sufficient security to invest in the "factory" building.

The "quota" aspect raises the issue of: what would happen if, in a good fishing year, quotas were filled before the six-month fishing season was over? One might expect that fishing would simply stop. But the difficulty here is that the migrant workers are recruited on the understanding that they will be allowed, and helped, to fish for six months. When they want to leave earlier, the argument used to restrain them is that they have signed a contract and must fulfil the contract. But equally, by the contract they have the right to catch rock lobster and be paid for them for a specified period, whether or not the rock lobster can be sold. And when the fishing is particularly good, fishermen are likely to want to stay and earn as much money as possible. It did happen once, during a particularly good year, that it was impossible to sell some of the large numbers of rock lobster that had been caught. Some of the fishermen were willing to go home; others claimed their right to continue fishing. This they did; they were paid for their catches, which were then thrown back into the sea. (Or a great part of them: it was still possible to sell small rock lobster suitable for exporting alive). This episode may be considered as demonstrating the sense of fair play of the owner of the business. But what happened hardly seems economically desirable; no doubt this possible outcome of the quota system had not been foreseen when it was introduced.

In 1966 a compound was built for the fishermen. This was a joint venture by five fishing businesses in the area, who formed a non-profitmaking company to house their African workers. Each employer contributed to the cost of building the compound in accordance with the number of workers he expected to house; and each contributes, in a similar way, to the costs of running the compound. (These costs include a salary for the compound manager, payments to cleaners, payments for the water supply, and so on). The owner of the rock lobster business here described contributed R6,179 as his share of the building of the compound.

As to the owner's own accommodation, he lives in a comfortable house, with his wife and four children, some seven or eight miles from the factory. He drives over to the factory on most days, sees that all is in order, and checks on the number of rock lobster caught by each fisherman. (This has on occasion been a cause of dissension. As each fisherman brings in his catch, it is counted and entered against his name in a book. The owner does not deny that it is possible that occasionally a wrong figure might be put down by mistake. The fishermen are told to look at the figure being written down, and make sure it is correct. But not all of them do, and even if they did, not all of them are literate. But all of them remember very vividly the number of rock lobster they caught in the previous few days: their earnings depend on their catches! So it has happened that fishermen who did not object when the figures of their catches were entered, raised fierce objection later on, when they were paid in accordance with those figures. By the time they were paid it was too late, of course, to check whether the figures were correct or not. This is the kind of difficulty that must often arise with an illiterate labour force). Apart from his supervisory work at the factory, much of the owner's time is taken up with ensuring that supplies arrive on time and that the deliveries of the rock lobster to the buyers go smoothly. These things, which would be relatively easy in a large centre, take time and organisation in a country district where businesses are scattered over a large area. If an out-board motor breaks down, for instance, he has to take it several miles to a repair shop. Most likely the repair is not done at once; the repair shop is busy; when the motor finally comes to be examined, a spare part is needed which has to be ordered from elsewhere. All this takes time; and unless the owner is busy prodding the repair shop along with telephone calls and perhaps personal visits, the repair may take a very long time indeed.

Such work can take up a good deal of time and effort; and even such a simple business as is here being described needs quite

a number of supplies: for the actual catching of rock lobster, rings and nets for the traps, rope, twine, cork floats (for marking the position of the traps), baskets, and measuring instruments. (Each dinghy has to have a measuring instrument so that the fisherman can be sure that the rock lobster he has caught is not undersized). The boats need oars, rowlocks, paint, life jackets, and flares. Traps may be lost if the rope breaks, the float disappears, or the ring is caught among rocks on the sea bed; ropes are lost, measuring instruments or rowlocks fall overboard, life jackets or flares vanish mysteriously. The fishermen are supposed to report all these losses, but often forget to do so (fearing, perhaps, that they will suffer in some way if they lose things). There is also the maintenance of the motor vehicles and the pumping equipment. The owner is kept quite busy simply in these activities which are needed to keep the business running.

A typical day would start with the fishermen walking down from the compound to the factory before dawn. A few might stay behind, tired or not feeling well; if the weather looked doubtful, some might decide not to go out, others would go anyway. The decision is up to them. The fishermen arrive at the factory dressed in old pullovers, sometimes great-coats, oilskins, rubber boots, knitted balaclava helmets. There is probably a breeze blowing, and it can be cold out at sea, even in summer. The first task is to load up the dinghies: with ring-nets, oars, bait, possibly outboard motors, and the other needed equipment already mentioned: the two "foremen," Winnus and George, supervise the issue of this equipment. Then the boats are carried down to the water: it needs about six men to carry each boat. In going out, some fishermen row themselves, others use outboard motors or are towed by boats with motors. But it is rare for a dinghy with an outboard to return towing another dinghy: co-operation does not stretch so far!

The fishermen choose their own fishing spots among the reefs and rocks along the coast. They do not go more than a few miles from the factory. Each dinghy carries eight ring-net traps. The traps are very simple: an iron hoop, rather less than a metre across, with a small net loosely attached all round. When the ring lies on the sea-bed, the net lies loosely below it. When the ring is hauled up, the net falls into a pocket below it, and any rock lobster that have ventured inside the ring fall into this pocket and are brought to the surface. The bait - it comes in the form of blocks of frozen fish, which are given out in chunks to the fishermen when the block has thawed - is tied in the centre of the ring with twine. A rope with a float attached marks the position of each trap. A dinghy usually carries eight such ring-net traps; by the time the last one has been put out, it is time to go back to the first one, pull it up, extract any rock lobster that may have been caught, re-bait it, and lower it again. Captured rock lobster are thrown into a small "hold" in the centre of the dinghy. (It has a loose cover to prevent the rock lobster getting out). If the rock lobster is too small to be legally caught, it is thrown back into the sea; the measuring gauge is there to test doubtful catches. This process of moving from trap to trap, hauling up, throwing any catch into the "hold", re-baiting the trap, and lowering it again, continues all morning. By about one o'clock, but perhaps sooner or perhaps later, depending on the weather and the catches that are being made, the crew will decide they have had enough and will start to row back to the factory. Once arrived, the boat is carried up the beach beyond the high tide mark; the equipment is put away; the rock lobster are taken out of the hold, thrown into a large wicker basket, and carried into the factory, where they are counted and entered by one of the foremen, or possibly by the owner himself, should he be there. For the fisherman, the day's work is now over. He walks back to the compound, cooks something over his paraffin stove, and very likely goes to sleep underneath a blanket. Although it is not yet late in the day, he has been busy - and often working hard -

since before dawn; he expects to do the same thing on the next day; and there is nothing much else for him to do anyway.

To turn now to the capital assets of the business as they existed in 1971. The owner estimated they had cost him R94,354; the chief items were: the house in which he lived (R52,079);* the corrugated iron buildings put up in 1961, first used to house the fishermen, later as store-rooms (R1,513); the "factory", referred to in the accounts as the "rock lobster tank buildings" (R11,544); the compound buildings (R6,179); the cold storage plant and machinery (R2,235); pumping plant and machinery (R1,652); motor vehicles, (R9,391); dinghies (R4,177); outboard motors (R2,484); and furniture (R1,206).

It is, perhaps, unusual for a residential property to be included among the assets of a business. The reason it was done here is that the business is not registered as a company; therefore the business is considered as belonging to the owner, and all the owner's assets are also assets of the business. In the same way, the motor vehicles that had cost a total of R9,391 were two sedan cars and one truck. The truck was used full-time for the purposes of the rock lobster business; the cars were those used by the owner and his wife. The owner's car was largely used for business purposes, but it was a private car as well; his wife's car was used more for private purposes than for business purposes.

By the middle of 1971 the book value of the various assets mentioned had been written down to R73,674. But since the owner's house was new in 1971 and had not depreciated at all, all the depreciation was of assets used in the business. If one considers that the owner's house should not be counted as part of the assets of his business, and if one further counts only half the value of the motor vehicles shown as

* The reason for a residential property being included among business assets will be explained later.

being assets of the business, then the position might be summarized as follows: In the 1970/71 season, the business had assets which had cost a total of R37,579, and which by the end of the season had depreciated to a book value of R20,756. (The items that depreciated fastest were the motor vehicles - from R9,391 to R1,679,* - the dinghies - from R4,177 to R690, and the outboard motors - from R2,484 to R1,012). The full figures of assets and depreciation are given in Table XVII.

The results of the years trading during the 1970-71 season are shown in detail in the trading account (Table XIV), and in the profit and loss account (Table XV). In approximate figures they might be summarised as follows:-

Income from sales of	
Rock lobster (in 000's of R)	41.5
Expenses:	000's of R.
Office expenses	2
Bait	4
Motor vehicles	1.5
Boats and equipment	1
Outboard motors	1.5
Electricity	.5
Depreciation	2.5
Bantu workers (all expenses)	15.5
Other expenses	<u>2</u>
Total expenses	30.5

The total expenses of R30.5 thousand were R11 thousand less than the revenue from sales (R41.5 thousand); the profit on the year's trading was thus R11 thousand. (The profit and loss account shows a net trading profit for the year of R11,249.18).

* These are the figures for all three vehicles. They would have to be halved if it were considered that the business use of these vehicles should only count against half of them.

Apart from the expenses connected with the African workers, which will be examined in detail, these figures do not require much explanation. The income from sales totalled R41,421.81, made up of live rock lobster to the value of R19,077.75, and dead rock lobster to the value of R22,344.81. A total of 41,408 were sold live, at 46 cents each, and 52,962 dead at 42 cents each.* This makes a total of 94,737. The slight discrepancy is due to the fact that rock lobsters occasionally eat each other, or die and start to go bad while in the tanks.

Selling the rock lobster involved a certain amount of juggling between the two buyers. The buyer who flew the rock lobster live to France could only buy at certain times, often at fairly short notice, when he knew air freight would be available; and the rock lobster had to be in good condition at this time. The buyer who exported frozen rock lobster tails was less concerned about delivery dates; and a certain quantity of rock lobster could be kept in the cold store next to the factory until the buyer was ready to collect them.

Under "office expenses" are included such items as bank charges, office rent, travelling and entertainment, licences, stationery, telephone, postage, and interest on loans. The exact amounts are shown on the profit and loss account (Table XV). The owner used two offices: one was simply a corrugated iron hut near the factory, with little more than a table and a telephone in the way of office equipment. The other office was a small room in the owner's house; it was here that the real office work was done and the records kept.

* Today (1976) rock lobster are sold by weight: live, R1.30 per kilo, whole weight; and dead, R1 per kilo, whole weight. This might give the impression that the price of live rock lobster has risen relatively to dead rock lobster since 1970. But allowance should be made for the fact that it is the small rock lobsters that are sold live. (Small rock lobsters cost less to air-freight than large ones).

Bait has already been discussed; it cost R3,963 in the 1970/71 season. The cost of running the three motor vehicles was a little less than R1.5 thousand: R443 in running expenses, mainly petrol and oil; and R942 in maintenance. If it is considered that this is a high maintenance charge for three vehicles, it must be remembered that vehicles do big mileages in country districts, and that the roads are generally gravel and often badly corrugated.

The item "boats and equipment" includes both the maintenance of the boats (R143), chiefly painting; fishing gear - rings, net, ropes, twine and so on - (R767); and boat gear - oars, rowlocks, life jackets, flares (R289). The R1.5 thousand spent on outboard motors went approximately half on maintenance (R732) and half on running expenses (R747). Electricity was used for pumping and running the cold storage plant; running expenses of the cold storage plant are shown as nil in the trading account (Table XIV); this is because the cold storage plant had formerly run on diesel fuel; the year before it had been changed to run off electricity, so that the running expenses of the pumping and cold storage plant were accounted for under one item. The item "depreciation" is self-explanatory; details are given in the trading account (Table XIV).

The item of R15.5 for African workers has been arrived at by lumping together all the expenses connected with the employment of these workers. The items included were:

4c for each rock lobster caught	7,579
1c "bonus" for each rock lobster caught	1,895
Basic salary of R1 per week	1,365
Extra bonuses and presents	906
Foremen's wages	926
Recruiting and tuition	258
Rations and expenses	301
Train and bus fares	1,027
Compound expenses	906
Registration fees	258
	15,421

As already explained, the fishermen, fishing in pairs, were paid 4c each for each rock lobster caught, and a bonus of 1c each at the end of the season. Thus the direct labour cost to the employer was 10c for each rock lobster landed. But this 10c was not the whole of the labour cost, but only about two-thirds of it. Additional items were:

Basic salary of R1 a week: this, as mentioned earlier, was to enable the fishermen to buy food at times when, owing to poor catches, they were earning little.

Extra bonuses and presents: the "extra bonuses" was money paid to the fishermen at the beginning of the season as a special reward for coming back. It was paid only to fishermen who had been employed before, and the more successful a fisherman had been, the bigger the extra bonus he got when he returned. In the 1970/71 season, the six best fishermen who returned each got an "extra bonus" of R50. Less successful fishermen were given smaller bonuses; the smallest of all being R8 paid to Mfuniswa, a fisherman who had been 39th out of 57 in the ranking list of fishermen in 1969/70. (He improved to 30th in the 1970/71 ranking).

(A word might be said here about this ranking list, shown in columns 1 and 12 of Table XVIII. It was the employer's habit, when the fishermen arrived at the beginning of each new season, to write their names down in his wages ledger in the order in which he thought they would be successful fishermen. Thus the fisherman whom he expected would make the largest catch had his name put down first, followed by the others in order, the one expected to make the smallest catch having his name written down last. As the season progressed, the employer found an interest in seeing how far his predictions about the fishermen's catches had been verified. It is for this reason that the successful fishermen are at the head of the list, but not accurately in the order of their success; and occasionally there is one low down in the list who does unexpectedly well, (Wilson, for instance: expected to be No. 50, actually No.19),

or one high in the list who does unexpectedly badly (Dinibango, for instance: expected to be No.9, actually No. 36). A possible reason for unexpected success is that a newcomer is taken under the wing of an experienced fisherman, crews with him, and shares in the rewards for his skill; or a newcomer might simply show unusual ability. Unexpected failure might similarly be accounted for by the loss of an experienced companion, illness, laziness, or, to some extent, simply bad luck.

It has to be admitted that the ranking list is not entirely accurate. It does not go beyond 55, although 58 Africans fished during the season.* And there are, for instance, three fishermen ranked at 29, although two of them (Christopher and Winile) caught fewer fish than Mantane, who is ranked equally with them. I have not attempted to correct the ranking list, but have left it in its original form).

To return to the extra bonuses and presents: the extra bonuses paid out to returning fishermen totalled R893; the "presents" were gifts of meat given occasionally to the crews of particularly successful dinghies.

Foremens' wages: These are shown as totalling R926 in the trading account. But in the record of fishermen's earnings they are shown as having received a total of R1,059 - R597 to Winnus and R562 to George. The larger total includes extra bonuses and some small earnings from fishing (they normally worked on land but George occasionally went out in a dinghy). It is difficult to reconcile the figures completely, but it is clear that the figure of R1,059 must be very close to what the two of them actually received; and it may well be quite accurate, since there does not seem to be a complete record of all the various "bonuses" and "presents" paid out.

* One of them, George, was one of the two foremen, and only went out fishing occasionally; he was not ranked. The other foreman, Winnus, did not go out at all.

Recruiting and tuition: old hands who persuaded their friends in the Transkei to sign on for a season of fishing were rewarded with a special recruiting fee. There does not seem to be a complete record of exactly what fees were paid to whom: but Bennett, for instance, received a recruiting fee of R56 as well as his "extra bonus" of R50 for returning himself. As for the tuition fees: when a newcomer arrived, he was sent out a few times with an experienced fisherman to be "shown the ropes." These were normal catching trips, but the more experienced fisherman was given a special fee of 50 cents for each trip of this sort.

Rations and expenses: Various items were included under this heading. There was, first of all, the money paid to fishermen to enable them to buy food on their journeys to and from the Transkei. Also, when the fishermen arrived from the Transkei, they were each given R1. And at Christmas time the fishermen were given presents of meat - several sheep's heads - which they cooked in the compound.

The other three items need little explanation. The employer pays for the fishermen to come from the Transkei and to return there. The compound expenses have already been explained. Registration fees have to be paid to the authorities in respect of Africans brought in from the Transkei.

It might now be worthwhile to look at these payments not from the point of view of the employer who makes them, but from the point of view of the fisherman who receives them. The first point to consider is: how much of the money that was paid out in respect of them actually reached them as wages? They received the 4c for each rock lobster caught, the 1c bonus for completing their contract, the R1 a week basic wage, and the extra bonuses for coming back, for recruiting, and for taking out new-comers. All this comes

to a total of R12,939.- Their train and bus fares, their rations and expenses during the journey, the compound expenses, and the registration fees did not benefit them in the same way, though they made it possible for the fishermen to reach the factory and helped them to live there once they had arrived. But if we take the view that what interested the fishermen was not how much was given to them while at work, but how much they could take or send back to the Transkei as a result of that work, then some further deductions must be made. How great these deductions should be depends on what is considered to be the minimum on which a man could have lived in the compound given all that he essentially needed to spend money on was food, the means to cook it, and clothing. Perhaps one should put down this minimum at R3 a week; if so one would have to deduct R4,504 from the total earned to allow for living expenses while at work.* This leaves a total of R8,435 which could be taken or sent back to the Transkei - an average of R145 for each fisherman. (If it were considered that a fisherman could live on R2 a week, this sum would be increased to R171; or if it were thought he would need R4 a week, then it would fall to R119). This would be the average total sum taken or sent back to the Transkei after six months work.

However, in fact the earnings of individual fishermen showed considerable variations. The details are given in Table XVIII. It is impossible to make a completely accurate calculation, because the figures showing how the recruiting and tuition money was distributed are not available. Ignoring this, the actual sums earned by some of the fishermen - including the best-paid, the worst-paid, and "average" fishermen - are shown in this table:

* These calculations are made on the assumption that there were 58 African fishermen employed for the season. In fact, 59 signed on, but two, Kolakela and Aron, worked only part of the season; so to assume 58 fishermen should lead to a reasonably accurate result.

Name	Benn- ett	Xaze- lini	Maqola	Mpik- elwa	Dini- bango	Flur- ile	Doug- las	Amos
Place in rank- ing list	5	1	2	28	36	39	54	53
4c catch fee	R 238	R 289	R 288	R 129	R 107	R 104	R 52	R 56
1c bonus	59	72	72	32	27	26	13	14
Basic salary	26	26	26	26	26	26	26	26
Extra bonus	50	50	50		40	20		
TOTAL	373	437	436	187	200	176	91	96
Take- home pay:								
Living at:								
R1 p.w.	347	411	410	161	174	150	65	70
R2 p.w.	321	385	384	135	148	124	39	44
R3 p.w.	295	359	358	109	122	98	13	18

The table includes three high earners - Bennett, Xazelini, and Maqola. The high earners probably, in fact, earned more than is shown, because they were the most likely ones to benefit from the recruiting bonuses and tuition fees. The owner remembers that Bennett was paid a recruiting bonus of R56 that year; but this was unusually high; the total amount paid out in recruiting bonuses and tuition fees that year was R258. Mpikelwa was an average earner; Dinibango had a bad year; he had done well the year before, and earned a R40 returning bonus; otherwise he would have been among the lowest earners. Douglas and Amos were the two who earned least.*

* That is provided one ignores the fishermen who left before their contracts were completed.

The last three rows of figures show the pay that these workers could have taken or sent back to the Transkei on three different assumptions. The first row shows the amount that would have gone back if they had lived on R1 a week each, the second row shows the amount if they had spent R2 a week each; and the third row, the amount if they had spent R3 a week each. If Xazelini, the top earner, had lived most frugally, he could have sent back R411; if Douglas, the lowest earner, had spent R3 a week, he could have sent back only R13.

This concludes the description of a sample rock lobster business. Are there any useful conclusions that can be drawn from this description? One point that would strike many people, I think, is the large differential between the amount earned by the owner of the business and the amount earned by the fishermen. If we take simply the total sums paid to the fishermen, they shared between them a total of R12,939. If this total be divided by the number of fishermen, the result is R223 for each fisherman. This is almost exactly one-fiftieth of the R11,249 net profit made by the owner. In other words, the ratio of the employer's earnings to the fishermen's earnings were 50 to 1. By way of comparison, it might be mentioned that in England in 1974 the wages of a municipal street cleaner were £1,800 a year, while the salary of a judge of the supreme court was £17,850, and that of a cabinet minister £16,000.¹⁷⁸ So here the ratio between the incomes of the street sweeper and the judge is about 1 to 10.

In Scandinavia, the ratio between the lowest paid workers to those earning top salaries is about 1 to 7.* It might be added that while in Scandinavia this ratio was about the same

* It is admitted that the comparison between, on the one hand, an African fisherman and a fishing entrepreneur, and on the other a British street cleaner and a judge, is somewhat remote. It would have been better if comparable figures for a British or Scandinavian fishing enterprise had been available. But the figures given do illustrate what I believe to be true: that the differential between the earnings of ordinary workers and employers, managers, and professional men is greater in S.A. (and in most so-called "under-developed" countries) than it is in Britain or Scandinavia (or most developed countries).

before the Second World War, in England in 1936 municipal street cleaners earned £145 a year, while judges of the supreme court and cabinet ministers earned £5,000 a year. This is a ratio of more than 34 to 1, and approaches more nearly the ratio in the rock lobster business under review. So it appears that these differentials can change fairly rapidly.

But it is worth while looking further into this ratio. Although the owner-manager of the rock lobster business is far richer than the fishermen, and comfortably off by any standards, he is by no means what could be called a rich man, nor does he live a life that could begin to be called a life of luxury. He has a comfortable home with a small garden, a double garage, and two bathrooms. He has a Coloured girl to clean the house and help with the cooking (though much of the cooking is done by his wife). His children - there are four of them - attend the local village school, although the eldest girl is now at boarding school in Cape Town. He has to live in a rather bleak area with few of the amenities and amusements available to town dwellers. In ordinary human terms, he is not making more than a moderately good living.

Now let us see what would happen if the ratio of earnings between fishermen and employer were altered. Suppose the Scandinavian ratio of 1 to 7 applied. The total to be divided between the 58 fishermen and their employer would be R24,188 (the sum of the R12,939 paid to the fishermen, and the net profit to the employer of R11,249). The fishermen would get, on an average, R372, and the employer would get R2,604. If the ratio were the 10 to 1 of present-day England, the fishermen would get R356 a year, and the employer R3,560. If the ratio were the 34 to 1 that is said to have applied in Britain some 40 years ago, then the fishermen would get R262 and the employer R8,908. For convenience, these ratios are reproduced in the table below:

Nature of the ratio.	Ratio	Employer gets R	Workers get R
Scandinavia today	1:7	2,604	372
Britain today	1:10	3,560	356
Britain forty years ago	1:34	8,908	262
S.African rock lobster fishery	1:50	11,249	223

It is not for an economist, or even an economic historian, to suggest which of these ratios is "best". It would, however, seem unrealistic to suppose that a man with the ability to run a business of this sort, and with a degree in accountancy, would be willing to work for R2,604 or R3,560 a year. Even if he had no capital, he could do much better by selling his abilities to someone else. If, on the other hand, his earnings were reduced to R8,908, then the fishermen's earnings, at R262, would still be pitifully small. (And they would be small enough, too, at R356 or even R372).

These comparisons suggest that the high differential between the earnings of the employer and the fishermen, and the low earnings of the fishermen, are due less to the cupidity of the employer than to the low productivity of the fishermen. If the high differential between the income of the employer and the fishermen is looked on as a "problem" then it would seem the most hopeful approach towards a "solution" would be to raise the earning power of the fishermen, rather than to decrease the earnings of the employer.

Would it be possible to increase the earning power of the fishermen? It would need a lengthy technical investigation to determine this with any certainty. But even to one who is not a technician, it seems there are certain possibilities for increasing productivity:

(1) The first point to note is that the most successful fishermen caught five times as much as the least successful.

Xazelini caught 7,203 rock lobster during the season; Douglas, who also worked a full season, caught only 1,309.* It is difficult to believe that a difference as great as this could be accounted for by luck or even purely by laziness. Xazelini may have worked harder than Douglas: but hardly five times harder. One would think that Xazelini must have known better where to set his traps, how to bait them, how to haul them up so that the rock lobster did not fall out - or some similar "secret".** The training given to newcomers, without any real supervision, since it takes place at sea where the employer cannot see or hear what is going on seems rather casual; further, the employer speaks no Xhosa and so cannot communicate effectively with the fishermen; these facts, taken in combination, do suggest that some of the fishermen simply lack the training to enable them to use the equipment they have been given in the most effective way.

(2) The ring-net trap is a case in point.*** This bit of apparatus could hardly be simpler. Yet it loses most of its

* This is the number which was credited to each. It could be argued that as there were two men in each dinghy, their actual catches were only half the figures shown. Whichever figures are taken, the comparison between the 2 fishermen is not affected.

** Possibly part of the secret is that there is a "pecking order" amongst fishermen, and that senior fishermen like Xazelini claim prescriptive rights to certain fishing places of their choice.

*** A commission of inquiry into the fishing industry appointed by the Administration of South-West Africa reported in 1966: "Very little work seems to have been done on the ring-net, and particularly in regard to improvements thereof, both for efficiency and for reducing the number of small fish caught. These studies should involve not only design and dimensions of mesh and nets, but also materials of construction. Further intensive research is required in regard to the use of traps and development of improvements, and a comparison thereof with ring-nets both in regard to efficiency and in regard to size and selectivity of the animals caught."

In an addendum attached to this report Dr G.M.Dreosti wrote: "The Australians have considerable experience in the design and use of rock lobster traps, and have done considerable interesting research in regard to the breeding habits and culture of this species. It seems that one of our research officers, from South West Africa or South Africa, should visit that country.... (see foot of page 258...)"

effectiveness if not put down in the right place. Also it ought to lie flat on the bottom. If it is tilted against a rock, or if it tilts as it is being raised, there is a chance that the rock lobster will fall out. Then there is the question of the optimum time for leaving the ring-nets down. If they are not left long enough, not enough rock lobster will find them; if they are left too long, the rock lobster will eat the bait and go somewhere else. If fishermen's labour were high-priced, it would be worth someone's while to send a diver down, to sit on the bottom (possibly in a diving bell), to watch what was going on, and report on how the ring-nets could be used most effectively. But since labour is cheap, it is worth nobody's while to make such investigations, and the labour remains unproductive.

(3) If there were one man to a dinghy instead of two, this would approximately double each fisherman's earnings, provided he caught as many fish. Are two men really needed in a dinghy? Dory fishermen often fish in pairs; but they often fish single-handed too.¹⁷⁹ In this rock lobster fishery the dinghies are rowed by one man; the other meanwhile, sits in the stern and does nothing. It may be that two men are really needed to bait, lower and raise the traps.

*** cont'd from page 257:

"Furthermore, it seems reasonable to expect that investigations concerning the details of construction of the present ring-nets (e.g. mesh of nets, smoothness and dimensions of materials used, and even shape and size and actual design of nets) with the specific view of permitting small fish to escape, might lead to a reduction in the number of small fish brought to the surface. At any rate, such investigations seem warranted..."

Dr Dreosti was concerned specifically with the question of the size of fish caught; but his words do suggest a need for research into the use of ring-nets.

It may also be that with a little organisation, this could be done as effectively, or almost as effectively, by one man. The reorganisation might involve a lighter and quicker dinghy, possibly towing some sort of floating bag in which the catch could be kept. (Amateur swimmers who dive for rock lobster often have a bag of this sort). Or it might be that the ring-nets could be carried out to the fishing grounds by a large dinghy, possibly with an outboard motor; but in position by an experienced fisherman from the large dinghy; and then drawn up and re-baited by fishermen in small, quick-moving, canoe-like boats.

(4) In 1961 diving for rock lobster was forbidden in South Africa, and soon after in South-West Africa. It is difficult to understand the purpose of this ban, apart from the fact that the diving appears to have been a more efficient way of catching rock lobster than the "traditional" method with traps and dinghies; so that the divers threatened the livelihood of an established group of fishermen. In the long run, however, it would benefit the community as a whole if rock lobster were caught as economically as possible. If diving for rock lobster is more economical than trapping, it ought to be allowed. If it is not more economical, there is no need to prohibit it, since the divers will be unable to compete successfully with the "traditional" fishermen.

Considerations of this sort do suggest that the earnings of the rock lobster fishermen might be increased if their labour were organised more efficiently.

And taking a broader view: one wonders if this rock lobster fishery on the West Coast of the Cape, a small, relatively unimportant business, does not reflect in microcosm difficulties which beset, on a much larger scale, the whole of South Africa. Black labour is poorly paid, partly at least because its productivity is low. But because its productivity is low, it is not possible to increase

Black earnings without heavily cutting into the earnings of investors and entrepreneurs. And equally, because Black labour is "cheap", it is not worth while (at least, it does not appear worth while in the short run) to make the considerable efforts that would be needed to increase its productivity. Yet it is on the increase of the productivity of labour that most economic development must ultimately depend.

This concludes the review of the development of the fishing industry during the period 1945-1970. In summary, it may be said: catches and production increased greatly during this period; fish prices - from the consumers' point of view - increased, but it is not clear whether they increased more or less than food prices in general; the wages of fishermen increased, and many of the "isolated" and "backward" fishing villages of the west coast found themselves caught up in the general surge forward of the industry; this was also a period of heavy capital investment in the industry, more especially investment in factories to can and otherwise process the shoal fish which were being caught in such greatly increasing quantities; this was a time in which fishing industrialists as well as government officials became increasingly aware of the dangers of over-exploiting the fishery resources; and the possibility that over-exploitation might undermine the economic bases of the industry. It was, accordingly, a time in which many measures were passed with the aim of protecting the fishery resources; but it remains an open question whether the steps that were taken did in fact give the resources sufficient protection. This was a time in which foreign fishermen were taking more and more fish from waters that were traditionally regarded as "South African"; and by the end of the period, the activities of foreign fishing vessels in the South East Atlantic was a major "problem" for the South African fishing industry. Finally, it should be added that although there had been great advances in the

industry, there were still parts of it that appeared relatively backward. The example of the rock lobster fishery shows that there were still some fishermen whose earnings were far from what most people would regard as satisfactory in a developed economy, and whose productivity might have been increased by more efficient use of their labour.

VI. ACTIVITIES OF THE FISHERIES DEVELOPMENT CORPORATION.

It now remains to ask: what part did the Fisheries Development Corporation play in the great changes in the fishing industry that have just been described? Some of those who helped to bring the corporation into existence had expected to see it exercise a dominating role in the industry, even to the extent of itself directly controlling sections of it. However, the directors of the corporation do not appear to have seen themselves in this role. They set themselves, not to control the industry, but gently to guide it, to nudge it, as it were, onto the right lines, rather than wrenching it onto the right lines by main force and by the powers conferred on them. They chose for themselves the road of influence rather than the road of power. This was demonstrated immediately in the corporation's first annual report, in which the directors expressed their determination to co-operate closely with the established fishing industry. During the first year of the corporation's existence the directors and the general manager visited all the important fishing centres, to gain a knowledge of the industry and to discover how the corporation could best aid development. In general, the lines of approach decided on during that first tour, and laid down in the first annual report, are the lines on which the corporation has proceeded ever since. The main activities of the corporation, as foreshadowed in its first report, were:

- (1) Encouraging development of the fishing industry by investment in those sections of it which had good growth prospects.
- (2) Research into new techniques and new products.
- (3) Direct assistance to fishermen by means of benefit schemes of various sorts.

(4) The improvement of harbour facilities.

(5) An finally - although this is not mentioned in any corporation reports - using the influence which its other activities gave it to persuade leaders of the fishing industry to act so as to promote the long-term interests of the industry as a whole; rather than the short-term interests of only a section of it!

These five areas of activity will now be considered one by one.¹⁸⁰

(1) Investment in the Fishing Industry

Soon after its establishment, the corporation was approached by the head of a fish canning company, who proposed that the corporation should take a financial interest in his business. The corporation declined this offer, but made a counter-proposal: that it should take a one-third share in all companies engaged in fish canning. To this end, a meeting with representatives of all the main canning companies was held. The corporation's offer was discussed; but in the end, only two companies - the Lambert's Bay Canning Company, and Stephan Brothers - were willing to agree to the corporation's proposal. The corporation therefore applied to parliament for £85 000 "B" shares, to be invested in these two companies. This investment was also bound up with an order for a pilot plant to produce fishmeal and fish oil, which the Lambert's Bay Canning Company had placed with a firm in the United Kingdom. At the same time, negotiations were proceeding to launch a new company to produce fishmeal and oil at Stompneus Bay in St. Helena Bay. Meanwhile, the companies that had originally rejected the corporation's offer to take shares in their undertakings were having second thoughts; and by the end of 1945 negotiations for the corporation to take shares in several companies were in progress.¹⁸¹

In the following year many of the plans made during 1945 came to fruition. The company to produce fishmeal and oil, christened "St. Helena Bay Fishing Industries Ltd." was launched with an authorised capital of £200 000, of which £100 000 was issued. This £100 000 was divided up among five companies, who each took one fifth (£20 000) of the total capital: the Lambert's Bay Canning Company, Stephan Brothers, Table Mountain Canning Company, South African Sea Products, and the corporation. Work was started on a jetty at Stompneus Bay, and machinery for the proposed new factory was ordered from the United Kingdom, including a quick-freezing plant to produce frozen pilchards for human consumption.¹⁸² (It is easy, of course, looking back, to see that these were bound to be profitable enterprises; it was not so obvious, however, looking at the position as it appeared in 1945. In encouraging these investments, the directors of the corporation showed courage and enterprise).

During the year 1945/6 the corporation also invested in several fishing and canning companies, so that by the end of 1946 it held shares in the following companies:

Lambert's Bay Canning Company (£60 000);
 Stephan Brothers (£30 000);
 Ocean Products (£13 324);
 South African Sea Products (£26 000);
 St. Helena Bay Fishing Industries (£20 000);
 Laaiplek Fisheries (£15 000);
 and Table Mountain Canning Company (£21 000).

In addition, the corporation had been authorised by parliament to invest £25 000 in John Ovenstone Ltd., and £60 000 in a quick-freezing plant project at St. Helena Bay, although these investments were not taken up during 1946.

As the corporation pointed out in its report,* all the companies in which it had invested were engaged in development programmes: the Lambert's Bay Canning Company was building a £100 000 ~~modernisation~~ plant to produce canned pilchards, fishmeal, and fish oil; it was also considering the possibilities of developing freshwater fisheries in Northern Rhodesia; Stephan Brothers was planning to close down its cannery at Paternoster, and to open a new modern cannery at Steenberg's Cove; Ocean Products, whose main interest was the production of vitamin oil from shark livers, was planning a cold store and ice-making plant for Gansbaai; South African Sea Products had just built a modern vitamin oil plant at Hout Bay, and had started work on new freezing and processing plants there; the combined projects were expected to cost about £100 000; Table Mountain Canning Co., which at the time was an investment company only, had plans for starting a fishing enterprise in South West Africa, at Hottentot Bay, 50 miles north of Luderitz; and Laaiplek Fisheries had recently undergone a large-scale re-organisation, and was planning to produce pilchard oil and meal, as well as processed fish for human consumption.

During the first two years, the corporation ran at a loss; but these investments, with the additions and alterations that were made to them in the following years, proved highly profitable. In 1947 the corporation made £23 000 profit,¹⁸³ entirely from its "B" share investments,** which then totalled

* Its second annual report, for the period October 1945 to September 1946. All the corporation's reports covered a period October to September. For convenience, the report for the period ending in September will be referred to as the report for that year: thus the report for the period October 1945 to September 1946 will be referred to as the "1946 report" or the "report for 1946".

** In fact the profit was £25 000; there was a loss of £2 000 on "A" shares.

£260 000. Development was continuing at Lambert's Bay; Stephan Bros. had earned "substantial profits", and Ocean Products "record profits." South African Sea Products was carrying out a merger of six Hout Bay and Cape Town fishing concerns, and had increased its capital from £100 000 to £250 000. Development was going ahead at St. Helena Bay; the newly-formed company was expected to be in operation by February 1948. Laaiplek Fisheries had increased its capital from £100 000 to £500 000, and bought a site for a new factory at Walvis Bay, and was building a new pilchard oil and meal plant at the Berg River mouth. The Table Mountain Canning Co. had merged with other companies with interests in South West Africa; new freezing plant was being installed. Finally, the corporation had taken shares in the North Bay Canning Co., which had a substantial rock lobster quota.

During the next few years the corporation steadily built up its investments, which remained highly profitable. By 1948 it had £329 000 invested in the fishing industry; the names of some of the companies in which it had invested had changed, following re-organisations. For instance, Laaiplek Fisheries had become Marine Products Corporation; the fishing venture in South West Africa in which Table Mountain Canning Co. had been an early participant had become West Coast Fishing Industries Ltd.; but basically the corporation's share holdings were little changed. Profits from the shares grew. In 1948, "B" share profits were £49 000; in 1949, £53 000; in 1950, £59 000; in 1951, more than £70 000; in 1952, £93 000; in 1953, £103 000; in 1954, £114 000; after this profits fell slightly for a time, but by the early 60's they were climbing again: in 1961, £199 507; in 1963, R348 308; in 1965, R507 045; and in 1966, R525 220. This was the greatest profit made by the corporation in the 60's; but the profits remained very substantial; in 1970 they were R360 381.

A few additional investments were made: in 1950 the corporation invested £10 000 in Southern Sea Fishing Enterprises, a company which had been formed by Dutch and South African interests in 1948. The corporation suffered a loss in 1950, when the collapse of the vitamin oil market, following the successful manufacture of synthetic vitamins, led to the closing down of Ocean Products Ltd. at Gansbaai.¹⁸⁴ (The corporation undertook to help the fishermen who had suffered as a result of the closing down of this firm; this help will be discussed under the section on "direct assistance to fishermen.") In 1952 the corporation reported that it had invested a total of £495 000 in thirteen companies. Of these, seven were public companies; the comprehensive holdings in these seven companies, at current market value, were worth more than £1 million, although the corporation had paid only £319 000 for them. In 1960 the corporation sold its shares in Stephan Bros., which gave up fishing. In the early 60's the corporation's shareholdings were increased by a number of capitalisation issues - by South West Africa Fishing Industries Ltd. and by Southern Sea Enterprises, among others. In 1968, following a merger between John Ovenstone Ltd. and Ovenstone S.W.A. Investments Ltd., the corporation was offered shares in the new company, which it accepted. In 1970 the corporation had invested R1 023 131 in fishing companies; the income from these investments had paid all the corporation's expenses, and left a balance over which was from time to time distributed as dividends to those who held shares in the corporation; as the corporation reports pointed out, this arrangement made it possible for the corporation to fulfil its functions without any cost to the taxpayer - or certainly without any direct cost.

(2) Research into new techniques and new products.

From the very first, the corporation both took a direct interest in research, and encouraged research in the companies

in which it took an interest. Thus one of its aims in investing in companies producing fish-liver vitamin oils, was the hope that these companies could reduce costs by co-operating with each other in their laboratory work.¹⁸⁵

In the same way, the encouragement of companies investing in fishmeal reduction plants and the part the corporation played in founding St. Helena Bay Fishing Industries, were aimed to develop processes which, while not strictly experimental, were new to South African fishing industrialists.

A direct experimental effort, begun already in 1945, was the attempt to develop the growing of oysters. The report of 1945 pointed out that South African oysters had been little exploited in the past; if they could be cultivated in lagoons and estuaries, this might lead to a valuable industry. Investigations, said the report, were starting. In 1946 an attempt was made to import European oysters and establish them in Knysna Lagoon, which had been shown by a survey to be suitable for oyster culture. This attempt was not a success. Experimental cultures of local oysters were started in the Knysna Lagoon and in the Keurbooms Lagoon. A total of 50 000 oysters were put down at Knysna, and though many of these were attacked by natural enemies, those that survived the attacks were reported in 1947 to be doing well. The oysters put down in the Keurbooms Lagoon all died. In 1948 the corporation co-operated with Thesen and Co. of Knysna in starting a company to grow oysters; a Dutch expert was engaged to collect stocks and to supervise the attempts to grow the oysters.¹⁸⁶ By 1949 20 000 oysters had been brought from Europe and were growing in Knysna Lagoon; at the same time, attempts were being made to fatten oysters in the Saldanha Lagoon, although it was known that the water there was too cold for oysters to breed. In 1950 the oysters at Knysna were showing "signs of success"; 50 000 spat were imported from Holland. But in fact the oyster cultures did not proceed

smoothly. In 1953 a Dutch expert, Dr P. Korringa, spent six weeks at Knysna, and gave advice on the best species to grow. Some oysters were sold. An attempt was made to grow Portuguese oysters, but the oysters were attacked by the Polydora worm, and the attempt was not a success; there was more success in growing and selling local oysters; in 1955 it was reported that the sales of local oysters were three times larger than they had been the year before. During the years that followed, attempts to grow oysters continued with indifferent success.¹⁸⁷ In 1967 there were visits to Japan and Australia to study methods of oyster culture there. By 1969 the corporation had decided that the natural increase of oysters at Knysna was too uncertain to form the basis of a profitable industry; research was taking place into artificial breeding methods, with the probability of only modest sales while the stock of cultivated oysters built up. By 1970 the corporation could report that oyster cultivation at Knysna was continuing, and that market prospects appeared to be good. In summary, it appeared that after 25 years of oyster research, the methods by which a really successful oyster industry could be built up had still not been found.

A second research project taken up in 1945 was the development of rock lobster hatcheries. Already at that time there were fears that, despite size limits and rock lobster sanctuaries, the rock lobster population might be declining. It seemed possible that rock lobster hatcheries might reverse this process. Rock lobster are prolific breeders; but mortality is heavy during the first six months of life - the so-called "glass crab" stage. If some means could be found of protecting the young rock lobster during these first six months, then the danger to the resource might be averted. The idea seemed a good one; but in fact the experiments ran into difficulties from the start. By 1947 it was admitted that the experimental rearing of rock lobster had failed;¹⁸⁸ experiments were continued, but apparently without better success. Meanwhile, the corporation interested itself in the discussions that led to a reduced export quota for rock lobster, and in arrangements for more effective control of exploitation and sales.

A major research project was the creation in 1946 of the Fishing Industry Research Institute. The corporation cannot claim all the credit for this: but it did co-operate with the C.S.I.R. and with leading fishing firms in the discussions which led to the formation of the Institute.¹⁸⁹ The C.S.I.R., at a meeting in April, agreed to finance the Institute on a pound for pound basis up to £5 000 a year; and firms in the industry - the great majority collaborated in the scheme - subscribed a total of just over £5 000 a year for the first five years. It was agreed that the Institute would work closely with the Division of Fisheries; the Division would be responsible for research into marine biological problems; the Institute would do research into the techniques of processing, canning, and the reduction of fish to oil and meal.*

A brief experiment of quite a different type was started in 1947. The corporation had been asked to support a demand for a fishing harbour on the Natal South Coast. Before doing so, it decided to satisfy itself that suitable fishing grounds existed. It therefore agreed to finance one year's fishing off the Natal Coast by a newly-built boat, and to bear the losses should the experiment fail. In fact, after seven months of fishing there was a loss of £4 000, after which the experiment was discontinued. Strong currents had made netting very difficult, and the results of line fishing had also been disappointing.

The first five years of the corporation's existence had been years of tremendous growth in the fishing industry; growth which the corporation had itself encouraged, and which it had assisted with investments, both in shares and in other ways, which by 1949 had totalled over £1 million. But already the corporation had started to sound a warning note; development could be too rapid; it could lead to over-production;

* During the years that followed, the corporation from time to time made contributions of money to the Institute's projects.

worse, it could lead to over-fishing and damage to the fishery resource.¹⁹⁰ (A year later, in 1950, the collapse of the Californian fishing industry was to provide an object lesson in the dangers of over-fishing). These warnings, started in 1949, were reiterated by the corporation in the years that followed. Emphasis was placed on the need for consolidation: the search for improved efficiency and better quality, rather than for increased production. These warnings do not seem to have had much effect in the first years of the 50's, when shoal catches increased. But in 1953, although the catch increased, it was noticed that the shoals were farther out; in the 1954 season the South African catch actually fell. It was true - as the corporation agreed - that there was no clear evidence of over-fishing; but the industry admitted the danger, and after discussions between leaders of the industry and corporation officials, a £175 000 research scheme was launched. Essentially, the plan was to build three research ships, to investigate especially the pilchard and maasbanker resource. The plan also involved a new block of laboratories at Sea Point and a field station at Stompneus Bay. The ships would be paid for initially by the corporation, which would get its outlay back by means of a levy on the industry. This project, agreed to in 1954, was delayed by problems in design of the boats needed; so that the building of the boats was not begun until 1957, by which time their estimated cost had increased to £210 000. By 1958 the first of the boats had been delivered and the research programme had begun; in 1959 the corporation paid in full for the three boats, which eventually cost a total of £235 000.

During the 60's the corporation initiated, or co-operated in, several experiments involving new techniques or new resources. In 1961 it co-operated with the Division of Sea Fisheries in experiments to adapt light trawling tackle to local conditions. The results were said to be "encouraging".

In the same year, the corporation became interested in the possibilities of commercial fishing of tuna. The visit of an American expert, Mr E. Lucich, had stirred interest in tuna fishing, and some South African pilchard boats had been used for tuna fishing. But, as a corporation report pointed out, sound commercial exploitation would need a considerable capital outlay in special boats, freezing and cold storage equipment, and harbour installations. The following year the corporation chartered a boat for experimental tuna fishing, and sent a fishing technologist to the United States to study netting techniques. (He learned that tuna nets are huge, of a size to cover five rugby fields, and weigh five tons each!) The chartered boat cost R31 500, but gave the corporation "valuable experience"; the tuna experiments were continued in 1964, when new nets were imported. But in the end the tuna fishing experiments petered out; in 1965 the corporation had to admit that tuna fishing had not prospered; there had been no opportunity to try the imported gill-net which had worked well in Australian waters. Also in 1961, the corporation gave R10 000 to the Southern Universities Nuclear Institute, on condition that the institute produced such isotopes as the Division of Sea Fisheries or the Fishing Industry Research Institute might require. In 1963 the corporation was co-operating with others in investigating the possibilities of anchovy fishing; in October of that year experimental fishing for anchovies began with six boats from the pilchard fleet. Despite some initial technical difficulties, the results were encouraging and as a result the authorities agreed to allow shoal-fishing boats to use the smaller-mesh nets that were needed for anchovy. The corporation reported that the smaller-mesh nets were not expected to cause harm to young pilchards, and that although the new nets would probably cost between R15 000 and R20 000 for each boat, there was "every hope" that the outlay of capital and effort would be "richly rewarded." *

* In fact, as already recorded, the anchovy catch increased rapidly from 1964.

In 1964 the corporation co-operated with the Division of Sea Fisheries and Cape Town trawling companies in an investigation of shrimp fishing grounds off the South African coast. Some "promising areas" were discovered off the Natal coast and on the Agulhas Bank. As a result of these investigations, commercial fishing for shrimps and prawns started off the Natal coast: by 1967 this form of fishing was showing "healthy development". Other smaller research activities in which the corporation co-operated were whale research, research into fish larva, into the density of hake, and into the radio-activity of local waters.

Up to September 1968 the corporation had spent a total of R444 000 on research - some of it on research projects undertaken directly by corporation officials, some on subsidies to other organisations to undertake research. The greater part of the money had been spent on pilchard and maasbanker research, experimental tuna fishing, experimental shrimp and prawn fishing, and in oyster research.

(3) Direct assistance to fishermen.

One of the objects of the corporation, as laid down in the Act of 1944, had been to provide amenities for fishermen and others engaged in the fishing industry - amenities such as housing schemes, health services, pension and provident funds, and hospitals. In fact, the corporation started immediately to plan assistance for fishermen on these lines; and the first report, in 1945, outlined various proposals, which included:-

(i) A non-European village at Lambert's Bay. Plans were drawn for between 250 and 300 houses, a recreation hall, and a clinic. Plans were also made for a water supply to the village.

(ii) A second proposal was for houses and a community centre for European fishermen at Lambert's Bay.

(iii) The corporation consulted with the Forestry Department on how best to preserve the vegetable cover and prevent wind erosion at Lambert's Bay.

(iv) Investigations were made about a water supply and houses for workers at the proposed new fishmeal factory at Stompneus Bay.

(v) The corporation proposed to negotiate for control of 44 houses which the Cape Divisional Council was building for fishermen at Hout Bay; it also proposed to build a community centre there.

(vi) On the south and east coast, fishermen tended to live in small isolated communities, and to dispose of their catches locally. The corporation proposed to remedy this situation initially by improvements to the harbours of Gansbaai, Hermanus, Knysna, Kalk Bay, Gordon's Bay, Mossel Bay, and, later, one or two harbours further east. These improvements, it was hoped, would draw the isolated fishermen towards the improved harbours, where it would be possible to start social benefit schemes for them.

(vii) The corporation had also considered how it would be possible to "organise" fishermen. But it seemed that most fishermen were too inexperienced and lacked the necessary capital to organise ordinary co-operative societies. The corporation therefore proposed to organise boat-owning societies, servicing societies, and distribution societies; fishermen would not be forced to join these societies, but would be encouraged to do so by the benefits offered. To enable the corporation to carry out these plans, the Minister was asked that controlled areas should be declared at Lambert's Bay, St. Helena Bay, Hout Bay, and Gansbaai.

In following up how these early plans were carried out, it will be best to consider first the housing and similar amenity schemes carried out by the corporation. By 1946 the corporation had already embarked on a fairly extensive housing programme; £26 000 had been spent; and a total expenditure of £175 000 had been approved. The projects included a non-European township at Lambert's Bay, houses for European fishermen at Lambert's Bay, houses for European and non-European fishermen at Stompneus Bay, houses for European fishermen at Gansbaai, houses at Laaiplek, and a community centre at Hout Bay.

By 1947, 164 sub-economic houses for non-Europeans had been built at Lambert's Bay, as well as quarters for 150 Africans, a community centre for non-Europeans, a cinema hall, and a store; plans had been drawn for six houses for European fishermen and for a community centre for Europeans; and the corporation had successfully opposed the grant of a second liquor licence at Lambert's Bay. At Hout Bay, the 44 houses built by the Divisional Council had been leased to the corporation, and were all occupied by Coloured fishermen. The corporation had acquired a site for a community centre. At Laaiplek, the corporation had lent £20 000 to Marine Products Ltd. to enable houses to be built for fishermen.

In the first five years of its existence, the corporation had, in summary: built 12 houses for Europeans at Gansbaai; 13 houses for Europeans and 167 houses for non-Europeans at Lambert's Bay; taken over 44 houses from the Divisional Council at Hout Bay; and given financial help for company housing schemes at Saldanha Bay, Stompneus Bay, Thorn Bay, Hondeklip Bay, Port Nolloth, and Hout Bay. These activities had cost £230 000; and another £100 000 was to be spent in the next year; but despite these expenditures, the problem of housing was anything but solved. On parts of the West Coast fishermen and factory workers were living "virtually

under desert conditions". Building costs had risen, and the £500 000 originally set aside for amenities for fishermen was inadequate. In fact, in 1952 the government voted another £50 000 for amenities: this was spent on financing a water scheme at Lambert's Bay, and on an installation for handling fish body-oil in bulk at Table Bay docks. (The corporation lent the money for this to the fish oil producers, who were to repay it over nine years). The corporation was also able to sell some of the houses it had already built to fishing companies: this made money available to build more houses. A loan of £100 000 from South West Africa Administration to the corporation was also used to finance housing schemes. By the middle 50's, housing for fishermen in South West Africa was becoming more urgent than in South Africa; shoal catches in South Africa were beginning to fall, whereas in South West Africa they continued to rise, leading to an increased demand for labour and therefore an increased demand for housing.

By 1962 the corporation had made loans for housing schemes to the value of R1 207 000, and loans for houses to individuals totalling R100 500. At Lambert's Bay, it was claimed, there was now a "well-integrated community, comfortably housed, with a strong sense of civic pride." But while the corporation was still prepared to make housing loans, there was a feeling - expressed, for instance, in the corporation's report for 1957 - that the shoal fishing industry ought to be able to do more to house its own workers. The industry was, after all, making handsome profits. Whether for this reason or not, the scale of housing loans made by the corporation decreased during the 60's. Reports mention loans to individual fishermen to help them build houses; but the scale of these loans was clearly not large. Seven are mentioned in 1967, nine in 1968; four in 1969; by the end of 1969, the corporation had lent R282 000 to individual fishermen to help them build houses, and

R1 406 000 to companies for housing schemes. In addition to these housing loans, the corporation had helped in an electricity supply scheme for Gansbaai in 1950, in the water supply scheme - already mentioned - at Lambert's Bay in 1952, and in a water supply scheme for Velddrift and Laai-plek in 1959.

Housing loans were at first from the financial point of view the largest "amenity" activity undertaken by the corporation; but the boat ownership scheme involved only slightly less money in the early years, and even more later. This was, as the name implies, a scheme to help fishermen to acquire boats. The procedure was that, after an applicant had been approved, he deposited with the corporation one quarter of the purchase price of the boat and its engine. The corporation then bought the boat, handed it over to the applicant, while at the same time a bond in favour of the corporation was registered over the boat and engine. Under the terms of this bond, the applicant had to repay the corporation over 20 years, the rate of payments being reduced after the first ten years. The payments were so calculated as to cover repayment of the bond, interest, and insurance. The applicant was also required to maintain the boat to the corporation's satisfaction. The scheme was introduced in 1946; in that year two boats were sold, two more were under construction, and two more were ordered, making a total of six. (At this time a fishing boat might be expected to cost between £4 000 and £5 000).

There was an immediate steady demand for boats under the scheme; by 1948, loans had been made for 23 boats; by 1949, 31; by 1950, 38. Most of the loans were for pilchard boats, delivering to factories on the West Coast;* and generally to factories of companies with which the corporation was associated.

* The corporation refused applications from Natal fishermen for boat loans. Its own fishing experiment off the Natal coast had convinced it that the basis for a successful commercial fishery did not exist there, except perhaps for such specialities as prawns and shrimps. 191.

In 1951 the scheme was changed. Boats had become bigger and more expensive. At the same time, fishermen had become better off. The corporation, instead of demanding one quarter of the purchase price as a deposit, and charging interest at three per cent, now asked for 40 per cent deposit and charged interest at five per cent. This change did not, in the end, lead to a falling off in the demand for boat loans, though there does seem to have been a drop in the years immediately following the change - a drop that may have resulted from the stiffer terms, but may also have resulted from the falls in catches of some South African shoal fishermen in the early fifties. But there was change in the nature of the scheme. The first applicants for loans had been individual fishermen. But as the price of boats grew, it became more difficult for individual fishermen to raise the necessary capital to enable him to ~~own~~ a boat, even with the corporation's help. Instead, fishermen hired boats from the companies to which they delivered the fish. Therefore the boat loan scheme gradually turned over from being a scheme to help individual fishermen, and became a scheme for advancing money to fishing companies to help them buy boats.* To this extent, the scheme ceased to be an "amenity" for fishermen, but came to be rather a system of financial aid to the industry. The change was gradual, as the price of boats rose. In 1966, when the price of a fully-equipped pilchard boat was more than R80 000, the corporation made loans for 17 new boats; but most of these loans were to companies, not to individuals. In 1967, there were 18 new loans - a total of 195 boats had now been built under the scheme - and the demand was still for bigger and more expensive boats, necessary especially since the boats now needed to go farther to find fish, which were becoming scarcer on the older, closer fishing grounds. By 1969, it was becoming apparent that boats were becoming so expensive, and became obsolete so quickly, that even loans to companies might involve dangers. A corporation report of that year pointed

* The Corporation continued to advance boat loans to fishermen, but now required that repayment of such loans be guaranteed by the companies served by the borrowers.

out that there has been a "frightening" increase in costs. A 76 foot pilchard boat, fully-equipped, cost about R150 000 - of which R70 000 was for the hull, R40 000 for fishing and navigating machinery, R20 000 for the engines, and R16 000 for the nets. The boat was, of course, the security for the corporation's loan. But the need for big boats with the latest equipment might mean that the older boat lost value rapidly, with resultant danger to the corporation's security. In fact, the corporation was now seeking additional security beyond that of the boat. Nevertheless, it concluded that a cautious policy with regard to boat loans would be wisest. At this time the corporation had advanced more than R5 million for boats.

One aspect in which the corporation showed an early interest was the education of fishermen. The expansion of the industry, and the introduction of expensive and sophisticated equipment, was underlining the need for trained fishermen. But in fact most fishermen had little education, and lived far from centres where training could be given. Possible solutions to this problem were the introduction of marine biology as a school subject; special courses for fishermen at the Cape Town Technical College; the use of mobile teaching vans; and help from company managements, especially in offering inducements to fishermen to follow training courses. All these good intentions broke down on the fact that few fishermen wanted to be educated or trained. In 1953, with the co-operation of the South African navy, a training school for fishermen was started. But the response to an appeal for recruits to this school was "extremely disappointing."¹⁹²

The corporation had also made two attempts to start co-operatives among fishermen. In 1947 a co-operative society was launched at Kalk Bay, with the apparently solid support of the fishermen there. One aim was to build a cold store, although there was some difficulty about finding a suitable site. This difficulty apparently remained insoluble while the harbour at Kalk Bay was under the control of the South African Railways; so the co-operative made no progress.

The second attempt at forming a fishermen's co-operative had a happier history. The manufacture of synthetic vitamins - already mentioned - led to a collapse of the vitamin oil market; and Ocean Products, of Gansbaai, which had been producing vitamin oils, closed down in 1950. The local fishermen, who had thus lost one of their main markets, decided to form a co-operative, and asked the corporation to help. The following scheme was evolved: the corporation undertook to make certain advances to the fishermen, in return for which the fishermen handed over their catches to the corporation, which processed and marketed them. Any extra "profits" earned from the sales were passed on to the fishermen. During the first year this scheme met with "fair success". (It might be added that the corporation had co-operated with ~~Marine~~^{Ocean} Products and with the local Village Management Board to supply Gansbaai with electricity; after the collapse of Ocean Products Ltd., the corporation took over the electricity scheme, without much hope of immediate profit, since Ocean Products had been the principal customer. Thus the corporation was doubly involved in Gansbaai). During the next two years, the co-operative continued to work, with gradually increasing success. The fishermen's earnings rose; they began to get better prices for their catches; they were able to play an increasing part in the running of the co-operative. In 1953 the "Gansbaai Co-operative Fisheries" was legally registered.¹⁹³ It then had a shark-liver reduction plant, was selling various fish products with enthusiasm, and had made a satisfactory profit in the first six months of the year. In 1954 the co-operative prospered and expanded, though hampered by lack of moorings; but extra moorings were provided in the following year, and, in addition, a trawling company built a fish factory at Gansbaai. In 1956 the corporation helped the co-operative to build a small drying installation for shark meat. Helped by this, and also by improvements to Gansbaai harbour, the co-operative made a record profit in 1958. (At about the same time, Gansbaai was linked to the Escom electricity supply, thus bringing to an end the corporation's

electricity undertaking, on which it had been losing money). In 1959 the co-operative enlarged the shark-drying plant, and built an ice-making plant. By 1961 it was considered that the co-operative had advanced far enough to do without the corporation's management of its secretarial and administrative affairs. The co-operative also had a financial interest in a new fishmeal factory being built at Gansbaai. What had happened, then, was that in ten years the corporation had helped to build up a successful fishermen's co-operative. It is perhaps worth mentioning that Gansbaai was the only fishing village in South Africa where the great majority of the fishermen were Europeans.

These were the direct efforts that the corporation had made, up to 1970, to improve the social conditions of fishermen. On the south and east coasts, however - as has been explained - the corporation proposed to combine its attempts to improve the conditions of fishermen with plans for harbour improvements. The whole question of improvements to fishing harbours - which became, in later years, a major part of the corporation's work - will now be dealt with.

(4) The Improvement of Harbour Facilities.

As already mentioned, one of the first actions of the Board of the corporation was to visit the principal fishing ports in South Africa in order to get a comprehensive view of the fishing industry and its problems. The Board came back from these visits convinced that "the great difficulty that confronts all engaged in the fishing industry in this country is the lack of suitable all-weather harbours. Although large sums of money have been spent on fishing harbours at a number of places, the majority are very small and offer inadequate shelter, with the result that only small boats can operate from them, and these are often held up for days by adverse weather." 194

The Board's solution to this problem was that the authorities, instead of trying to provide harbour facilities at many fishing villages all round the coast, should rather concentrate on a few main centres, where adequate facilities for large fishing boats could be provided. When this had been done, fishermen from the smaller villages could move to the larger harbours, the only places where they could expect to make a reasonable living from fishing. The Board suggested that the Knysna area might be regarded as an example of this type of development. Rather than trying to establish small fishing harbours at villages near Knysna, - Buffalo Bay, Gericke Point, Plettenberg Bay - it would be better to develop Knysna itself as a fishing centre for the whole area. This would involve dredging the entrance to the Knysna Lagoon, so that the entrance could be made safe for larger, and therefore more efficient, vessels.

However, the Board was not itself able to put this policy into effect. The maintenance and improvement of fishing harbours did not fall under the corporation, but was financed by the Ministry of Transport, and, at a later date, by the Department of Commerce and Industries, while the actual work was carried out by engineers of the South African Railways and Harbours. The Department of Commerce and Industries did consult the corporation about fishing harbour improvements, so that the corporation did have influence; but it had no authority.

Events at Knysna illustrated this position. The corporation took up the question of improvements at Knysna with the South African Railways and Harbours, and an investigation was begun to determine whether the entrance to the lagoon could be dredged so as to make it safe for large fishing boats, and how much such dredging would cost. The survey showed that the lagoon entrance could be dredged; this, with the construction of a sea-wall, would cost £300 000; and the annual costs of dredging to keep the channel open would be

£8 000. The corporation did not feel that expenditure on this scale would be justified for a fishing harbour. It did, however, consult an independent firm of engineers, which submitted a tender offering to dredge the mouth of the lagoon at a cost of slightly more than £40 000. This dredging, so the firm's experts claimed, would make the Knysna Lagoon a safe all-weather harbour. The corporation could not accept this offer, but forwarded it to the Department of Commerce and Industries. All this took several years. Finally, in 1948, the government decided not to go ahead with the dredging. The corporation had to accept this decision "with regret", and with a hope that it would be found possible to open Knysna as a fishing harbour in the not too distant future.¹⁹⁵

Other fishing harbours fared better. In 1946, the Government allocated £120 000 for improvements at Lambert's Bay; the work was held up by scarcity of cement and steel, but was well under way in 1948. At Hermanus (Stil Bay) more than £200 000 had been allocated to harbour improvements, which included a quay 260 feet by 60 feet, and a breakwater 950 feet long, the whole providing safe anchorage for about 25 large motor fishing boats. These, too, were well under way in 1948. At Gansbaai, a slipway and cradle with a power-driven winch had been provided in 1947 at a cost of £12 500; and a further £60 000 had been set aside for extending the main breakwater and removing rocks in the harbour. At Hout Bay, a cradle and slipway costing about £12 000 was completed in 1948. This made it possible for boats to be overhauled and repaired at Hout Bay instead of having to be sent round to Cape Town. (At the time there were about 50 fishing boats operating from Hout Bay). And in the same year the Government voted a further £100 000 for improvements at Hout Bay.

All the improvements mentioned had been made before 1950. Thereafter, for a period of more than ten years, the corporation had little to do with harbour improvements. Funds were voted annually by parliament to the Department of Commerce

and Industries; and the Department assigned the construction and maintenance work to the administration of the South African Railways and Harbours. However, the administration was short-staffed, and had many duties besides the improvement of fishing harbours. There was a feeling that lack of adequate harbour facilities was, once again, becoming a restraint on the fast-growing fishing industry. During 1963, therefore, the Government accepted a proposal that the corporation should in future become responsible for improvements to fishing harbours, and should take over the work previously done by the South African Railways and Harbours Administration. The corporation could not itself, of course, carry out the construction and maintenance work; this was put out to tender. The corporation did the planning of new works, and supervised their construction; and this in itself necessitated a considerable increase in the corporation's staff - a technical manager, (formerly a harbours engineer with the South African Railways), five engineers, two draughtsmen, one senior technician and two engineers' assistants, as well as extra administrative and clerical staff. The corporation's report for 1963, commenting on this change, said: "The additional work taken on by the Corporation - particularly the planning and construction of modern fishing harbours - will demand a great deal of time and money, and although there will be no delay in tackling the work, over-rapid progress should not be expected. However, there is reason to believe that the corporation will be able to continue, as in the past, to spearhead further development of South Africa's valuable fishing industry."¹⁹⁶

In fact, the corporation was almost at once involved in a great deal of activity. In 1964 twelve contracts to a total estimated value of R747 000 were awarded. These included the cutting of a channel and the building of protective works to allow easier access to Berg River from the sea; the construction of a new access road to Gansbaai harbour; the

tarring and draining of the working area at Hout Bay; and the construction of an office and store at Lambert's Bay. The corporation's staff was also busy with planning new works at Gansbaai, Hout Bay, Hermanus, and Kalk Bay, and with surveys at Saldanha and St. Helena Bay.

Even more work was initiated in the following year - 1965 - when twenty contracts to a total value of about R3 200 000 were awarded for the construction and maintenance of fishing harbours. These included the extension of the breakwater at Hout Bay, as well as the construction of a mole jetty, a new slipway, and harbour buildings; the building of a new breakwater at Gansbaai; the reclamation of land and the construction of a quay at Saldanha Bay; and the building of a breakwater, as well as the reclamation of factory sites at Sandy Point. A contract to build a dredger was awarded to a Dutch firm, local boat-builders having been unable to submit technically acceptable offers. Construction work on a smaller scale was carried out at many fishing harbours; a hydrographic survey was carried out at Stil Bay; and model tests were made in connection with the development of Rietvlei and Gansbaai.

Progress on a similar scale continued to the end of the decade. In 1966, thirty contracts were awarded, to a total value of R1 028 600; in 1967, 16 contracts to a value of R2 032 000; in 1968, eleven contracts to a value of R1 122 600; in 1969, 14 contracts to a value of R365 465; and in 1970, 14 contracts to the value of R2 316 000. Thus by 1970 a total of 117 contracts had been awarded, valued altogether at R11 311 665. Of these, work valued at R9 583 808 had been completed by September 1970.

Among the projects which had then been carried out, or were nearing completion, were: improvements to the entrance to the Berg River. This involved cutting a channel from the sea to

the river, and then deepening the river to ten feet, to allow large boats to use the new opening. This work was completed by 1968. By 1970, a new 1,000 ft quay had been built on the Berg River. Another major harbour work was a 2,000 ft breakwater at Sandy Point; started in 1966, this was completed in 1969; in the same year a 250 ft. coaster berth had been completed alongside the breakwater, and a 150 ton slipway was under construction. The reclamation of factory sites at Saldanha made "excellent progress" in 1968. A new mole at Hout Bay was completed in 1966. But a new breakwater at Gansbaai presented considerable problems. It had been a third completed in 1966; then the gantry used to place the concrete caissons was twice damaged by storms, the second time so badly that it had to be replaced. More than 1,000 foot of the breakwater had been completed in 1968, but next year bad weather led to further delays, and in 1970 the breakwater had still not been completed. New slipways at Hout Bay and Hermanus were completed in 1966. At Pepper Bay, Saldanha, a new quay, begun in 1967, was completed, after some delay caused by difficulties with the foundations, in 1968. A second quay at Pepper Bay was completed a year later. A new jetty at Hout Bay was completed in 1967; and the next year the breakwater was extended by 40 feet. In 1968, a new spur to a jetty at Hermanus was completed, also a new jetty for snook boats at Sandy Point. At Mossel Bay, an extension to the breakwater was completed in 1970; the work was carried out by the South African Railways and Harbours, but one of the corporation's engineers was seconded to the railways to help supervise the project. At Lambert's Bay, dredger material was used in 1969 to reclaim land near the harbour, and in 1970 a new coaster berth was built. At Laaiplek, work on a new 600 foot quay began in 1969.

To summarise: From 1963, when the Corporation became responsible for the planning and construction of new fishing harbour works, there was greatly increased activity in this direction. From 1940 to 1963, during the time when the South

African Railways and Harbours were responsible for harbour improvements, a total of R3 143 400 was spent - an average of a little under R137 000 a year. From 1964 to 1971, when the Fisheries Development Corporation was responsible, a total of R12 657 700 was spent - an average of more than R1 800 000 a year.¹⁹⁷ Even allowing for greatly increased costs in the later period, this was a very considerable increase. The decision to spend this extra money was obviously a high-level government decision; the Corporation's influence may have had some effect in causing the decision to be taken.

(5) Influence on leaders of the fishing industry.

The activities of the Corporation in improving harbours, in building houses for fishermen, in helping them to buy boats, or in investing capital in fishing ventures, is easy to describe, capable of being quantified, and open to optical proof: the harbours, houses and boats are visible, the investments could be shown in company accounts. But to describe the influence exercised by the Corporation on the fishing industry is much more difficult, and to quantify it impossible. Yet it may be that this intangible influence of the Corporation, exercised at board meetings, in letters, in conversations between individuals, was more important to the development of the South African fishing industry than any of its more "material" activities. Direct evidence of this influence would be hard to find. But to ignore the Corporation's influence because of the difficulty of finding evidence of it, would be to overlook one of its most important aspects. The Corporation's own reports suggest that "influence" was one of the Corporation's most important functions: "The Corporation has taken a prominent part in guiding development along sound lines." "The development of the pilchard industry in the Union was to a large extent initiated by the Corporation." The presence of the Corporation's General Manager at board meetings of the companies in which the corporation is interested "has been instrumental in bringing about a measure of co-operation and co-ordination that would otherwise have been impossible." These quotations from Corporation

reports do something to suggest the importance of the Corporation's influence, as well as the directions in which it was exercised. An attempt will now be made to analyse the influence which the Corporation exercised, or tried to exercise, in four directions:

(1) encouraging co-operation and rationalisation within the industry; (2) encouraging the adoption of new techniques or products; (3) encouraging controlled marketing; and (4) warning the industry about the dangers of over-exploitation and encouraging conservation.

(i) Encouraging co-operation and rationalisation.

The attempt in 1945 to get the shoal fishing companies of the West Coast to accept investments from the Corporation was, in one aspect, an attempt to get them to co-operate with each other. The Corporation's own view of the attempt, as expressed in its first Annual Report, was: "About 60 per cent of the whole inshore fishing of South Africa is located on the west coast, between Port Nolloth and Hout Bay. The canning of crawfish, pilchards, snoek, and other fish, is in the hands of some twelve companies, with factories dotted along the west coast. Attempts have been made in the past to secure some form of co-operation between these companies, but all these efforts have ended in failure. Soon after the establishment of the Corporation... a scheme was drawn up which aimed at the development of the inshore fishing along the west coast through the co-operation of the Corporation with all the interests concerned. In brief, it was suggested that the Corporation should invest new capital in all the companies, to the extent of a one-third share - this new money to be devoted to the purchase of a new plant, boats, and gear, and to the general modernisation and improvement of the factories. Such a link-up, it was hoped, would bring about that measure of co-operation and rationalisation needed to develop the industry to its fullest extent and to meet keen competition from overseas after the War." 198

As already recorded, this initial attempt to build up co-operation within the shoal fishing industry did not succeed. But later most of the companies that had, in the first instance, rejected the Corporation's plans, changed their views and accepted investments from the Corporation, with a consequent increase in the Corporation's influence. As a result, the Corporation was able to write in its third Annual Report:

"It can justifiably be stated today that the Corporation has brought about a measure of co-operation and expansion in the fishing industry of the Union that would not and could not have occurred if this organisation had not been in existence. Through our substantial financial holdings in a number of important companies engaged in inshore fishing and in the canning and processing of fish and fish products, by constant consultation on all matters affecting the industry, and by providing amenities for the fishermen, we are able to play an increasingly influential part in the substantial developments that are going on. In other words, at three years of age the Corporation is well established and has fully justified its existence."

The Corporation's influence was increased a year later - 1948 - when it acquired control of a permanent headquarters in Cape Town - Seafare House, in Orange Street - and most of the companies in which it had investments took offices in the same building. "The accommodation of all these offices under one roof, with a common board room, has contributed much to quick and easy consultation and co-operation."¹⁹⁹

As already explained, a feature of the development of the fishing industry during the post-war period was the gradual organisation of most of the previously independent or semi-independent firms into groups. The Corporation apparently approved of this trend. In 1950, Seafare Investments had been formed as a holding company to control the various firms that made up

the "Lambert's Bay" group. In 1951 the Corporation assisted in this re-arrangement by transferring £50 000 of its capital from the Lambert's Bay Canning Co. to Seafare Investments. At the same time the Corporation increased by £50 000 its holdings in St. Helena Bay Fishing Industries, and made some other small re-arrangements to its investments. The Corporation's own explanation of these changes was: "In pursuance of a policy of consolidation and rationalisation, the Corporation subscribed to a scheme for bringing a number of companies, with which it was financially associated, into a more closely-knit group. An additional company, Seafare Investments Ltd., was founded for the purpose, and the Corporation assisted in its establishment through agreeing to exchange blocks of shares held in its earlier associates for shares in Seafare Investments Ltd." The Corporation's actions in this matter, and its explanations for them, strongly suggest that the Corporation's influence at this time was exerted in favour of consolidation, rationalisation and the formation of groups of companies. These were, as it turned out, the developments that actually took place. It certainly could not be shown - nor is it even likely - that these developments took place as a result simply of the Corporation's influence; but at the same time it seems not unreasonable to suppose that the Corporation's views and actions did have some effect in influencing the course of events into the direction they actually took.

Another example of the Corporation's efforts to encourage co-operation was in the production of fish-liver oils. In 1945, there were four companies producing fish-liver oil from shark livers. The oils contained vitamins "A" and "D": as production was far above^{ve} South Africa's effective demand, the greater part of the product was exported. There was little co-operation between the four companies; in particular, each maintained its own laboratory for testing the oil;

a shared laboratory might have made for substantial savings. Three of the companies approached the Corporation in 1945 and suggested that the Corporation should make investments, as it had done for the canners. This the Corporation was not willing to do, as it considered that one of the companies was in an unsound position. But the Corporation did take an interest in one company, and negotiated for interests in two more, including a newly-formed one at Hout Bay.* "By our association with these concerns," said the Corporation's report for 1945, "we hope to bring about a measure of co-operation with a view to effecting economies in the operational costs, to reduce the waste of carcasses and skins that is going on at present, and, if necessary, in collaboration with the Division of Fisheries, to prevent over-exploitation of the slow-breeding sharks that yield the valuable oil."

There is no further reference in the Corporation's reports to co-operation among the producers of vitamin oils. And the question of how much co-operation was actually achieved is not of first-class importance, since within five years the market for vitamin oils had largely collapsed due to the discovery of synthetic vitamins. However, the episode does demonstrate that the Corporation's influence was exercised in the direction of co-operation.

(ii) Encouraging new techniques and new products.

The Corporation's most important activity in this direction was the encouragement of the production of fish-meal and fish-oil from shoal fish. The production of fish-meal was not of itself a new process in South Africa; a factory at Cape Town docks had begun making fish-meal from "dirt" - that is, unsaleable fish - before the war. But the attempt to make fish-meal from pilchards was something new in South Africa. The Corporation took an interest in pilchard factories, and one of its

* This was South African Sea Products, which had, of course, other interests far beyond fish-liver oils.

purposes in doing this was to encourage co-operation among the pilchard factories. But an equally important motive was to encourage the firms to make fish-meal. This is how the Corporation, in its report of 1945, explained its aims: "It has been known for some years past that large shoals of pilchards (sometimes called sardine) occur off our coast, but little attempt was made to exploit them until two or three years ago. Even so, they are still only caught in comparatively small numbers for canning, and to a still smaller extent for sale as salted "herrings".

"A closely allied species of pilchard is caught in vast quantities off the West Coast of the United States and used for the manufacture of fish oil and fish meal. The oil can be used for practically any purpose for which vegetable oils are used, such as linseed oil, cottonseed oil, peanut oil and palm-seed oil. Large quantities of these vegetable oils, or of the raw materials from which they are made are imported into the Union at present, and fish oil from our pilchards might well replace them partially or wholly. The meal is a valuable source of cheap protein food for cattle, pigs, and poultry, of which there is a very serious shortage at the present time. Furthermore, if a high quality product is aimed at, it might be found suitable for mixing with mealie meal, in order to furnish a cheap balanced ration for workers on the mines, a ration much more healthful than mealie meal alone."

"Early in its career the Corporation turned its attention to the pilchards, and their exploitation as a source of oil and meal. Having satisfied itself that the pilchards are available in quantity off the West Coast for the greater part of the year, the Corporation initiated negotiations with the companies with which it is linked, with a view to the establishment as speedily as possible of factories for the production of fish meal and fish oil at suitable centres."

The floatation of St. Helena Bay Fishing Industries, which took place about the same time, was another example of the double attempt to encourage both co-operation and new products. St. Helena Bay was a joint venture involving several companies; and it was to produce the new products of fish oil and meal. All this provides evidence to support the Corporation's claim that it had to a large extent initiated the development of South Africa's pilchard industry. The impetus given to the production of fishmeal and oil was the Corporation's greatest effort in encouraging new products and techniques. But there is evidence that its influence was consistently used in this direction. In 1963, for instance, it was underlining the need for South Africa not to be left behind in adopting new fishing techniques: "There is at present an aspect of the South African fishing industry that calls for particular attention on the part of the Corporation and the industry itself, namely, the lack of variety in our inshore fisheries. The Corporation is therefore actively striving for the opening of new channels of development. New fishing techniques must be devised, and fishing boats will most probably have to be adapted in design and size to suit such new techniques. Fishing technology has developed very rapidly in recent times; as witness the large and well-equipped vessels of Japan, Russia, Spain and others nowadays frequenting our ports. Their activities are a challenge to us, and also an incentive to try to avoid lagging behind other nations in the exploitation of our maritime resources."²⁰⁰

Although they took place outside the time span (1944-1970) with which this thesis is mainly concerned, the increasing efforts which the Corporation has been making during the decade of the 70's to encourage mariculture should be mentioned here.

If one surveys the long story of man on earth, it is clear that the change from hunting to agriculture, which began perhaps 10,000 years ago, has led to an immense increase in the quantity of food produced from the land. But as far as

the sea is concerned, man remains essentially a hunter and scavenger. Man's methods of exploiting the sea, in other words, are 10,000 years behind his methods of exploiting the land. If he could learn how to farm fish, instead of hunting them, he would reap great benefits. As was pointed out in the Corporation's report for 1953: "The advantages are enormous, the most fundamental advantage offered being that of legal title to the raw material. Production might be planned to meet market demand, a stricter control over costs is possible, fish might be available to the market in optimum condition, fresh or with minimum processing, and the vagaries of the weather might be neutralized. These are but a few of the advantages." The report did not claim that these advantages could be easily or quickly achieved. On the contrary, "It is not suggested that sea-farming will replace the traditional methods of fishing within the near future, if indeed ever, but it is felt that these activities will live side by side for many years yet, the one supplementing the other, even as the hunter and the husbandman have lived together for centuries on the land-masses. Armed as we are with the capacities of modern science and technology, and the vast store of experience gained in animal husbandry, it may well be that the process of the sea-hunter to the sea-farmer will be of shorter duration than that of hunter to husbandman."

However, as the report pointed out, there are difficulties about the development of mariculture in South African waters. It would seem to require water than can be enclosed or cut off in some way - the equivalent of fencing on land. Stretches of such water are not easily found off the coasts of Southern Africa. Also, the supply of meat in South Africa is relatively abundant, as is the land on which livestock can be raised. Under these circumstances the South African demand for fish as an alternative source of protein is not as urgent as it is in some other countries. Considerations of this nature induced the Corporation to lay the main stress of its early

efforts in mariculture on luxury or semi-luxury fish such as oysters, prawns, and mussels.

Research into oyster culture had, of course, for long been among the Corporation's activities. By 1970 the Corporation's biologists were having some success in breeding oysters, and during 1971 the research station at Knysna was enlarged and modified to equip it for an expansion of hatching on a commercial scale. In this the Corporation co-operated with the Knysna Cyster Co., Pty.Ltd., a part-owned associate of the Corporation. By 1973 it had been decided that it was worth while for the Corporation to open a hatchery of its own; tests were carried out with samples of oysters imported from the United Kingdom, and the exotic oysters appeared to be adapting well to conditions in the Knysna lagoon. Two years later, "gratifying progress" was reported in the development of the hatchery; the Knysna Cyster Co. was growing oysters to commercial size, and the Corporation had increased its shareholdings in the company, so that it now had 70% of the issued shares. The report added that it was expected that the first oysters produced from spat in the Corporation's hatchery would be marketed in 1976.

As regards prawns: in 1970 the Corporation took an interest in a Natal project to capture young prawns and fatten them in artificial ponds. At the same time the Corporation was trying to develop hatching techniques for prawns, so that they could be hatched as well as fattened under controlled conditions. By 1972 the Corporation had organised three units to conduct prawn research: one at Port Elizabeth, one at Durban, and one on the Zululand coast. All were making progress, but the Corporation did not expect any rapid results. However, scientists engaged in this project succeeded in hatching prawns under artificial conditions; and the newly-hatched prawns showed "a promising rate of survival." On the other hand, the problem of feeding the young prawns economically did not seem likely to find a quick solution. By 1976 prawn propagation had been centralised in Zululand where it had shown "encouraging progress on all fronts."

Investigations into mussel-breeding began in the Langebaan Lagoon in 1970. Some progress was made, and there were hopes that the project might be expanded to a pilot commercial stage. But the construction of the new harbour works at Saldanha in connection with the Sishen iron ore project had a harmful effect on the mussels, and in 1975 the attempt to raise mussels in the Langebaan Lagoon was suspended.

In 1972, the Corporation (in co-operation with the Department of Nature Conservation of the Provincial Administration and the J.L.D. Smith Institute of Ichthyology of Rhodes University) began a survey into the potential of eel culture in the Eastern Cape. This survey was continued in the following years. And by 1975 the Corporation had begun to examine the possibilities of fish farming with fin fish.

It is evident that experimental work of this nature would be most unlikely to yield quick results on a commercial scale. If there were such a likelihood, commercial interests would have been willing to conduct the investigations, and there would have been no need for the Corporation to have acted at all. But viewed from a longer time-span, such work might prove to be of very great value to the economy: and the Corporation was rendering a useful service to the community by financing it. The importance that the Corporation attached to this type of work is shown by the increasing amounts it spent on research during this period:

	<u>Research Expenditure</u>	<u>Research Subsidies</u>
	R	R
1970	17,602	12,484
1971	34,698	13,502
1972	61,852	20,549
1973	99,205	22,007
1974	187,536	30,527
1975	226,441	28,272

The experimental work of the Corporation could be regarded as encouraging the industry to seek new methods and new products: the oyster experiments; the attempt to hatch rock lobster; the investigation of fishing possibilities off the Natal Coast, the tuna fishing experiments, the exploitation of anchovy, the evaluation of the prawn and shrimp fishing grounds, the experiments in mariculture - all these were evidence that the Corporation was trying to lead the South African fishing industry in the direction of new techniques and new products. No doubt some of the roads tried by the Corporation proved to be dead ends: the rock lobster hatcheries came to nothing, the Natal coast proved unsuitable for fishing, the tuna fishing industry never prospered. But these "failures" merely emphasized that the Corporation was really trying to pioneer new trails. (And, as far as the tuna fishing is concerned, it might be added that while the South African fishermen do not seem to have been able to make a commercial success of tuna fishing, Japanese fishermen have for some years been exploiting the tuna off the South African coast. The possibilities were there if the means had been found to exploit them).

(iii) Encouraging controlled marketing.

In 1947 the South African exporters of rock lobster came to an agreement whereby all rock lobster exports to the United States were sent to one agency and sold through that agency. (In fact, a New York attorney was appointed to supervise the marketing arrangements for South African rock lobster in the United States). It was claimed that this one-channel system of marketing would have substantial benefits for the South African exporters; in particular, the fact that there was a single seller would make it easier to hold back supplies should prices begin to drop. Also, according to the agreement, the gross return from all sales was to be pooled and divided out among exporters. Therefore, the rock lobster available could be apportioned out rationally among the various markets, so as to bring in the greatest total return. Previously,

competition among exporters to sell their products in the most profitable markets had tended to bring down prices in those markets; so that it could happen that the New York market was glutted, while markets in the Middle West were left unsupplied or inadequately supplied. The Corporation approved of this one-channel marketing, and its report for 1947 claimed that the General Manager had "lent valuable assistance in the formation of this agreement."

Further evidence of the Corporation's support for controlled marketing is to be found in its report for 1950, which *inter alia* says: "The companies with which the Corporation is associated have in almost every instance had a successful trading year, and in most cases dividends have been maintained or increased.... Further progress has been made in the marketing of the products of the industry. The industry believes in organised marketing, and the various sections have established associations which control and regulate the distribution of the relative products. By this means, a large measure of co-operation and stability has been achieved within the industry. To this aspect of the industry's development also the Corporation has made a significant contribution."

In 1956 the Corporation associated itself with representations that were made to the authorities for an increase in the price of fishmeal. There was controlled marketing of fishmeal, and producers were required to sell, at a price fixed by the authorities, as much fishmeal as local purchasers wanted to buy. The remainder could then be exported. For some years before 1956, the local price of fishmeal had been fixed at an average of £29 a ton. Fishmeal that was exported, on the other hand, realized an average of £53 a ton. The fishmeal producers, supported by the Corporation, objected to the degree by which the two prices differed. Further, it was maintained that it was inequitable that fishmeal producers should be forced to sell at a fixed price to, for instance, chicken farmers, whose own products were not necessarily

subject to price control. "The industry's contribution to the maintenance of a low national cost structure has saddled it with a burden of approximately £600 000 per annum,* a burden which the downward trend of profitability in canneries and an upward trend in production costs made it impossible to bear. As a result of these representations the local price was increased to £38 per ton, a portion of the increase being passed on to fishermen in Union waters. Fish oil, a complementary product, realised prices both on home and foreign markets somewhat superior to those which had been obtained over the previous year."

It may be going too far to claim that the Corporation's actions over fishmeal prices indicated support for controlled marketing. There is the negative evidence; that in their objections to fishmeal prices, the Corporation does not at any time seem to have attacked the principle of controlled marketing, but only the prices at which marketing was controlled. It may well be that, in line with the Corporation's general policy of co-operating with the fishing industrialists wherever possible, the Corporation would have given support to marketing controlled by the industry, rather than controlled by the government. However that may be, if one considers not only fishmeal prices, but also the other evidence available, it does appear that the Corporation favoured organised marketing rather than competition between producers.

(iv) Warning of the dangers of over-exploitation.

It has already been pointed out that market forces in the fishing industry will tend to force producers who are in competition with each other to over-exploit the fishery resource, with resulting increased costs and probable damage

* Fisheries Development Corporation report for 1956. The sum of £600 000 was presumably arrived at by subtracting the sum which the producers received for their meal sold on the local market at £29 a ton, with what they would have received had it been sold abroad at £53 a ton.

to the fishery resource. It might be expected that an entity which was not itself directly dependent on market forces, and which saw itself as having the duty of guiding the fishing industry "along sound lines", would repeatedly attempt to warn the industry about the dangers of over-production and over-exploitation. And this is exactly what the Fisheries Development Corporation did. The warnings began early: in its second annual report, in 1946, the Corporation was already warning of the possibility that the rock lobster resource was being over-exploited: "Evidence is accumulating that the crawfish beds, particularly those from Hout Bay to St. Helena Bay, are being over-fished and depleted. Out of seven canning factories that formerly operated in this area, only one remains. Poaching in the sanctuaries is on the increase, and the Division of Fisheries finds it difficult to control this because of lack of patrol boats. The export of frozen crawfish tails has increased enormously during the past months, and the beds are being heavily fished as a result.... Canned crawfish and frozen tails can only be exported under permit. The maximum quantity that may be exported during the year, including canned crawfish and frozen tails, amounts to some 6,000,000 lb, valued at about £500 000, and this is approximately the quantity handled during recent peak years. It is not known at present whether the crawfish beds can be maintained or not at their present rate of productivity if they are exploited to the extent of 6m. lb., per annum. It may be that they can be fished more heavily than this without depletion, or it may be found necessary to reduce the amount in order to preserve this valuable asset...."

(As events turned out, the Corporation's fear that six million lb. of tails for export might be too much turned out to be well founded. But it was more than a decade before the rock lobster beds had been so depleted that there was a dramatic fall in the catch; and it was not until this happened that the export quota was reduced).

The next year - 1948 - the Corporation, in a considerably firmer voice, was warning about the dangers of over-exploiting shoal fish. It was indeed the Corporation which had itself encouraged the growth of shoal fishing by helping to introduce fishmeal plants into South Africa. But the very success of these activities led to the danger. "So encouraging have the results been that there is now a large-scale influx into the industry, to the extent that existing producers are becoming alarmed that overfishing in certain areas may soon take place. The Corporation shares these fears, and as a result is taking a leading part in an effort which is now being made to have legislation enacted limiting the number and sizes of plants and regulating the quantities of fish that may be reduced in any one year. It is definitely the feeling of the Corporation that if the disastrous experience of the industry in California is to be avoided, early steps will have to be taken to protect our fishing grounds."

These two particular warnings, directed specifically at the danger to rock lobster and shoal fish, were followed by more general warnings about the danger of too rapid expansion. The annual report for 1949, commenting on "Development and Future Policy", said: "Progress has been so rapid during the past few years that fears are already being expressed that the development may have been overdone and that the industry may soon be threatened on the one hand by over-production, and, on the other, by damage to the fishing grounds as a result of intensive fishing.* While it would hardly be possible, at this juncture, to come to any definite conclusion regarding the aforementioned fears, the Corporation still has great confidence in the future of the industry. Nevertheless, it feels that during the next few years it would be prudent to adopt a

* There is, however, a third danger which the Corporation report does not mention: the danger that intensive fishing may reduce the stock so that, although it remains possible to catch as great a weight of fish as in the past, the cost of doing so increases. It seems highly likely that this has been happening, in the South African as well as in so many other fishing industries. A reduced degree of exploitation would give, after a few years in which the fish stock had grown, the same catch with less effort and therefore at lower cost.

cautious policy regarding development, until such time as further investigation and research have taught us more about the potentialities of our fishing grounds. The keynote of our policy during this period should be consolidation of gains rather than further development. This does not mean that from now on the Corporation should seek to curb all expansion. Undoubtedly there will still be sound propositions which the Corporation would do well to support, but on the whole it should aim at exercising a stabilizing influence on the industry, with the object of making existing units more efficient, rather than encouraging new enterprises."

Warnings of this sort, with variations, were repeated over and over in the reports of the years that followed. In 1951 it was noted that "unprecedented expansion" had taken place, that the pilchard catch had doubled, and that the output of fishmeal and tinned fish had increased considerably. But the report did not greet these increases with any enthusiasm. On the contrary, it regarded as unfortunate the fact that several new fishmeal plants had recently been erected or were about to be erected, and it pointed out that production in the St. Helena Bay area had reached a level which called for the "utmost caution". In 1952 the Corporation, in the face of continued increases in the catch, called for "added caution". "One is reminded of the very serious decline of the Californian fisheries, where the yield of pilchards has fallen from the peak of 791,000 tons in 1936/37, to 128,500 tons in 1951/52... Although there is no unanimity as to the reason for this catastrophic fall in catch, opinion now veers strongly towards over-fishing. If this should be the case in grounds of 23,500 square miles extent on the Pacific Coast, it would appear that the danger of overfishing is much greater in respect of the 570 square miles of grounds off the western seaboard of the Union and the coast of South West Africa, and that from now onwards extreme care should be exercised." The report went on to point out that the introduction of a closed season and limitations on the numbers and capacities of reduction

plants had failed to keep down catches, and suggested that production quotas for reduction plants might be worth considering. Two years later, in 1954, the catch of shoal fish had fallen (in Union waters) from 288,155 tons to 220,683 tons. The Corporation regarded this fall with "disquiet", and had, as a result, initiated discussions with the Director of Fisheries and the Minister of Economic Affairs, with a view to drawing up a research programme which might provide the necessary theoretical and practical knowledge on which to base an effective conservation programme. (It was these discussions that eventually led to the commissioning of three research ships).

In the seasons that followed, shoal fish catches had at first fallen slightly, and then, from the 1956/57 season, started to rise. In South Africa itself the rise was moderate and tended to level off at about 400,000 short tons; but in South West Africa the increase was much steeper: 306,000 short tons in 1959/60, then steadily up to 987,000 in 1969/70. In addition to this, in the seasons of 1966/7, 67/8 and 68/9, two South African based factory ships were operating off the coast of South West Africa. If their catches (276,000 tons in 1966/7, 615,000 in 67/8, and 530,000 in 68/9) are added to the catches of the land-based ships, then the catches of shoal fish by South African ships in southern African waters become greater still - in 1967/8 the total was only slightly under 2,000,000 short tons.

Although the Corporation had expressed disquiet when the shoal catch was little more than a quarter of this, it was only towards the end of this period of rising catches that the Corporation's reports again begin to draw attention to the dangers of over-fishing. Possibly the reason for this was that during this period the research programme into shoal fish was beginning, and it was judged better to wait until there was firm evidence of over-fishing before sounding a warning note; or perhaps the experts themselves were not sure whether over-fishing was taking place - it is difficult to

believe in the danger of fish scarcity when in fact they are so plentiful that catches are rising rapidly. But the appearance of factory ships, coupled with the increasing activities of foreign ships in the waters off South Africa, were two developments which the Corporation noted with some concern. In its report for 1966 it commented:

"More intensive competition for the resources of the waters off the west coast of Southern Africa has been experienced from foreigners... This competition... is likely to grow with the increase in the demand for seafood of an expanding world population... Against this background of an increasing demand for fishmeal, the emergence of the large factory ship as a factor in the local fishery appears as a natural development, in that it opens up to local exploitation the rich shoal fish resources of the Southern African coast. It is a development, however, not without its problems, such as the provision of harbour facilities for these larger vessels. More significantly, the matter of conservation and protection becomes more important and also more urgent. These are problems for which no ready solutions offer themselves. They are engaging the attention of all concerned... Commercial fishing has, in recent years, acquired an increasing degree mobility, principally as a result of the development of new techniques in the preservation of the catch at sea. With the birth of the wide-ranging trawler, and fleet-fishing operations involving factory ships, catchers, and supply ships (in some instances tugs and depot ships as well) distance no longer affords protection to the fish stocks of maritime nations. The concept of the sea as a common natural resource, once belonging to the field of the legal theorist, now enters the province of the commercial and industrial entrepreneur... The competition of foreign trawlers constitutes an increasingly serious problem. As demand from a growing world population increases, so the sharpness of competition for the

resources of the most productive grounds will be heightened. The Republic and South West Africa are blessed with rich grounds, and we must anticipate an increasing effort by outsiders to win the resources of our waters, resulting possibly in a decline in yield in the not too distant future." 201

And it was not only a decline in total catch that the Corporation feared. There was also the question of the species caught. It was about this time, - the middle sixties - that the catches of pilchard, the species on which the shoal fishing industry had been built up, were declining, and were being replaced with increased catches of anchovy. This was not a change that the fishing industry or the Corporation regarded with any pleasure. The anchovy was a less profitable fish than the pilchard. In the first place, it was not regarded in South Africa as an edible fish, and therefore it could not be canned for human consumption - and the profits on canned fish are greater than the profits on fishmeal. It did not have as high an oil yield as the pilchard, it spoiled more easily, and it was more expensive to catch, since an anchovy net cost twice as much as a pilchard net - R10 000 as against R5 000. For all these reasons, while replacement of the pilchard by the anchovy was a less serious blow to the industry than the simple disappearance of the pilchard catch would have been, it was a set-back, and underlined the need to conserve fish stocks.

In its report for 1967 the Corporation noted that there had been a fall in the catch rate of trawled fish both on the traditional Cape trawling grounds and also on the grounds to the north. It seemed likely that the growing number of foreign fishermen had been at least partly responsible for the decline, said the Corporation. "The need for control measures to safeguard this important foodstuff is becoming ever more apparent." 202

At this time long-range fishing craft from distant parts of the world - trawlers, shoal fishing craft, and even tuna boats - had for some years been operating in increasing numbers in the waters off the west coast of southern Africa. This had had an effect particularly on the trawling industry. The total quantity of hake caught by all fishing boats had increased enormously; but the catches of South African trawlers had dropped, not only relatively to the total catch, but even in absolute terms (See Table VII). The Corporation saw some form of international agreement as the only solution to this problem: "The proper management of these and other heavily fished areas is a major problem of world fisheries. It is one that does not admit of national boundaries, since the oceans are not delineated by geographical features, and vast regions are, in fact, outside limits of national jurisdiction. The interest and co-operation of all fishing nations will be required if scientific conservation is to be practised in the exploitation of these regions in an effort to meet the ever increasing demand for protein foods."²⁰³

The following year the Corporation took the argument a step further. It pointed out that over-fishing had led to crises of varying magnitude in several foreign fisheries. If South Africa did not adapt her rate of fishing to the stocks available, similar crises could be expected in South Africa. But even if South Africa did adapt, this still left unsolved the problem of the foreign fisherman. One answer might be to replace fish hunting by fish farming. "The need is for marine agriculture to be developed and pursued with the same vigour and enthusiasm as characterised the application of agricultural techniques on the land masses."²⁰⁴

These somewhat repetitious warnings do show that throughout nearly the whole period under consideration the Corporation was aware of the danger to fish stocks; and it seems likely enough that the warnings given so repeatedly in the Corporation's reports should have been repeated in formal and informal meetings with leaders of the fishing industry. The Corpora-

tion's influence, it seems, was exercised continually in the direction of more conservation. But the fact that the influence was continually exercised in one direction suggests a further probability: the influence was not effective, or at least not effective enough. And this probability is borne out by the catches. Towards the end of the period under consideration, there was clear evidence that some rock lobster beds had been over-exploited; hake was more difficult to find; so were shoal fish; and one of the most profitable varieties of shoal fish had virtually disappeared, to be replaced by a less profitable variety. There was continuing need, therefore, for the Corporation to repeat its warnings.

It remains to mention a few minor ways in which it seems that the Corporation attempted to influence the fishing industry. In 1951 it drew attention to the need for high quality products. It admitted that improvements had taken place, but "a lot still remains to be done before the industry can be satisfied that it is giving the public the best possible produce under the conditions prevailing."²⁰⁵ The Fishing Industry Research Institute - which the Corporation had helped to found - had done useful work in raising standards. But the Corporation pointed out that cleanliness and the speed with which catches were handled had important effects on quality. There was also the question of catching and processing fish at a time of year when they were in good condition. There were certain seasons when certain fish, especially fish for human consumption, were not in good condition and should not be caught. The Corporation suggested that the State might find it necessary to control this aspect of fishing. Two years later, in its report for 1953, the Corporation returned to the question of quality, and noted with approval that the South African Bureau of Standards had been asked to impose quality control on the products of all South African fish canners.²⁰⁶

In 1954 the Corporation used its influence in quite a different way. In that year the South African Railways introduced increased rates on canned fish, which threatened to make it difficult for South African canners to market their products abroad. The Corporation interceded with the railways on behalf of the fishing industry. Its arguments were listened to sympathetically, and as a result of them concessions were made. 207.

VII. OTHER BODIES INVOLVED IN THE FISHING INDUSTRY

The preamble to the Fishing Industry Development Act of 1944 stated that the aim of the Act was to "promote the development within the Union of the fishing industry, and to establish a corporation and an advisory council for that purpose." But one certainly could not conclude from this wording that the sole responsibility for the development of the fishing industry in South Africa lay with the Fisheries Development Corporation; still less the advisory council. The Corporation was only one of a number of bodies that had powers of control over, or were in some way connected with, the fishing industry. Neither the successes nor the failures of the fishing industry could be laid wholly at the Corporation's door. In order to be able to make some estimate of how far the Corporation could control or influence fishing developments, it will be necessary to discuss the various bodies connected with the fishing industry, and to place the Corporation in perspective among those bodies.

From the government point of view, the fishing industry in 1970 fell under the Minister of Economic Affairs; this ministry had two main divisions, industry and commerce. There was accordingly a Secretary for Industry and a Department of Industry; as well as a Secretary for Commerce and a Department of Commerce. The fishing industry fell - as might be expected - under the Department of Industry. The head office of the department was in Pretoria; the department's main duty, as far as the fishing industry was concerned, was to receive information on the industry, and to prepare for the Minister draft regulations for the fishing industry. The department received its information on resource control from the Division of Sea Fisheries in Cape Town, which was directly responsible to the Department. The main duties of the Division of Sea Fisheries were (i) research into the fishery resource, more especially from the biological aspect and with a view to conservation; (ii) advising the department about conservation; (iii) the enforcement of conservation

measures through inspections and patrols; (iv) the management of fishing harbours; and (v) the collection of statistics of catches and of fishing boats.

Inasmuch as the Division of Sea Fisheries managed fishing harbours and enforced conservation measures, it might be said, in a certain sense, to be directly in charge of the fishing industry; the chain of command, as it were, went from the Minister of Economic Affairs, through the Secretary for Industries, the Department of Industries, and the Division of Sea Fisheries, to the leaders of the fishing industry. But outside this direct chain of command were other agencies connected with the fishing industry. One group of these agencies was concerned in research.* The research bodies included the Fishing Industries Research Institute, the Oceanographic Research Institute in Durban, the research departments of the museums at Cape Town, Port Elizabeth and East London, researchers at the Universities of Cape Town, Natal, Rhodes, Stellenbosch and Port Elizabeth, and the Council for Scientific and Industrial Research. Of these it was, of course, the Fishing Industry Research Institute that was most directly concerned with fishery research; its work was concentrated mainly on the technical processes that lay between the catching of the fish and the marketing of the final produce; it also investigated the development of new products and did research into the effects of fisheries on the environment. The Institute was thus in touch, firstly, with the fishing industrialists, who looked to it for help in keeping up the standard of their products (and who helped to finance the Institute); secondly, with the Council for Scientific and Industrial Research, which also gave it financial support; thirdly, with the other research bodies just mentioned; fourthly, with the Division of Sea Fisheries, (although according to the Du Plessis report the liaison between the two bodies on conservation research was not as close as it should have been); fifthly, with the Department of Industry, which might have to draft quality control regulations based

* The word "group" should not be taken to suggest that these bodies formed anything approaching an integrated, co-ordinated group. On the contrary, there were complaints that researchers did not co-operate enough. 208

on the Institute's research; and sixthly, with the Fisheries Development Corporation, which was also interested in closely related research, either carrying it out for itself, or financing research which was carried out by others.

Also outside the direct governmental chain of command were the Fisheries Development Advisory Councils, one for the Republic and one for South West Africa. These Councils were intended to act as a link between the fishing industry on the one hand and the Minister of Economic Affairs on the other. Their composition and an estimate of their performance will be given in a later section.

Within this general framework for the support and control of the industry, the Fisheries Development Corporation occupied an unusual, and in some ways a central, position. It was responsible not to the Minister, but directly to Parliament. But it had direct links with almost every part of the industry, as well as with most parts of the "framework" just described; and a Corporation representative was often present at meetings of various controlling or advisory bodies, sometimes as an official member. Thus the ~~manager~~ ^{financial} ~~director~~ of the Corporation was on the boards of many of the largest fishery concerns, by virtue of the money that the Corporation had invested in them. An official of the Corporation was a member of both the Fisheries Development Advisory Councils; on the other hand, officials of the Department of Industries were members of the board of the Corporation. Besides this, the Corporation was in direct communication with the Division of Sea Fisheries and the various research organisations interested in the fishing industry. Its contacts with the whole fishing industry framework were therefore very wide; at the same time, it had no legal powers of compulsion over any section of the industry. It had certain powers of persuasion backed by the financial support it was able to give or withdraw. Beyond this it had to rely on influence.

The Du Plessis Commission had certain criticisms of the framework of the fishing industry, and it may be well to

mention them, since any weaknesses which might have shown themselves in the industry could well have been due to these weak links in the system. Among the alleged weak links were: (1) A lack of communication between the Division of Sea Fisheries in Cape Town, and the Head Office of the Department of Industries in Pretoria. One result of this was that the views of the Division of Sea Fisheries on conservation did not carry enough weight in Pretoria. (2) Perhaps partly as a result of failures in communication with the Division of Sea Fisheries, the Department of Industries found it difficult to co-ordinate into one policy the information it received on the possible degree of exploitation of the fishery resource, on technological changes, and on economic forces. (3) This fact, combined with the apparent weakness of the Advisory Councils, meant that the Minister of Economic Affairs did not receive advice which adequately reflected all aspects - biological, technical, and economic - of the issues involved. (4) Within the Division of Sea Fisheries itself, not enough information was produced on which to base a rational conservation programme; in other words, there was not enough research. This was perhaps because the Division was involved in other work - inspections, patrolling, and the management of fishing harbours - which might or might not be more important than research, but was certainly more urgent. Therefore, when there was a choice between research duties and administrative duties, administration tended to be preferred; and more administration meant less research. (5) There was a lack of liaison between the researchers in the Division of Sea Fisheries, and researchers working for other bodies - the universities, the museums, the Oceanographic Research Institute, and the C.S.I.R. (6) Finally, Advisory Councils were not considered to have fulfilled their functions adequately. This aspect will now be considered further.

A Fisheries Development Advisory Council was set up by the Act of 1944 to advise the Minister on the working of fishery regulations, and in general on conditions within the fishing industry. It was also intended, apparently, that the Council

should act as a link between the fishing industry and the Minister. The Secretary for Industries was to be chairman of the Council, and there were to be eleven members - a fishery scientist (the Director of Sea Fisheries), a representative of the Fisheries Development Corporation, eight representatives of the fishing industry, and one representative of the consumers. (The representatives of the fishing industry represented the company managements: not the fishermen or factory workers). When the administration of fisheries in South West Africa was separated from that of the Republic, a similar Advisory Council was set up for South West Africa.

These Advisory Councils did not win the trust of the industry. There were various reasons for this. Firstly, the Councils did not give continuous attention to the problems of the fishing industry. They were called together from time to time to consider certain specific questions that were put before them. They do not appear to have themselves originated matters for discussion. Thus what the Councils produced were opinions on a certain number of specific aspects of the industry. Such ad hoc opinions could never amount to an overall policy for the industry. In this way any advice which the Councils gave was only of limited value. Secondly, the Councils opinions were tendered to the Minister in the form of advice, and it was up to the Minister to accept or reject it; he was not required to act on it. This in itself was not really a weakness, but it became a weakness when combined with the third reason for the Councils inadequacy, namely, that their deliberations, and the advice that they gave the Minister, were confidential. Nobody outside the Councils could therefore know what advice was being given, and whether or not the advice was being accepted. Fourthly, because of this secrecy, the Councils were ineffective as a link between the Minister and the leaders of the fishing industry. Industrialists could put their views to the Councils but they could not know how the Councils had presented their views to the Minister, or what the Minister's reaction had been.

Quite a different objection to the working of the Councils came from the Division of Sea Fisheries. Much of the advice that the Division gave was on the subject of conservation. It could be sent to the Minister by way of the official "chain * of command" - through the Department of Industries and the Secretary for Industries. But advice could also reach the Minister by way of the Advisory Councils. Officials of the Division of Sea Fisheries believed that their advice to the Minister was undermined by contrary advice given by the Councils. Once again, because of the confidential nature of the Councils' activities, there was no official way in which officers of the Division could know if their suspicions were correct or not. **

The Du Plessis Commission itself was of the opinion that the Councils were passive bodies, which seldom or never took any initiatives themselves, and which did not fulfil the functions that might have been expected from advisory councils. ²⁰⁹

Mention might also be made here of the Boat Limitation Committees which were set up in the early 1950's. At that time the fishing industry was expanding so fast, and fishing appeared to be such a profitable occupation, that many people who were not fishermen at all - perhaps doctors, or lawyers, or other professional men - would buy shares in a boat, in the hope of making a paying investment. Professional fishermen felt themselves threatened by this development, especially in view of the fact that the government was starting to impose limits - directly or indirectly - on the quantity of fish that might be caught. Representations were made to the authorities, who in 1953 decided that no further entrants would be allowed into the shoal fishing industry on the west coast (it was here that the industry had been attracting outsiders), and set up a Boat Limitation Committee - consisting

* An attempt to give a schematic lay-out of the various official and non-official bodies connected with the fishing industry, and their relations with each other, is given in Table XII.

** They might have known unofficially, since the Director of Sea Fisheries was himself a member of the Councils.

of equal numbers of fishermen and fishing industrialists, under the chairmanship of the Director of Fisheries - to control the size of the fishing fleet.

It is difficult to estimate how far the Boat Limitation Committee can be considered to have succeeded in its task. According to the Du Plessis Commission, the Boat Limitation Committee did not succeed in reducing the aggregate tonnage of the shoal fishing fleet - which, on the contrary, grew between 1953 and 1970. On the other hand, it did succeed in reducing the number of boats - from 229 in 1953, to 118 in 1970. In other words, boats were fewer but larger. This in itself was advantageous; fewer boats, even if larger, would have done less to disturb the fish than larger numbers of smaller boats. And there was, again, the difficulty that the Committee's advice to the Minister was confidential; if there were failures, there was no way to tell whether these were failures of the Committee to give the correct advice, or of the Minister to accept it. All in all, the Commission's view was that the Committee had played a useful part in helping to build up an efficient fishing fleet so as to conserve the fish.²¹⁰

Finally, there were the Local Advisory Committees which it was proposed, in the Act of 1944, should be set up. No mention of the activities of these committees appears in the Du Plessis Commission's report, in the annual reports of the Fisheries Development Corporation, or in the reports of the Division of Sea Fisheries. It does not appear that these Local Advisory Committees can have played a significant role in the control of the fishing industry, if, indeed, any were in fact called into being.

VIII: SUMMARY AND EVALUATION

In this chapter an attempt will be made to evaluate the achievements of the Fisheries Development Corporation during the first twenty-five years of its existence. Various approaches to such an evaluation are possible. The first main avenue of approach is to consider the progress of the South African fishing industry during the period under review. The Fisheries Development Corporation was founded with a view to promoting the development of the fishing industry; so that any assessment of the Corporation's performance cannot ignore the development of the fishing industry. Yet at the same time, the Corporation's achievements cannot be measured by the development of the fishing industry. As was pointed out in the last section, the Corporation is only one of a number of bodies concerned with the fishing industry. Furthermore, there are economic, biological, geographic, and other factors affecting the industry. If it is considered to have developed satisfactorily, it is not inconceivable that it has developed not because of, but in spite of, the Corporation. This consideration leads naturally to the second main avenue of approach, which would be to consider the activities of the Corporation directly.

These two main avenues of approach may again be broken down further. There appear to be three ways by which the development of the South African fishing industry might be judged: (1) by attempting to compare the South African fishing industry with other fishing industries in other parts of the world; (2) by attempting to compare the fishing industry in 1970 with the fishing industry in 1944. For both these methods it would presumably, be necessary to find some quantitative criteria on which the comparisons could be based. This might prove difficult or unrevealing; if so, a third possible method of evaluating the fishing industry would be by the informed comments of those who had studied the industry; and, fortunately, informed comment for the period about 1970 is available. As to the second main avenue of approach, this can be broken down into two inquiries: (1) what

activities did the Corporation undertake, and with what result; and (2) how far did those activities coincide with the aims for which the Corporation originally was called into being? There are thus five separate lines of approach to the inquiry. Each will be explored in turn; and when this has been done, it may be possible to return some sort of answer to the question asked in Chapter I - How far has the Fisheries Development Corporation succeeded in giving the South African fishing industry the advantages of free enterprise combined with the benefits of control?

(1) A comparison of the South African fishing industry with other fishing industries.

There are numerous criteria by which different fisheries might be compared with each other in theory. In practice, the figures on which the comparisons might be made are either lacking entirely, or of such doubtful reliability as to be of little value. Further, the criteria themselves often do not reveal whether or not the fishery makes the most economic use of the material resources at its disposal, which is the area of comparison most relevant to this study. Thus one criterion by which a fishery may be assessed is the catch per fisherman per year. If this is high, it may indicate that the fishermen are using effective, possibly modern, techniques. On the other hand, it may merely indicate that there is an abundance of fish easily accessible. And even if one ignores this, the figures that are available appear to be open to question. For instance: Robert Morgan²¹¹ estimates that in 1951 the catch per fisherman per year in the South African fishing industry was about 18 tons, which was then rather more than the comparable figure for the U.S.A. In 1967 according to official figures²¹² there were in the fishing industry 3 045 regular workers and 2 567 casual workers - a total of 5 612. In the same year, fish production was 1 640 200 metric tons. This would suggest a figure for production per fisherman per year of very nearly 300 tons a year for that year. It seems highly unlikely that both these sets of figures can be correct.*

* The Du Plessis report (para.132) suggests that in the late 60's the fishing industry was employing about 22 000 workers; the catch was then about 2 million tons, which works out at about 91 tons per head.

Other criteria by which different fisheries might be compared are open to similar objections. Catch per ton of craft per year, or catch per ton-hour of fishing, might reveal the "efficiency" of the industry, or simply the abundance of fish. The degree to which resources are exploited is another criterion, but it is difficult to estimate, and even if it could be discovered it would be difficult to establish clearly that one rate of exploitation was "better" than another. (The criterion is no doubt useful in drawing a distinction between undeveloped and developed fisheries; but much less useful in comparing developed fisheries with each other). "Stage of technical development" is difficult to quantify, though, again, it would be easy to distinguish between primitive fisheries and modern ones, much less easy to draw comparisons between developed fisheries using different techniques. Total production gives a fishery a place in the hierarchy of world fisheries; and it might be arguable that a fishery which produces a very large output must be in some sense comparatively "efficient"; though there seems no reason to suppose that quite a small fishery might not be even more "efficient". Criteria such as "employed fishermen as a percentage of total employed nationals", or "fishing product as a percentage of total national product" give information about the importance of the fishery within its own economy, but reveal little about the nature of the fishery itself. "Production per head of population" or "percentage of product exported" do lead to meaningful comparisons between one fishery and another, but do not in themselves shed much light on how "well run" the fishery might be considered to be.

One criterion which might be helpful in comparing fisheries could be rate of growth of total product. It cannot be claimed that this is an entirely satisfactory criterion; when a fishery's output is growing rapidly, this might be because fish are becoming more abundant (not a very likely eventuality except over a very short period) or it might be because a fishery resource had been hardly exploited previously, so that even "inefficient" exploitation would lead to large

increases in output. Besides this, it is arguable that a ^{very} rapid increase in output is not evidence of a well-run fishery, but of a fishery that is not properly controlled and is soon going to destroy its economic basis. Despite these objections, growth of output over time does enable some sort of comparison to be made between different fisheries; and there is the added advantage that the figures are available. ²¹³

Taking the period 1938 to 1970: in 1938 South Africa was a quite inconsiderable fishing nation, whose total nominal catch* was only 66 600 metric tons, (compared with, for instance: Japan, 3 677 700 tons; Norway, 1 127 800 tons; Portugal, 247 200 tons; Thailand, 161 000 tons). Between 1938 and 1970, the total world catch grew steadily, from 21 million tons in 1938 to more than 69 million tons in 1970. Over the same period, the South African catch grew from 66 600 tons to 1 519 400 tons - and it had reached 2 027 900 tons in 1968. (In fact, the smaller 1970 catch was due to deliberate attempts to protect the fish resource by restricting production). South Africa jumped from being an inconsiderable fishing nation in 1938 to being the seventh biggest producer in the world in 1970 - after Peru, Japan, China, Russia, the United States, and Norway. The only country whose catches grew more rapidly than South Africa was Peru, which caught 23 400 tons in 1938 and 12 618 800 tons in 1970. There were one or two other nations whose catches increased at a rate somewhat similar to South Africa's - Thailand, from 161 000 tons to 1 595 100 tons; Denmark, from 97 100 tons to 1 226 500 tons. But generally the increases were far more modest: Angola from 26 200 tons to 368 400 tons; Spain from 408 500 tons to 1 496 000 tons; Portugal from 247 200 tons to 498 400 tons. And the catches of some nations actually declined - Britain's fell from 1 198 100 tons in 1938 to 1 099 000 tons in 1970. On the face of it, these figures do suggest that the South African industry made satisfactory progress over the period. One could even argue that the much faster growth of the Peruvian industry was a dangerous attack on Peru's fishery resource, and that South Africa's steadier but still rapid growth was the mark of a healthy but well-controlled industry. (But it would not be possible to produce

* The nominal catch is the live weight equivalent to the landed weight.

figures to prove that this view was correct, however much one might "feel" that Peru was allowing her catch to grow much too fast). Yet, if one is to attempt to argue from the growth figures that the South African industry was efficiently run, one must also concede that there were several factors other than the efficiency of the industry itself which also contributed to growth - the large, unexploited shoals of pelagic fish, the advanced economy of South Africa as compared with the rest of Africa, the existence of a large (and chiefly White) market, with high spending power, the best inland transport service in Africa, and ports on a main trading rout, making exporting comparatively easy.

From the foregoing discussion it may be concluded that it is difficult to make helpful quantitative comparisons between South Africa and other fisheries. The figures of catches do suggest that the South African industry was developing in a satisfactory way, but cannot be regarded in any sense as conclusive.

(2) A comparison of the South African fishing industry of 1944 with the industry of 1970.

This comparison has in fact largely been made in Chapter V. There it was shown that catches and production both increased greatly; fish prices more or less kept in step with the general increase in food prices, rising sometimes more quickly, sometimes more slowly; the wages of fishermen rose, sometimes dramatically; the capital investment in the industry increased greatly; up-to-date fishing techniques were introduced (this will be further discussed in the next section); and the industry was rationalised and re-organised into a few large groups, instead of the many independent or semi-independent firms that had existed before. At the same time, attempts were made to control the rate of exploitation and to protect the fishery resource. In general, it would seem to be fair to say that between 1944 and 1970 the fishing industry developed in a way that was advantageous to fishing

industrialists, to fishermen, and to those who invested in the fishing industry. The consumers of fish did not benefit,* but nor could it be said that they suffered.

(3) Informed comment on the development of the South African fishing industry.

As a general, though early comment, one might quote from Robert Morgan's book "World Sea Fisheries".²¹⁴ He writes: "The long-term trend of the prosperous and energetic South African fishing industry will doubtless continue upwards... The fisheries region just discussed** offers a classic example of how, with the application of enterprise and skill, the fish production of underdeveloped waters can be raised very quickly, far more quickly than can agricultural production in underdeveloped lands."

More detailed comment on the industry was given in the Du Plessis report, which considered each section of the industry individually. It was, in general, favourably impressed by the techniques used in shoal fishing, and by the organisation of that section of the industry. On the catching side, the Commission was "struck by the high technological levels of fish spotting and catching methods." It mentioned the use of aeroplanes for locating shoals, of echo sounding, of boats with advanced equipment, involving heavy capital outlays. "The Commission is also of the opinion that the industry is well able to keep up with the latest technological developments and to use the latest innovations." The Commission was, however, less happy about the ability of fishermen to make the best use of the complicated apparatus with which they had been supplied. Fishermen, it concluded, were not being given the necessary training - although unsuccessful attempts had been made to get fishermen to attend training courses - and this unsatisfactory aspect demanded "earnest attention." On the

* In the sense that fish prices did not fall, absolutely or relatively. They did benefit in the sense that more fish became available and was consumed.

** i.e. the Benguela current zone.

production side, the report described modern factories in which catches were pumped from the ships, or sent along conveyor belts, sometimes mechanically gutted, and cooked under pressure. Again the general picture was one of modernity and efficiency. The Commission noted, however, that there was no rational relationship between the quantity of fish available, the capacity of the boats to catch fish, and the capacity of the factories to deal with the catches. The Commission suspected that there was a good deal of unused capacity, and in this sense the shoal fishing industry was over-capitalised and inefficient. On the marketing side, the Commission was satisfied with the position as it existed in 1970 (when the industry could have sold more fish at the prevailing prices, had the fish been available), but foresaw certain future difficulties. In summary, the Commission's view on the shoal fishing industry was:

"The Commission is happy to place on record its favourable comment on the technical capacity of the fleet, the general technological status of the factories, and the well-organised and efficient marketing methods. The Commission is of the opinion that there is room for improvement as far as the handling of raw fish during the unloading process is concerned, while the production of a greater variety of refined products for human consumption is worthy of consideration. The Commission notes that there are practically no training facilities for fishermen or artisans in the shoal fishing industry. This question deserves further attention...."²¹⁵

The ocean trawling industry, at the time the Commission reported, was passing through a difficult time. One of the reasons for this was falling catching and increasing costs of catching - probably caused by heavy fishing in the past, much of it by foreign trawlermen. Another was the uneven quality of the ocean trawling fleet. In 1970 there were 60 ocean trawlers operating from South African ports. Some

of these were up to date, but others were old, and the Commission felt that on the whole ocean trawling techniques were not as developed as they should have been. (Perhaps the trawling companies did not keep up to date on the latest technological developments? Perhaps government protection of local boat-builders hindered fleet modernisation? Perhaps unsatisfactory harbour facilities, especially in Table Bay, were a hindrance?)

The Commission also noted that there was considerable wastage of trawled fish. After the nets had been hauled in and the catch dropped onto the deck, fish that were too small to market were simply flung overboard again. These might make up between ten and twenty per cent of the catch by weight, but possibly half the catch by numbers. This throwing away of fish was apparently unavoidable in the older trawlers, which had no means of preserving undersized fish. On some of the newer trawlers, there was storage for these undersized fish, which could then be made into fishmeal. But the Commission recognised that the building of modern freezer-trawlers involved heavy capital outlays which the hard-pressed trawling industry found it difficult to produce.

As to product: The Commission found that the quality of trawled fish varied considerably; this variation seemed to be connected with whether the fish had been caught by a modern trawler with up to date refrigeration, or an obsolete trawler. On the marketing side, trawlermen had to face the competition of poultry in the local market, and the products of rival trawlermen on the overseas market. (A frustrating aspect of this was that in some overseas markets - Spain, for instance - South African trawled fish met competition from fish caught by foreign trawlers in the ocean off South Africa). Ocean trawling was carried out mainly by three big companies; the Commission felt - and the companies themselves agreed - that some form of centralised organisation would be an advantage. (There was in fact a certain amount of co-operation between the three companies at the time; there were tentative proposals for joint marketing of exports; but the trawlermen

felt that joint marketing would not be possible in the local market, where there was a great variety of different products, and where individual firms had given much effort to building up markets for their own particular products).

Coastal trawling (for soles, etc) is a much smaller industry than ocean trawling. (In the 1960's the total annual catch of South African coastal trawlers was in the region of 2 000 tons; the catches of ocean trawlers over the same period were always more than 100 000 tons a year; the discrepancy in value was less, but still considerable; in 1970 the catch of the ocean trawlers was sold for about eight times that of the coastal trawlers).²¹⁶ There were many small firms engaged in coastal trawling; the fish were sold through the marketing organisations of the three big ocean trawling companies. The Commission was of the opinion that the coastal trawling fleet was not modern or efficient; furthermore it was too big in relation to the catches made. The Commission was doubtful about the effectiveness of the marketing system; some witnesses had suggested that the ocean trawling companies exploited the coastal trawlers by buying their fish cheap and selling it dear. In general, the Commission felt that "the fact that so many boats are owned by individuals or small undertakings, suggests that the fishery is vulnerable to setbacks."

The rock lobster industry was generally regarded by the Commission as efficient, except on the catching side. Rock lobster are, of course, caught in baited traps which lie on the seabed and are pulled up from time to time. These traps often brought up undersized rock lobster which had to be thrown back into the sea, but sometimes after being treated so roughly that they were unlikely to survive. The rock lobster fishing fleet could therefore "not be regarded as efficient". The rock lobster factories had a high standard of technology and their products were of high quality. Marketing was efficiently organised, but it was a weakness that about 90% of the total rock lobster exports were sold in one market.

The fourth main division of the South African fishing industry is the inshore fisheries. By this is intended all those small-scale fishing enterprises scattered along the coast, sometimes in small and remote villages, which catch fish by hook and line or by beach-hauled seines (known in South Africa as "trek-netting"). The Commission did not consider the inshore fisheries in quite this way. It used the term "inshore" to cover all fishing activities except ocean trawling, long-line fishing for tuna, and whaling (which was, in any event, not counted by the Commission as "fishing" but as the "exploitation of marine mammals"). The Commission therefore considered the fishing activities referred to in this paper as "inshore fishing" under the heading of "hand-line fishing" and "other fishing activities in coastal waters." But whatever names are used, the reference is to hand-line fishermen and trek-netters. These represent quite a considerable section of the industry, in the aggregate, but because their fishing is scattered and small-scale, no satisfactory statistics are available. The Commission was able to discover production figures for the hand-line fishermen but none for the trek-netters, although it admitted that trek-netting was widespread, of considerable extent, and in some places of distinct local importance.

The Commission found difficulty in coming to a firm conclusion about these fishermen. As far as the hand-line fishermen were concerned, they used many different types of boats, of which a great number could be considered dangerous. The hand-line fishermen earned very much less than fishermen in some other sections of the industry; some did not earn an economic livelihood. The catch - mainly snoek and shark - was disposed of in various ways; to factories for freezing or salting; through the marketing organisations of the ocean trawling companies; to fish dealers; or direct to the public, either fresh or salted. The Commission believed that only that part of the catch which went to factories was handled satisfactorily; it claimed there was evidence that fish from this source, when sold by hawkers, was often of poor quality.

As to the trek-netters, the Commission found difficulty in coming to a conclusion; their scattered activities, and their complicated but localised problems, would demand, the Commission admitted, more time for investigation than was available.

The Commission also considered fishery research in South Africa. Here its judgment was not wholly favourable. Some aspects of research, notably the Fishing Industry Research Institute's investigations into production techniques, were satisfactory. Other research, said the Commission's report, tended to lack direction and co-ordination, and did not achieve the desired results.

This, then, was the judgment on the industry passed by the Du Plessis Commission in 1971. It would not be unfair to add that the standards by which the Commission judged seem to have been high. Those sections of the industry regarded as satisfactory conformed to advanced world technological standards; those sections that fell below such standards were judged as unsatisfactory. This was certainly not an unreasonable attitude for the Commission to take; but there would be few industries, in any country, in which every section would conform to high world standards. If this is borne in mind, it may be concluded that the Commission's judgments on the industry suggest that it had developed on the whole satisfactorily.

It will be suitable to include at this point some opinions on South African fish conservation. In June 1961, under the auspices of the Food and Agriculture Organisation, a meeting of fishery experts was held at Ottawa to discuss "Economic Effects of Fishery Regulations."²¹⁷ Mr L.P. Gertenbach, of the Economics Branch, Fisheries Division, F.A.O., Rome, read a paper on the regulation of the South African West coast shoal fisheries, in which he said:

"(The shoal fisheries) started in a modest way during World War II to supply canneries meeting the war-time demand for canned fish... A few years of rapid expansion

followed during the early 1950's. By the middle 1950's, under cautious conservation policies initiated by the state authorities of the Union and South West Africa, the development was slowed down and the position stabilised by various state-imposed measures affecting the fishermen, the fishing fleets, the reduction plants, and the canneries."

In the discussion that followed, one of the South African representatives, Mr Charl du Plessis (who was at that time Director of Fisheries) was asked about yield curves of South African shoal fish. He replied: "Frankly, we know very little, if anything, about this." Mr R. Turvey, a British representative, then asked: "If this is so, what assurance have you got that you are faring better as a result of regulation than without it?" Mr du Plessis replied: "Our policy, a cautious policy, which sought to develop the fishery in an orderly fashion so that it would neither be flooded by masses of new entrants nor be managed too conservatively in relation to biological considerations, was initiated about nine years ago. Maybe we have been somewhat too ambitious in our aim. What our policy makers tried to do, I believe, was to maximise the sustainable catch and at the same time to keep input to a minimum. I am not in a position to say, with any assurance, whether we have achieved this or not. I suspect that we probably have not been entirely successful. On the other hand, I do think that if we did not have these regulations, or at least some of them, we would be in a worse position. There is enough evidence to support this view."

Later, in reply to a further question, Mr Du Plessis added: "Mr Turvey has asked whether we had any idea where we were on the yield curve. I still cannot tell him where we are, in spite of all the research that has been carried out. I think, though, that we must have been on the left side for a good many years, because for the last two or three years we have allowed a much higher catch."

Dr Richard van Cleve, Dean of the College of Fisheries of the University of Washington, and Chairman of the discussion, had this to say about South African conservation measures: "Summing up, it seems to me we have here a unique example of a fishery that has been brought under regulation before there was any indication of a need to do so. The stimulus to impose controls came from the fear of what might happen in the absence of controls, as exemplified by the situation in a similar fishery in California. There was no biological evidence that regulation was necessary or even desirable. It appears that the regulations have served the purpose of stabilising the industry in South Africa and South West Africa. We still cannot answer the question, however, whether a stabilised industry is better than an industry with periodic gluts or famines, and whether or not such control is worth the cost, whatever the cost may be. I have no doubt that the owners of the plants and the owners of the boats in South West Africa who have enjoyed stability in their industry would wish to argue in favour of controls."

(4) What activities did the Corporation undertake, and with what result?

This section must be to a large extent a summary of what has already appears in Chapter VI; at the same time an attempt will be made to set the Corporation's achievements into the larger framework of the fishing industry as a whole. The Corporation's activities up to 1970 included:

(a) It had invested a total of more than R1 million in the fishing industry, mainly in shoal fisheries on the West Coast. (It would scarcely be possible to estimate the total capital in the fishing industry in 1970. In 1944 an estimate of £1.4m. - R2.8m - had been suggested, and had been criticised as being far too low. Since then many millions of Rand had been invested in the industry; R12 m. had been spent on improvements to fishing harbours; the total capital investment must have been in tens of millions of Rand, at least; and investment of R1 million, though certainly not negligible, would have been only a comparatively insignificant part of the total investment).

(b) It had spent about half a million Rand on research aimed either at keeping the industry technologically advanced or at conserving the fishery resource. Again, it would scarcely be possible to estimate the value of this research to the industry or to the whole community.

(c) It had lent a little under R1 800 000 for housing for fishermen. Of this, by far the greater part had been lent for company-owned housing schemes. One could hardly imagine that adequate housing for one fisherman (not to mention his family) could be built for less than R1 800. So the housing loans could hardly have provided housing for more than 1 000 fishermen. In 1969, according to the Du Plessis report, there were 22 000 people engaged in the fishing industry.

(d) It had advanced rather more than R5 million for the purchase of fishing boats, and had thereby financed the purchase of about 220 boats. In 1969 there were not far short of 8 000 registered fishing boats in the Republic alone.²¹⁸ (Though it is true that only about 1 000 were powered fishing boats; the rest were dinghies).

(e) It had attempted to encourage the training of fishermen, though with little success.

(f) It had attempted to form two fishermen's co-operatives; one had failed, the other had achieved a considerable degree of success.

(g) It had financed or helped to finance water supply schemes at Lambert's Bay and Velddrift; and an electricity supply at Gansbaai.

(h) Under its aegis, the rate of spending on improvements to fishing harbours had increased more than twelve times over.

(i) By influence and persuasion, the Corporation and its officials had encouraged co-operation and rationalisation

within the industry; had favoured the introduction of new techniques or new products; had pressed for controlled marketing of the products of the industry; and had over a period of several years urged the need for fish conservation, and warned of the dangers of uncontrolled fishing. It seems likely that the value of the activities enumerated in this last section far outweighed the value of the Corporation's other activities. But it would be quite impossible to attach any definite financial value to such activities. Nor should it be forgotten that the power of the Corporation to influence and persuade rested to a considerable extent on the investments it had made in the fishing industry and the help it was able to give industrialists and fishermen. To this extent it is really impossible to separate the Corporation's "influential" activities from its more material activities; the one would hardly have been possible without the other.

(5) How far did the activities of the Corporation coincide with the aims for which it had originally been called into being?

In Chapter III, ten "aims" of persons who were interested in the Fishing Industry Development Bill of 1944 were listed and discussed. Of these, two were not capable of implementation by the Corporation as it was constituted: Dr Bernard Price's view that the Corporation should act as a licensed monopoly; and Professor Frankel's view that the Corporation should be carefully controlled lest it abuse its powers as a semi-autonomous government body. Of the eight "aims" that remain, the first was that the Corporation should improve the social conditions of the "degraded" fishermen who lived in isolated villages along the coast.

The Corporation did build houses and amenities for fishermen, financed some supply schemes, and tried unsuccessfully to train fishermen. But it was the rapid growth of the shoal

fishing industry of the west coast that did most to improve the living standards of fishermen, and to turn the once isolated and tumble-down villages into small industrial centres. But what about those villages that were not caught up in the growth of shoal fishing - more especially the villages on the south coasts? Perhaps some of the fishermen migrated to the new fishing villages and shared their growing prosperity. Others, no doubt, remained behind, and helped to form that body of fishermen, trek-netters and line fishermen, whose importance the Du Plessis Commission admitted, without being able to estimate how many of such fishermen there were. Nor is it clear whether these fishermen, however many of them there may be, are better off today than they were in 1944. In summary: the social conditions of fishermen have been improved since 1944, to a small extent by the Corporation; to a large extent by the growth of the shoal fishing industry; and to some extent - though to what extent is not known - they may not have been improved at all.

The second "aim" was the development of the fishing industry, and with this was bound up the idea of "cheap fish". In the years following 1944, the fishing industry did develop rapidly; and the Corporation aided and to some extent guided this development. But the main cause of the development was the exploitation of the pelagic shoals off the west coast, previously ignored; it was the war-time scarcity of fish that initiated this exploitation, and the shoal fishing would surely have grown rapidly even had the Corporation not existed. As to the aim of "cheaper fish", the increase in the quantity of fish produced no doubt tended to keep fish prices from rising more rapidly; insofar as the Corporation aided the production of increased quantities of fish, it may be said to have assisted in the aim of "cheaper fish". But this does not ever appear to have been one of the Corporation's overt aims. The Corporation's reports refer occasionally to "favourable prices" for fish or fish products. Invariably "favourable" is intended to be read a favourable to the producer, not favourable to the consumer.

The third "aim" was that the Corporation should reorganise the inshore fishing industry in such a way as to lead to bigger earnings for the fishermen and cheaper fish for the consumer. It is doubtful if this aim could ever have been carried out, and certainly not with the resources at the Corporation's disposal. It never attempted it, unless one is to consider the proposed fishermen's co-operative at Kalk Bay, and the actual co-operative at Gansbaai, as first steps in this direction.

The fourth, fifth, and sixth "aims" all involved the trawling industry: to "milk" the trawling industry for the benefit of inshore fishermen; to end the "excessive" profits made by the trawling companies' distribution networks; and to end the trawling companies' "monopoly profits". If these aims had ever been realisable, they were finally made unrealisable by the exemption of trawling from the powers given to the Corporation to control the fishing industry. In fact, the Corporation has had little to do with the trawling industry.

The seventh "aim" was to end fluctuations in fish prices, or at least minimise them. The control of price fluctuations is one of the chief aims of centralised marketing. The Corporation has always encouraged the centralised marketing of fishery products; and to this extent it has aided in minimising price fluctuations.

The final "aim" was the direct improvement of fishermen's social conditions by building roads, supplying water and electricity, and by similar "service" activities. As explained, the Corporation has done a little, but only a very little, in this direction.

Two general comments might be added. The first is that the Corporation, from the start, saw its task as promoting the interests of the fishing industry: one might even say of the fishing industrialists. (The housing loans were made far more to companies than to individuals; the boat loans, which at

first went to individual fishermen, later on went more and more to companies - though admittedly the increasing cost of boats may have been the most important factor in causing this; Corporation officials were more likely to be found in company boardrooms than in fishing boats or on factory floors; there is no evidence that they concerned themselves with fishermen's wages). It may be that the Corporation's activities were indirectly of benefit both to the fisherman and the housewife; an expanding and efficient industry may have been the best way to ensure higher wages for the fishermen, combined with the lowest practicable prices for the housewife. But the Corporation did not directly encourage either higher wages or cheaper fish.

The second general comment is that the unrolling of events made it impossible for the Corporation to act in the way the legislature, and many of those who had interested themselves in the Bill of 1944, had expected it to act. In 1944 trawling was seen as the prosperous and powerful section of the industry; inshore fishing as the weak and poor section. But a turn of events quite unforeseen by most people in 1944 reversed this state of affairs. Inshore fishing turned into shoal fishing and became the biggest and most prosperous section of the industry. The trawlersmen, caught between rising costs on the one side, and apparently diminishing resource on the other, became the struggling poor relation of the industry. The Corporation, swept along in a rush of events that few had foreseen, had to adapt itself as well as it could to the changing fortunes of time.

How well has it succeeded? This brings us back to the question asked at the beginning of this paper: how far has the Fisheries Development Corporation succeeded in combining, for the fishing industry, the advantages of free enterprise with the benefits of control?

Clearly, no definitive answer is possible. In the first place, as has been pointed out already, the Corporation is only one

of a number of bodies concerned with the fishing industry. In the second, it is impossible to know how the industry would have developed had the Corporation not existed. What is clear, is that the Corporation did exist, and that the industry did develop - in output, in size, in technology, in the well-being of those taking part - in a manner that, in human terms, cannot be considered unsatisfactory. There were, indeed, fishing experts in other parts of the world who were interested to know how the South African industry had developed and what part the Corporation had played in that development.

It is, of course, possible to argue that a stricter control of fishing effort might, in the long run, have led to an increased fish stock, an increased catch per unit of effort, and so an equal catch at less cost. This may well be so; but without a knowledge of the yield curve of fish in the South East Atlantic it is impossible to be sure; and despite much research, the yield curve is not known. In any event, the question of increased control is somewhat academic, since there are growing numbers of foreign fishermen in Southern African waters over whom South African authorities have little or no control.

In the last analysis, the only way of combining the advantages of free enterprise and control is by self-control. In the context of the fishing industry, this may simply mean taking the long view rather than the short view. Insofar as the Corporation, without powers of control, has tried to persuade industrialists to co-operate with each other, to rationalise their industry, to use efficient methods, and to conserve the fishery resource, it may be said to have tried to combine the benefits of control and free enterprise - and not without success.

APPENDIX 'A'

FIRMS IN THE SOUTH AFRICAN FISHING INDUSTRY

A complete account of the growth and inter-relationships of the various firms that have played a part in the South African fishing industry would be long and involved. Something of the story may be gathered from the brief notes in this appendix. The firms have been put in alphabetical order; thus it is easy to look up any particular firm and to find a short account of the part it played in the industry. The South African fishing firms mentioned are themselves listed in this appendix. I have therefore not thought it necessary to put (q.v.) after each firm.

AFRICAN FISH CANNING CO.

Founded at Woodstock, c.1916. Later moved to Paarden Eiland, and in 1930 to Lambert's Bay, where it began to can rock lobster. In 1935 it received a rock lobster quota. In 1947 it was granted an additional licence to operate at Lüderitz. In 1949 both branches of the company became part of the newly formed United Fish Cannery Ltd.

AFRICAN INSHORE FISHERIES DEVELOPMENT CORPORATION

Formed in 1943 to erect a fish cannery and can fish at Velddrif. Sponsored by Irvin and Johnson and its subsidiaries - Kergeulen Sealing and Whaling Co., Union Smokeries, Vitamin Oils, and Concentra Ltd. (in which I. and J. had a one third share). Land was bought; work started on building a jetty. A scheme to amalgamate African Inshore Fisheries with the Lambert's Bay Canning Co. was abandoned in 1945 after the Fisheries Development Corporation had taken a 1/3 share in Lambert's Bay Co. By 1946

A.I.F. was the Union's largest fish processing factory. (H. Abao was then chairman of the company). It produced quick-frozen pilchards and liver oil, and exported smoked fish to Australia. In 1948 it was given a 50 000 lb rock lobster export quota. Cannery production continued to grow. (Output was 3 599 190 cans in 1947). In 1949 it was absorbed by United Fish Cannery Ltd. But a sand bar across the Berg River mouth made it difficult for large boats to reach the factory, which as a result became uneconomic and was closed down in 1957. Its fishmeal licences were transferred: Da Gama Fishing Industries got a licence for 15 tons per hour, and the A.I.F. fleet capacity licence; South African Sea Products got a licence for 10 tons per hour.

AMALGAMATED FISHERIES LTD.

Backed by the British Vestey Group, started operating with three motor trawlers from Hout Bay in 1961. In 1963 it was building a freezing and smoking factory for "Table Top" products. In 1964 took delivery of the 135 ft "Seahorse", a modern, full-scale stern trawler.

ANGRA CANNING CO.

Founded at Lüderitz c. 1922 by diamond dealer Fritz Knacke. In 1947 it was one of several pioneering companies to be given a crayfish licence at Lüderitz; in the same year it became part of South West Africa Fishing Industries Ltd., (SWAFIL), a £500 000 amalgamation of Angra Canning Co., Table Mountain Canning Co., and the Cape Lobster Co.; the Fisheries Development Corporation also invested in the new company.

ANGRA PEQUENA VISKORPORASIE

Founded in 1963. Sponsored by the Trust Bank, S.M. Druker of Atlantic Holdings (pty.) Ltd., and Mid-Western

Fishing Industries Ltd. Obtained a 90 000 ton licence for pilchard and a 500 000 lb rock lobster quota. When its 250 000 shares were put on the market they were over-subscribed 16 times. Into operation 1964 - when it was also given a sealing licence. In the same year there was an exchange of share with Wesbank Visserye, and Angra's rock lobster quota was increased by 1 893 600 lb. In 1967 it was excluded from additional quotas on the ground that it had an interest in factory ships.

ASSOCIATED OIL PRODUCERS LTD.

The name was taken by Marine Products Ltd. in 1947, when it became a subsidiary of Laaiplek Visserye.

ATLANTIC OCEAN INDUSTRIES (HOLDINGS) LTD.

Sponsored by the Transvaal Mining and Finance Co., with an initial capital of £300 000, went in operation at Yzerfontein in 1950. There were plans to build a 600 ft breakwater, a shark-liver oil factory, a cannery, and a 15 ton-per-hour reduction plant. But early results were disappointing. There was no good anchorage, fish were hard to find, expensive equipment lay unused. The company went into liquidation in 1951.

ATLANTIC ROCK LOBSTER FISHERIES (PTY.) LTD.

Started in 1967 with a small factory at Walvis Bay. Had a rock lobster licence, and also supplied the local market with white fish from a single trawler.

ATLANTIC TUNA CORPORATION (PTY.) LTD.

Formed in 1961 as a joint venture by Mid-Western Fishing Industries, Ovenstones, and the Oceana group, it was a large-scale tuna project, based on Hout Bay, aiming to build up tuna exports. Results were disappointing: sea temperatures, fish habits, and the lack of suitable fishermen all led to

small tuna catches. In 1964 Ovenstones and Oceana withdrew. A.P. du Preez (of Mid-West) reorganised A.T.C. as a trawling company. In 1965 A.T.C. became a subsidiary of Kaap-Kunene; it had a factory in Paarden Eiland where it processed hake into quick-frozen fillets. In 1967, following the merger between I. & J. and Kaap-Kunene, A.T.C. was absorbed into Irvin-Kunene Holdings.

BEE AND BEE FISHING CORPORATION (PTY.) LTD.

Started at Cape Town in July 1963. Thomas Berry chairman and managing director. Bought a refrigerated coaster and equipped it for deep-sea tuna fishing. In August 1964 a R1 m. contract signed with a Durban firm to build five 300 ton all-steel tuna boats; the first was launched in February 1965. In August 1965 B. & B. and five associated companies went into liquidation with liabilities of R2½ m. A criminal prosecution followed; Berry was sentenced to 14 years for theft and fraud.

BONA FIDE VISSERIE

Founded at Paternoster by A.P. du Preez in 1947, with £3 000 capital mostly raised from local farmers and fishermen. Aim: to process snoek and shark livers. First machinery in a garage; du Preez drove lorry, collected snoek livers from St. Helena Bay, extracted oil, sent oil-drums to Marine Oils. 1948: paid 110 per cent dividend. 1949: synthetic vitamin invented, price falls. 1950: Marine Oils stop buying raw oil.

BUITESSEE VISKORPORASIE (EDMS.) BPK.

1966: Formed to use two new "factory ship" licences issued by the S.A. Government. (Only one licence exploited initially). R4 m. capital. Joint venture by Ovenstones and Kaap-Kunene groups. Former Norwegian whaling tanker bought, converted, re-named "Suiderkruis". Ship could process 1 680 tons of fish a day, could make meal into pellets, and could

off-load catch at sea; made its "maiden" voyage, with 18 catchers, in July 1967. Large catches made by "Suiderkruis" and "Willem Barendsz" off S.W.A. led to objections by the S.W.A. Administration and the refusing of new quotas to concerns with interests in the factory ships. In 1970 the two factory ships were requested by the South African Government to stop fishing off the coasts of the Republic of S.W.A.

CAPE LOBSTER CANNING CO. (C.L.C.)

Founded at Lüderitz in 1922 by Karl Albrecht, to exploit the rock lobster of Lüderitz. Two small boats enough since rock lobster plentiful; Axel Lindstrom of Lambert's Bay C.C. buys his whole production, exports to France. In 1936 C.L.C. refuses to join proposed central selling organisation until "injustice" of "too small" S.W.A. quota is rectified. In 1947 C.L.C. merged into S.W.A. Fishing Industries Ltd., a £500 000 merger involving Angra Canning Co., Table Mountain Canning Co., and C.L.C., with an investment by the Fisheries Development Corporation.

COLUMBINE CANNING CO.

When John Ovenstone Ltd. became a public company in 1952, it founded the Columbine Canning Co. as a subsidiary. A factory was built at St. Helena Bay; production of fishmeal and oil started in 1954.

CONCENTRA LTD.

Founded at Cape Town by German immigrant Fritz Mendel in 1937. Aim: to process waste fish into meal and oil. Plant imported from Germany erected at Cape Town docks. There were difficulties in obtaining the waste fish and in selling the product as stockfeed or fertilizer to farmers. At first nine-tenths of the product was exported. But by 1939 local farmers were buying half the production. The company grew;

in 1943 I. and J. held a one third share in it. In 1969 it was the largest white fish meal factory in the southern hemisphere.

DA GAMA FISHING INDUSTRIES (PTY) LTD.

Founded 1958 as joint venture by Oceana group and Mid-Western.
 Aim: to build reduction plant at Hout Bay. Took over licence for 15 ton-per-hour reduction plant from African Inshore Fisheries (A.I.F.) also A.I.F.'s fleet capacity. Jack Stubbs chairman, A.P. du Preez managing director. Into production February 1959.
 1964: D.G. boats go after anchovy; special nets ordered.
 1965: Oceana group buys Mid-Western's share of Da Gama, now has full control.

FEDERAL FISH PACKERS LTD. (F.F.P.)

A marketing company, formed in 1956. Founder members were United Fish Cannery, S.A. Sea Products, and S.W.A. Fishing Industries. 1958: New Western and Mid-Western join F.F.P. 1960: Ovenstone group join. In 1960 F.F.P. had turnover of £4½ m., handled 80% of S.W.A. canned fish, and had 28½% of the Union market for canned fish. (Rival sales organisations at that time were Marine Products with 40% and Silversea Sales with 31½%). 1963: Marine Products join F.F.P. which changes its name to Federal Marine Organisation. 1964: Silversea Sales join Federal Marine which now had sole S.A. agency for industry's entire production of canned fish. (For further history see Federal Marine).

FEDERAL MARINE ORGANISATION

(for early history see Federal Fish Packers)

Federal Fish Packers became Federal Marine and in 1964 was central selling organisation for S.A. canned fish. From 1963 S.A. sales rose: 1963, 600 000 cases; 1964, 1m. cases; 1965, 1 660 000 cases. Increase mainly among non-Europeans.

Export sales continued under established names; local names - Lucky Star, Glenryck, Saldanha - were retained, but the product could come from any factory.

FISH PRODUCTS LTD.

An early attempt to use the factory ship technique. In 1926 Thesen's of Knysna bought the "Sherard Osborn" and converted it to a factory ship with the aim of producing fishmeal as well as fish oils, canned fish, and other marine products. In early 1927 it was fishing for pilchard off Walvis Bay. Financial results were unsatisfactory, and despite an injection of capital from a Scottish fishing firm in 1930, the "Sherard Osborn" ceased operations in 1934 and was sold to shipbreakers in the Netherlands.

FISH WHOLESALERS LTD.

A consortium formed in the 1940's to operate the fresh-fish distributing business of Stubb's Fisheries, Swerling and Levin, and others. I. & J. were interested.

FRIEDMAN AND RABINOWITZ

This firm was distributing fish in and around Cape Town in the 1920's. In 1957 it helped to found the Union and S.W.A. Salt Snoek Corporation (UNISWA) as a marketing organisation for salt snoek. (Other members were I. & J., S.A. Sea Products, and Mid-Western: some sales were local, but most salt snoek was exported to Reunion or Mauritius). In 1965 Friedman and Rabinowitz became a subsidiary of Kaap-Kunene, operated trawlers, had a rock lobster quota and a snoeking fleet. 1966: bought freezer trawler, "Pionier IV". 1967: following the merger between Kaap-Kunene and I. & J., became a subsidiary of Irvin-Kunene Holdings.

GANSBAAI MARINE (PTY) LTD.

This firm was founded under the aegis of Marine Products Ltd. to operate a fishmeal plant at Gansbaai, in co-operation with Gansbaai Co-op. Fishery. The plant went into operation in the early 1960's.

HICKSON CANNING CO. (H.C.C.)

During the first world war H.C.C. was canning rock lobster at Woodstock. In 1928: H.C.C. moved to Port Nolloth, started rock lobster cannery there. 1935: given a small rock lobster quota. 1946: taken over by I. & J. 1949: taken over by United Fish Cannery (a £2 m. consortium in which I. & J., Tiger Oats, and ~~National Milling~~ ^{Standard Cannery} had interests, and which took over many fish processing factories on the west coast).

HOUT BAY CANNING CO.

1903: Lucien du Plessis bought a ship that had been wrecked at Mouille Point, had her towed to Hout Bay, beached her, installed canning machinery, and so started the Hout Bay Canning Co. In 1909 he was shipping rock lobster to New York. In 1914 he was killed by an explosion on the cannery ship; the company continued operations on a reduced scale from the shore. In 1920 new managers took over, tried to revive the exports to New York with little success. 1923: negotiations for a merger of Hout Bay, North Bay, and Stephan's canneries broke down. 1933: company made first profit for some years, following South Africa's departure from the gold standard. 1935: company got a small rock lobster quota. 1947: S.A. Sea Products took over Hout Bay Canning Co.

IRVIN & JOHNSON (I. & J.)

1910: G. Irvin and C. Johnson, who had been operating independently, agreed to work together; they had between them

four trawlers, a cold store, a smokery, and a distribution organisation. 1912: I. & J. officially formed. 1913: took a share in North Bay C.C. 1914 - 18: expanding in spite of war. 1919: selling smoked fish in Australia. 1922: had 27 trawlers. 1926: formed consortium to set up Union Smokeries at Maitland. Now had nation-wide marketing organisation, shares in Imperial Cold Storage; was accused of monopolistic practices. 1935: big competitor - National Trawling - appeared; but was finally absorbed by I. & J. 1938: helped form Vitamin Oils Ltd. 1939: war started - many I. & J. trawlers requisitioned. 1940: started canning fish. 1943: helped start African Inshore Fisheries. 1944: opposed government control, got trawling exempted from forms of 1944 Fishing Industry Act. 1945: took over Hickson's Canning Co; controlled most fresh fish sales; had many subsidiaries. 1949: Johnson died; Anglo-Transvaal Industries Ltd. gained control of I. & J. 1952: I. & J.'s holding activities taken over by newly-formed South Atlantic Corporation. I. & J. remained operating company, controlled fishing of about 30 subsidiaries. But trawling was losing its dominating position in S.A. Fishing industry. 1953: I. & J. got rock lobster quota, helped found Laaiplek Rock Lobster Packers. 1954: trawling for rock lobster off Natal coast. 1957: helped found Union and S.W.A. Salt Snoek Corp. 1960: experimented with tuna fishing. 1963: R2 m. order for nine trawlers from Scotland. 1966: exporting East Coast rock lobster through SAFROC. 1967: merged with Kaap-Kunene to form Irvin-Kunene Holdings (Pty.) Ltd.

IRVIN-KUNENE HOLDINGS (PTY.) LTD.

Formed in 1967 by a merger of Irvin and Johnson with the white fish interests of Kaap-Kunene.

JOHN OVENSTONE LTD.

Founded in 1916 by Ovenstones, at Hout Bay, it incorporated the Table Mountain Canning Co. 1935: received rock lobster quota. 1947: got big quota - 960 000 lb, of which

60 000 for freezing. 1952: reformed as public company; new capital used to modernise fleet and finance Columbine Canning Co. 1957: running rock lobster cannery and freezing plant at Port Nolloth.

JOHN QUALITY

Brand name adopted by Ovenstones for some of their products - e.g. fish paste made at their Woodstock factory. John Quality was mainly a selling organisation; in 1947 the factory operation at Woodstock was closed down.

KAAP-KUNENE BELEGGINGS BPK. (K.K.)

Formed in 1965 by A.P. du Preez by a merger of Mid-Western and New-Western. K.K. held shares in Angra Pequena and had as subsidiaries Atlantic Tuna Corp., Friedman and Rabinowitz, Kuiseb Visprodukte, and Colonial Meat Suppliers (du Preez was buying ranches, especially in S.W.A.). 1965: K.K. received a new 25 ton-per-hour fishmeal licence. It combined this licence with the existing licence held by Mid-Western at St. Helena Bay to form Suid-Oranje Visserye Bpk., with a share capital of R2½ m. (S.-O. took over Mid-West's assets; Mid-West took 54% holding in S.-O.; big new factory built at St. Helena Bay, went into operation 1967).

1966: S.A. Minister of Economics issued two licences for factory ships, one to Ovenstones, one to K.K. They pooled their licences, used only one, formed Buitesse Viskorporasie, bought "Suiderkruis". 1966: K.K. buying modern trawlers - Pionier IV for Friedman and Rabinowitz, also Prima I, S.A.'s first true factory-trawler.

1967: K.K. merged its white fish interests with I. & J. Three K.K. subsidiaries - Atlantic Tuna, Friedman and Rabinowitz, and Kuiseb - "sold" to I. & J. in return for 8 m. shares in newly-formed joint undertaking - Irvin-Kunene Holdings.

KERGEULEN SEALING AND WHALING CO.

A subsidiary of I. & J.

KUISEB VISPRODUKTE BPK.

Founded by A.P. du Preez in 1963 to look for new directions in the fishing industry. R250 000 factory built at Walvis Bay to freeze white fish. Got 10 000 ton pilchard quota to freeze pilchard fillets for mine workers. Was a subsidiary of Kaap-Kunene. 1967: "sold" to I. & J. as part of the merger which led to the foundation of Irvin-Kunene Holdings.

LAAIPLEK ROCK LOBSTER PACKERS (PTY.) LTD.

In 1953 Marine Products, National Trawling, and I. & J. were each given a 150 000 lb rock lobster export quota. They decided to combine their quotas and formed Laaiplek Rock Lobster Packers, managed by Marine Products.

LAAIPLEK VISSERIE BPK.

Registered in 1942. A subsidiary of Marine Products Ltd. Capital £50 000. Aim: to produce salted fish, kippers, smoked snoek. Bought 100's of morgen of land at Laaiplek, started large-scale fish-drying, mainly maasbanker "bokkoms". Built houses for fishermen. Into operation May 1943. By 1944 the company (with Marine Products) claimed to have spent R75 000 on development. 1944: "home-made" fishmeal plant (1 ton-per-hour) started work. Used Laaiplek's offal, also pilchards. Oil and meal sold locally. 1945: Laaiplek Visserye, three other companies, and F.D.C. combined to form £100 000 company to build fishmeal plant. 1947: Laaiplek Visserye bought out Marine Products Ltd. which now became the subsidiary and changed its name to Associated Oil Producers Ltd.

1947: P.E. Rousseau, managing director of Associated

Oil Producers, visited U.S., bought new process. New company, Marine Oil Refiners of Africa Ltd., formed to work new process. 1948: £500 000 plant built at Simonstown; Laaiplek Visserye had controlling interest in Marine Oil Refiners. 1948: Laaiplek Visserye changed its name to Marine Products Corporation of Africa Ltd.

LAMBERT'S BAY CANNING CO. (L.B.C.C.)

1918: Swedish immigrant, Axel Lindstrom, started canning rock lobster at Lambert's Bay. 1920: Stephan Bros. sold their skeleton cannery at Lambert's Bay to Lindstrom; also machinery and two fishing boats. Development began - but harbour was poor, fresh water scarce. No electricity. 1923: Lindstrom marketed rock lobster in France for newly-formed Cape Lobster Co. at Lüderitz. 1923: L.B.C.C. and Table Mountain C.C. invested in newly-formed South West Canning Co. at Lüderitz.

1923: L.B.C.C. making fair profit despite low prices; bought hotel, bar, and store. 1932: depression and falling profits. A second cannery opened at Lambert's Bay despite Lindstrom's opposition. 1933: South Africa off gold; industry revived; L.B.C.C. made record profit. 1934: French cut rock lobster imports drastically; profits in rock lobster industry fell, stock unsold, factories closed. 1935: S.A. Government imposed quotas: L.B.C.C. got a "generous" one.

1937: L.B.C.C. started freezing tails; spent £1 000 to investigate rock lobster at Dakar; built cold storage plant; made £3 723 profit. 1938: Crawfish Cannery Distributors (Pty.) Ltd. formed as central selling company for the industry; steadier prices result. 1939: L.B.C.C. started canning haarder - solution to idle spells when rock lobster canning stops? 1944: L.B.C.C. got government contract for 1 465 cartons of canned snoek. Salting and smoking houses for snoek built. Fertiliser plant extended. Housing scheme in operation.

1944: Hubert Gaggins managing director. Machinery bought for fish paste production. Land bought for canned goods

store. Record pack: pilchards best-paying line; profit £45 01⁴; 100% dividend paid.

1945: L.B.C.C. agreed to give F.D.C. a $\frac{1}{3}$ interest; 5 000 shares sold to F.D.C. for £62 500; Skaife and Spooner joined L.B.C.C. board. Earlier plan to amalgamate L.B.C.C. and African Inshore Fisheries abandoned. L.B.C.C. joined other companies and F.D.C. to build fishmeal plant at Stompneus. New housing scheme started with help from F.D.C. Plans for 10 ton-per-hour reduction plant, also for electricity supply.

1946: L.B.C.C. now S.A.'s biggest fish canner. Made £48 000 profit. Got big rock lobster export quota. 1947: fishmeal plant into operation. New boats ordered. F.D.C. spent more than £100 000 on social developments at Lambert's Bay. Government voted £120 000 for harbour improvements. Production continued to grow. 1947: Table Mountain C.C. (now an investment company controlled by L.B.C.C.) got rock lobster licence for S.W.A. Licence was for desolate Hottentot Bay. Project there failed but licence transferred to Lüderitz where new company (S.W.A. Fishing Industries Ltd.) formed by amalgamation of old companies, with injection of new capital including F.D.C. capital. L.B.C.C. controlled big shareholding through Table Mountain C.C. L.B.C.C. also had shares in St. Helena Bay Fishing Industry. 1947: L.B.C.C. took shares in scheme to feed N. Rhodesian copper belt with fish from Lake Tanganyika: but scheme failed.

1948: L.B.C.C. shared in scheme to develop cannery at Tristan da Cunha. Tried fish-farming in vlei near Lambert's Bay village. Exported canned fish to Malaya. 1950: L.B.C.C. had shareholdings in many other fishing enterprises. Co-operated with S.A. Sea Products. Formed Seafare Investments - holding company to control investments and centralize management of Lambert's Bay group. New 15 ton-per-hour reduction plant arrived, bringing total capacity to 25 tons per hour. L.B.C.C. bought all shares in North Bay C.C. and Namaqua C.C., also big shareholding in Walvis Bay C.C. But many of these shares sold to Ovenstones to allow L.B.C.C. to take shares in Mulderene, which had just been given licence for rock lobster in S.W.A.

1953: disagreement between Gaggins and Stubbs ended co-operation of Seafare and S.A. Sea Products. Stubbs left Seafare which sold its S.W.A. interests; L.B.C.C. had no further interests in S.W.A.A. 1953: L.B.C.C. installed S.A.'s first "full-meal" plant (using all stickwater). Into production 1954.

1957: Oceana Group formed - a major reorganisation of S.A. fishing industry. Essentially an amalgamation of L.B.C.C., Seafare Investments, S.A. Sea Products, and United Fish Cannery. L.B.C.C. got 1 m. rock lobster export quota. 1965: L.B.C.C. bought all shares of S.A. Sea Products; S.A. Sea Products bought 50% share in Da Gama Fishing. 1960: L.B.C.C. biggest single company in inshore fishing in S.A. Assets more than £10 m.

LUDERITZ BAY CANNING CO.

1937: founded by August Lubowski. Aim: rock lobster canning. 1938: refused to join Crawfish Cannery - central selling company for industry - but agreed to keep in line with its prices. 1946: bought by Wolf Heller of Standard Packers and Cannery. 1947: 10 ton-per-hour fishmeal plant installed, but catches unsatisfactory; plant was later moved to Velddrif. 1949: taken over by United Fish Cannery.

LUDERITZ AND WALVIS FISHING CO. LTD.

See under Mulderene.

LURIE'S CANNING CO.

Started at Lüderitz in 1922 by Judel Lurie. First operated from a boat, later moved ashore. 1950: it became a wholly-owned subsidiary of S.A. Sea Products. 1953: taken over (with other S.W.A. companies) by Sea Products S.W.A. Ltd.

MARINE OIL REFINERS

1945: formed by various fish-oil producers to refine fish liver oils and produce vitamin A concentrate. Laaiplek Visserye were the biggest shareholders and controlled the company.

1948: £500 000 plant into operation at Simonstown. Plant used new Selexol process, could handle whole S.A. output.

1949: synthetic vitamin A discovered; price of natural vitamins fell. 1950: Marine Oil Refiners announced they would buy no more liver oil, looked instead to fish body oils, bought whole S.A. production, sold some locally, exported some.

1950's: marine oils being used more for edible fats; manufacture of edible fats becoming company's main activity; Glenmor cooking fat and Glenol cooking oil launched; company taken over by Tiger Oats; collected and stored fish oil for whole industry. (S.A. was now world's fifth largest producer of fish body oils).

MARINE PRODUCTS LTD. *

Formerly Laaiplek Visserye. In 1948 took name of Marine Products Corporation of Africa, Ltd., later changed to Marine Products Ltd. 1948: S.A.'s first fully automated cannery ordered. Factory rebuilt. Houses built for 200 factory workers, 300 fishermen. Profits £8 430 in 1947 and £61 140 in 1948. December 1948: another 10 ton-per-hour reduction plant into operation. Factory could now process 40 000 tons of fish annually.

1951: new 15 ton-per-hour plant gave company total capacity of 35 tons per hour. 1952: company got licence for 20 ton-per-hour plant at Walvis Bay. Used licence and £300 000 capital to form Namib Visserye Bpk; into production May 1954. 1956: Marine Products group had 40% of local market for canned fish (Silversea Sales had 31½% and Federal Fish 28½%).

1950's: sand-bar at mouth of Berg River increasing problem as boats got bigger. Dredging attempts failed. Jetty built to sea, ½ mile pipe line to factory. 1957: as part of

* Two firms had used this name at different times. See below.

MULDERENE FISH AND OIL PRODUCTS LTD.

Started at Lüderitz in 1946 by Mulder, ex-serviceman who had acquired sealing rights. 1947: Mulder died, company sold to Wolf Heller of Standard Packers and Cannery. 1949: taken over by United Fish Cannery. 1952: Mulderene got licence for new fishmeal factory at Walvis Bay. Both Seafare and United Fish held shares in Mulderene. But deal involved complicated transactions, involving delay; S.W.A. Administration threatened to withdraw licence unless factory completed; it was finished only in nick of time. (Lambert's Bay C.C. and S.A. Sea Products also involved through cross-share holdings).

1953: following dispute with Gaggins, Stubbs formed Sea Products S.W.A. to take over S.W.A. interests of S.A. Sea Products, which included $\frac{1}{2}$ share (with United Fish Cannery) in Mulderene. Mulderene later changed its name (1) to "Lüderitz and Walvis Fishing Co. Ltd.", and (2) to "Oceana Fishing Co. Ltd."

NAMAQUA CANNING CO.

Founded in 1925 at straggly Coloured village of Hondeklip Bay by Capt. Scharnberg and the Silvermans. Aim: rock lobster canning. Company built a water condensing plant; rock lobster plentiful, but harbour dangerous. 1933: after S.A. left gold standard, sales improved, company made more than £5 000 profit, paid 10% dividend. Company got general dealer's licence, built houses for fishermen. 1935: French government cut import quota for rock lobster; sales fell, no dividend, "black" future. 1935: company got small export quota. 1938: Scharnberg retired, sold Namaqua C.C. to North Bay C.C. 1947: Namaqua and North Bay made combined trading profit of £34 478. 1950: Lambert's Bay C.C. acquired total shareholdings in Namaqua and North Bay.

NAMIB VISSERIE BPK.

1952: Marine Products Corp. got second fishmeal licence - for 20 ton-per-hour plant at Walvis Bay. With licence and

£300 000 capital, started Namib Visserye. Into production 1954, with parent company as managers. 1954: new Danish fishmeal plant installed. 1961: started canning fish - last of the six fish factories at Walvis Bay to begin canning.

NATIONAL TRAWLING AND FISHING INDUSTRIES LTD.

Founded in 1935 by R. & E. Ovenstone (who had been doing experimental trawling at Port Nolloth), and J. v.d. Horst, a director of Imperial Cold Storage and former managing director of I. & J. Modern trawlers ordered. Fresh and smoked fish exported to Australia. National Trawling soon became S.A.'s second biggest trawling company. 1945: wanted space at Cape Town docks for new modern factory, including cold store and fishmeal plant. 1953: got 150 000 lb rock lobster quota, pooled it with quotas of Marine Products Corp. and I. & J., helped to form Laaiplek Rock Lobster Packers, run by Marine Products Corp. 1957: taken over by I. & J.

NAUTILUS VISKORPORASIE BPK.

1965: started as private company by group of S.W.A. businessmen. 1966: converted to R1 m. public company. Owned factory site at Lüderitz, shared in 90 000 ton pilchard quota.

NEW-WESTERN FISHING INDUSTRIES LTD.

1952: Mid-West got licence for new fishmeal plant at Walvis Bay, formed New-West to operate it. Plant and cannery started work in 1953. 1953: S.W.A. Administration limited plant to 20 tons per hour. 1958: New-West joined Federal Fish Packers. 1963: Mid-West and New-West merged to form Kaap-Kunene Beleggings. Each held an equal share of the capital. 1967: New-West among S.W.A. factories that got no additional quota because of alleged interest in factory ships.

NORTH BAY CANNING CO.

1902: started at Saldanha Bay by two immigrants - William Holland from U.K. and Stephen Hinchcliffe from Canada. Aim: to can rock lobster; assets - two iron huts, two sailing boats. 1903: 18 year old Latvian immigrant, Ellis Silverman, employed to make cans. 1913: company was incorporated. I. & J. took large shareholding. It had factories at Hoedjies Bay, Cape Town, and Steenberg's Cove. It was regarded as an ambitious and prosperous cannery. 1915: Hinchcliffe died; Holland remained as director for many years. 1917: company started drying rock lobster offal for fertiliser at St. Helena Bay. 1923: plan to amalgamate North Bay, Hout Bay, and Stephan Bros. canneries failed.

1927: following dispute with Stephan Bros., North Bay moved its factory to Thorn Bay. Jetty built. Into operation 1928. 1929: company made £19 441 profit. But difficult times followed; in 1934 company suspended work at Saldanha and Thorn Bay, boats beached, salaries reduced. 1935: got "generous" rock lobster quota. 1938: bought out Namaqua C.C. 1939: war disorganisation and need to keep factories open led North Bay to try canning other fish; company agreed to sell 2 000 cases of pilchard to Defence Department. 1942: company agreed to sell 30 000 cases of snoek to U.K. Food Ministry. 1946: company bought small fishmeal plant from U.S. for its Saldanha Bay factory. Bought another small plant from Marine Products for its Thorn Bay factory. Accepted investment of £40 000 from F.D.C. Canned record of more than 100 000 cases. 1947: Holland died. Company and its subsidiary, Namaqua C.C., together made £34 478 profit. 1948: North Bay bought shares in Southern Sea; Southern Sea took over North Bay's cannery, its small reduction plant, and part of its rock lobster quota at Saldanha Bay. 1950: North Bay bought shares in S.A. Sea Products; Lambert's Bay C.C. took over total shareholdings of North Bay and Namaqua C.C.; Stubbs became chairman of North Bay; 10 ton-per-hour plant installed at Thorn Bay.

NORTHERN FISHING INDUSTRIES OF S.W.A. (PTY.) LTD.

Subsidiary of Wesco in the Swafil group. Formed to fish for tuna and shark, in 1967 it was also fishing for white-fish and for rock lobster bait.

OCEANA FISHING CO. LTD.

Originally Mulderene, re-named Lüderitz and Walvis Fishing Co., re-named again Oceana F.C. Factory at Walvis Bay. 1945: factory at Walvis Bay being extended. 1953: got 30 ton-per-hour licence for fishmeal from S.W.A. Administration. Company was now owned $\frac{1}{2}$ by United Fish Cannery, $\frac{1}{2}$ by newly-formed Sea Products S.W.A. 1967: company pioneered pilchards in chili sauce, in soya sauce, and minced as pet food.

OCEANA GROUP

Formed in 1957, the main members of the group were Lambert's Bay C.C. and Seafare Investments, S.A. Sea Products, and United Fish Cannery. The group was formed after long and complex negotiations. In 1953 there had been three groups: (1) Lambert's Bay and Seafare (Gaggins); (2) S.A. Sea Products and Sea Products S.W.A. (Stubbs); (3) United Fish Cannery (controlled by Tiger Oats - I. & J., South Atlantic Corp. also had shares). In 1957 South Atlantic sold its interests in inshore fishing. This led to a regrouping of the remaining companies under Oceana, with Stubbs as group chairman. The group controlled six of the 14 pilchard factories in the Cape Province, ten rock lobster factories between Cape Town and Lüderitz, and one factory at Walvis Bay. It also had shareholdings in Marine Products, the Tristan da Cunha Development Corporation, and in other enterprises.

1958: Oceana and Mid-West co-operated to launch new £230 000 Da Gama Fishing Co. to operate fishmeal plant at Hout Bay. 1958: after protests by shareholders about low dividends

and secret emoluments to directors, Jack Stubbs resigned. Oceana was reconstituted: Alan Lees became chairman of S.A. Sea Products, Seafare Investments, and United Fish Cannery; Abe Shapiro chairman of Sea Products S.W.A.; and Jack Rumbelow chairman of Lambert's Bay C.C. Oceana became S.A.'s biggest group; its factories processed half S.A.'s shoal catch. 1961: Oceana, Ovenstones, and Mid-West jointly formed Atlantic Tuna Corporation: not too successful; Oceana withdrew from A.T.C. in 1964.

OCEAN PRODUCTS LTD.

Started by Claude Taylor at Gansbaai in 1938. Aim: to produce vitamin A from shark livers. 1947: had shares in St. Helena Bay Fishing Industries. 1948: with SWAFIL and F.D.C., launched Wesco at Walvis Bay.

ORANJERIVIER VISSERYE BPK.

In 1965 the Minister of Economic Affairs issued several new licences; one went to a newly-formed company, the Oranjerivier Visserye, which planned to build a harbour and a fishmeal factory in the desert just south of the Orange River mouth. But in 1968 the plan was still no more than a plan; the actual processing was done by Oceana factories further south.

OVENSTONE GROUP

Old established fishing firm which grew from the original enterprise started by John Ovenstone in a converted lifeboat at Cape Town in 1901. By 1950 the group revolved round Ovenstone Holdings (Pty.) Ltd., a family company with holdings in John Ovenstone Ltd. and Ovenstone S.W.A. Investments Ltd. (Oswil). John Ovenstone ran a rock lobster cannery at Port Nolloth; Oswil controlled a reduction plant at Walvis Bay. 1952: John Ovenstone Ltd. became a public company; £250 000 share issue heavily oversubscribed; Ovenstones used the capital to modernise at Port Nolloth and to finance a new company, Columbine C.C., at St.

Helena Bay (producing meal and oil from 1954).

1960: Ovenstone group joined Federal Fish. Jeck Ovenstone appointed joint managing director of Federal Fish. 1961: Ovenstone group helped to found Atlantic Tuna Corp. 1961: Oswil and Chilean firm formed Industone, to build fishmeal factory in N.W. Chile. Into production 1964. Results disappointing. 1968: Ovenstones sold half their shares, proposed no further investment, said they expected no return on existing investment.

1966: Ovenstone group and Kaap-Kunene each got a licence for a factory ship. They co-operated, used only one licence, formed jointly-controlled Buitesse Viskorporasie, which bought "Suiderkruis". Successful maiden voyage in 1967.

OVENSTONE HOLDINGS

Family firm, core of Ovenstone group. In early 1940's, through subsidiary Oswil, formed Walvis Bay C.C. to can snoek. 1952: Ovenstone Holdings bought from Lambert's Bay C.C. all the shares that L.B.C.C. had held in Walvis Bay C.C. (Gaggins of Lambert's Bay wanted money to exploit new fishmeal licence).

OVENSTONE S.W.A. INVESTMENTS LTD. (OSWIL)

Floated in 1953 with nominal capital of £600 000. Aim: to finance development of walvis Bay C.C. Fishermen were crowding to Walvis Bay to cash in on S.W.A. pilchard. Ovenstones had to order boats from Norway because S.A. shipyards were overwhelmed with work. Administration limited Ovenstone's capacity in S.W.A. to 30 tons per hour.

1962: Oswil had best year ever. 1961: Oswil co-operated with Chilean company to exploit South American fish. Disappointing results. 1967: Oswil refused increased quotas in SWA because Ovenstone group had helped promote factory ship "Suiderkruis".

PATERNOSTER VISSERIE BPK.

In 1965 the Minister of Economic Affairs made fishmeal licences available to persons in the Cape fishing industry "who do not at this stage have any direct financial interest in any other fishmeal factory". One licence went to Paternoster Visserye, promoted by Cape M.P.'s, lawyers, and two fishermen, Johnny Eigelaar and "Kinnie" Boonzaaier. Company got a rock lobster licence and a 10 ton-per-hour fishmeal licence. As it could not process fish at Paternoster, it was processed at the Silvermans' West Point factory.

PESCANOVA S.A.

Spanish fishing firm based on Vigo in N. Spain. In 1964 it joined Imperial Cold Storage and Southern Sea Fishing Enterprises to promote Sea Harvest Corp., a R2 m. venture based at Saldanha Bay.

SALDANHA BAY CANNING CO.

1903: Ellis Silverman, Latvian immigrant, came to Saldanha Bay to make tins for North Bay Canning Co. 1905: Silverman left North Bay, with local boat-owner James Kasner started rock lobster cannery, called it Saldanha Bay C.C. 1909: 200 cases ready for export. Kasner died. Silverman could not pay widow her share of business, so sold business to coaster captain Scharmberg for £100. Scharmberg kept him on as factory manager at £20 per month. 1935: company got "small" rock lobster quota. 1937: Scharmberg retired. Silverman regained control of company, which had been growing. 1940's: several types of fish being canned. Rock lobster canned and frozen. Small reduction plant. "Saldanha" brand of canned fish well-known in S.A. But company had no dealings with F.D.C. Younger members of Silverman family now gradually taking control. 1960's: company's fish being sold through Silversea Sales, selling company which also sold for West Point Fishing Corp. and Southern Sea Fishing, and which controlled nearly $\frac{1}{3}$ of local market.

SARUSAS DEVELOPMENT CORPORATION

1967: S.W.A. Administration awarded a fishmeal licence to a group of S.W.A. businessmen who planned to build a factory at Cape Fria, north of Walvis Bay. Until the factory was built, Sarusas fish would be processed at Walvis Bay by the five factories there that had no connections with factory ships. (This arrangement appears to have been connected with the question that had arisen between South Africa and South West Africa over factory ships). In 1968 the Cape Fria factory had still not been built and its quota was being handled by existing factories in S.W.A.

SEAFARE INVESTMENTS

Formed by H. Gaggins in 1950 as holding company to centralise control of the Lambert's Bay group. Seafare co-operated with S.A. Sea Products, and there were cross shareholdings between the two groups. 1952: new licence granted to Mulderene at Walvis Bay. Mulderene then controlled by United Fish Cannery. United Fish joined with Seafare to finance new factory for Mulderene. Gaggins sold Lambert's Bay shares to raise money. 1953: after dispute between Gaggins and Stubbs, Seafare sold its interests in S.W.A. and separated from S.A. Sea Products. 1954: Seafare agreed with U.S. firm for S.A. maasbanker to be sold in U.S. under Starkist label. Starkist took minority interest in Seafare. But sales were disappointing and agreement lapsed in 1957. Mid-1950's: Seafare controlled rock lobster quotas totalling more than 1 m. lb: it imported two giant refrigerated trucks to carry frozen tails to Cape Town. 1956: industry over-capitalised in relation to output? Seafare's Sandy Point factory temporarily closed. Other factories cut down staff and output.

1957: in general re-organisation, Stubbs got control of Seafare, formed Oceana group, which included Seafare, S.A. Sea Products, and United Fish Cannery. Gaggins retired. 1959: Seafare held 51% interest in Stephan rock lobster packers, controlled Stephan's rock lobster quota. 1960: Stubbs retired. Alan Lees became chairman of Seafare. 1962: Seafare's earnings rose by 55%.

SEA HARVEST CORPORATION

Formed in 1964 as R2 m. joint venture by Imperial Cold Storage, Southern Sea Fishing Enterprises, and Pescanova (Spanish fishing company). Pescanova and I.C.S. each held 40% of shares, Southern Sea 20%. Sea Harvest combined distribution and cold storage network of I.C.S. with resources of S.A. inshore fishery and experience and fleet of Spanish fishing company. Advanced trawlfish processing factory built at Saldanha Bay. Spanish built stern trawlers with Spanish crews used. Into operation 1965. Big initial catches. G. van Essen of Southern Seas chairman of Sea Harvest.

SEA PRODUCTS S.W.A. LTD.

In 1946 Stubbs formed S.A. Sea Products; in 1948 Gaggins formed Seafare Investments. The two groups co-operated and exchanged shares; Stubbs became a director of Lambert's Bay C.C., Gaggins a director of S.A. Sea Products. 1953: Stubbs and Gaggins disagreed; Stubbs left Seafare, Gaggins left Sea Products. Seafare sold its S.W.A. interests to Sea Products. Stubbs formed Sea Products S.W.A. to control the S.W.A. interests of Sea Products. These included Lurie's C.C. and Mulderene. 1960: Stubbs retired. Abe Shapiro became chairman of Sea Products S.W.A. 1962: Sea Products S.W.A. had record year, profits more than R1 m.

SOUTH AFRICAN SEA PRODUCTS LTD. (S.A.S.P.)

In 1946 Stubbs, Trans-African Fisheries, and Trautmann Bros. formed S.A. Sea Products. Duikersklip Fisheries joined later. £100 000 capital: F.D.C. took shares. Aim: to export rock lobster. Quotas were pooled - total frozen tail quota was 720 000 lb. Modern cold store built at Hout Bay, also smokery for snoek and other fish, shark-liver oil plant, and plant to process rock lobster offal. Company built houses, brought electricity supply: Hout Bay became model fishing village, show-piece for F.D.C. 1947: Hout Bay C.C. joined S.A.S.P. Capital increased to £250 000. Company took over Stubb's Fisheries,

took shares in other fishing enterprises. 1947: company took lead in setting up controlled marketing: S.A. Frozen Rock Lobster Packers (SAFROC) formed as marketing organisation for whole rock lobster industry. 1948: company took shares in St. Helena Bay Fishing Industries and in Swafil; had part in expedition to investigate potential of Tristan da Cunha. 1949: Lambert's Bay C.C. co-operated with S.A. Sea Products; shares exchanged; Sea Products took over Swerling and Levin, had large interest in Fish Wholesalers Ltd. 1950: Sea Products took over Lurie's C.C. at Lüderitz, invested in North Bay C.C. and Namaqua C.C. Stubbs chairman of North Bay. 1952: through cross shareholdings, Sea Products had interest in new licence granted to Mulderene at Walvis Bay.

1953: Gaggins-Stubbs dispute. Sea Products and Seafare split. Gaggins resigned from Sea Products. Stubbs resigned from Seafare. Seafare sold its S.W.A. interests to Sea Products. Stubbs formed Sea Products S.W.A. to control these interests. 1956: Stubbs helped form Federal Fish Packers - sales organisation for Sea Products, United Fish Cannery, and Swafil. 1957: Sea Products gained control of Seafare; Seafare joined Federal Fish Packers; Sea Products became part of Oceana group. 1958: two licences issued for fishmeal plants at Hout Bay. Sea Products got one licence, added to it residue of ~~South African~~ ^{African} Inshore Fisheries licence (10 tons) and Thorn Bay licence (7½ tons). New plant built, into operation 1959. Hout Bay residents protested.

1960: Stubbs retired, Alan Lees chairman of Sea Products. 1962: following share transactions between Da Gama Fishing Industries and Lambert's Bay C.C., Oceana group obtained full control of Da Gama.

SOUTH ATLANTIC CORPORATION LTD.

1949: after death of Johnson, control of I. & J. passed to Anglo-Transvaal Industries Ltd. 1952: South Atlantic Corp. formed as a holding company for the I. & J. group. I. & J. became the operating company controlling fishing activities. (The group had about 30 subsidiaries). 1967: I. & J. and

Kaap-Kunene merged. South Atlantic and Kaap-Kunene each transferred shares to new holding company - Irvin-Kunene Holdings (Pty.) Ltd., which was the new holding company for the I. & J. group as well as for the white fish interests of Kaap-Kunene.

SOUTH WEST CANNING CO.

Formed in 1922 by Table Mountain C.C. and Lambert's Bay C.C. Aim: rock lobster canning at Lüderitz. Factory into operation 1923. Mid-1920's: company was struggling; could not pay prices fishermen demanded and still make profit on European market. 1926: factory stopped work. 1928: into liquidation; all assets sold to Fritz Knacke for £1 500.

SOUTHERN SEA FISHING ENTERPRISES (PTY.) LTD.

Formed in 1948 with £230 000 capital contributed by Dutch and S.A. interests. Aim: production of canned fish and fishmeal, especially for export to Europe. (Backers believed scarcity of fish in North Sea would provide market opportunities in Europe for S.A. fish products). North Bay C.C., in exchange for shares in Southern Sea, contributed its cannery, its small reduction plant, and part of its rock lobster quota at Saldanha Bay. Two 10 ton-per-hour reduction plants ordered from U.S. G. van Essen, general manager of Dutch parent company, came to S.A. to supervise. 1950's: fish apparently moving south, losing condition during long haul back. So Southern Sea brought out coaster "Paraat" to act as "mother ship", to take False Bay catches back to Saldanha. Experiment not a success. 1960: Southern Sea selling through Silversea Sales. 1964: Southern Sea joined Federal Marine (sales company) which now became sole S.A. seller of industry's canned fish production. 1964: Southern Sea took 20% interest in newly-formed S.A.-Spanish venture, Sea Harvest Corp. G. van Essen became chairman of Sea Harvest. 1969: Southern Sea making Redro Fish Paste.

ST. HELENA BAY FISHING INDUSTRIES LTD.

1946: formed under F.D.C. aegis. Aim: to produce fishmeal at Stompneus in St. Helena Bay. Sponsored by F.D.C., Lambert's Bay C.C., Stephan Bros., Laaiplek Visserye, and Table Mountain C.C. Spooner chairman, Gaggins managing director. Stompneus had good harbour, little else. Jetty, roads, water, power, houses, had to be provided. F.D.C. financed scheme. Aim specifically fishmeal. One local, one U.S. plant ordered - each 10 ton-per-hour. Neither was satisfactory. Company also tried liver oil and quick-frozen pilchards; but pilchards were soon abandoned, freezer plant sold to Swafil. 1948: fishmeal plants into production. Laaiplek sold its shares, Swafil, S.A. Sea Products, and Ocean Products bought shares. Company experimented with big U.S. purse-seine nets; but they were too big for S.A. fishermen. 1949: company made £59 000 profit. Third 15 ton-per-hour fishmeal plant put into operation.

STUBB'S FISHERIES

Established at Cape about 1920. Buying from I. & J. and line fishermen, selling from stalls or to hotels and restaurants; sending snoek to farms or to Mauritius; selling fresh and cured fish locally. 1947: S.A. Sea Products bought out Stubb's Fisheries; Jack Stubbs chairman of S.A. Sea Products. 1948: fresh-fish distributing business of Stubb's Fisheries, Swerling & Levin, and others, operated by Fish Wholesalers Ltd., company formed with participation of I. & J. 1959: Jack Stubbs retired.

SUID KUNENE VISSERYE BPK.

In 1963 S.W.A. made two new licences for fish processing available, one for Lüderitz, one for Walvis Bay. Walvis Bay licence given to Suid Kunene, new company formed with backing from Bonuskor and Federale Volksbeleggings. Federale had inter-held shares with Marine Products group. Marine Products Corp. was asked to manage the new factory. Suid Kunene offered 755 000

shares to the public: this was over-subscribed 30 times. 1964: factory went into operation.

SUIDERKRUIS

See Buitesee Viskorporasie.

SUID-ORANJE VISSERYE BPK.

In 1965 the Minister of Economic Affairs announced that he would award new fishmeal licences to those in Cape fishing industry "who do not have direct financial interest in any other fishmeal factory". One licence went to group of applicants who decided to integrate their licence with existing Mid-West licence at St. Helena Bay. This led to formation of new company, Suid-Oranje Visserie, with authorised share capital of R2½ m. Suid-Oranje took over all Mid-West's assets; Mid-West was given controlling share (54%) in Suid-Oranje. New modern factory built: old Mid-West factory became fishmeal store. Because of slow delivery of boats, catching power was inadequate at first, and factory plant stood idle for much of 1966; into operation in 1967.

SUN CANNING CO.

Operating at Woodstock in 1916.

S.W.A. FISHING INDUSTRIES LTD. (Swafil)

Formed in 1947 by a merger of several companies: Cape Lobster Co., Angra Canning Co., Table Mountain C.C. (which contributed rock lobster licence and quota originally granted for Hottentot Bay). F.D.C. invested. Lambert's Bay C.C. had big shareholding through Table Mountain C.C. Factories at Lüderitz were modernised, new cold stores were built, production progressively concentrated under one roof. H. Gaggins chairman. 1948: Swafil took interest in expedition to Tristan da Cunha.

Co-operated with Ocean Products and F.D.C. to launch West Coast Fishing Industries (Wesco) at Walvis Bay. Wesco run as subsidiary of Swafil; Col. S. Jeffrey managing director of both companies.

1952: Lambert's Bay sold its holdings in Swafil (Gaggins wanted money for new Mulderene project at Walvis Bay). 1956: Swafil a founder member of Federal Fish Packers (sales organisation). Swafil was now the only S.W.A. fishing company completely controlled from S.W.A. Had large rock lobster quota at Lüderitz: Wesco at Walvis Bay was a wholly-owned subsidiary. 1967: Swafil's subsidiary Wesco had formed a sub-subsubsidiary, Northern Fishing Industries, to fish for tuna and shark. It also fished for white fish and rock lobster bait.

SWERLING AND LEVIN

Operating as fish dealers in Cape Town area in 1920. 1948: S.A. Sea Products absorbed Swerling and Levin, took over their rock lobster quota. Fish Wholesalers Ltd. (in which S.A. Sea Products had a large share) formed to operate fresh fish business of Swerling and Levin and others.

TABLE MOUNTAIN CANNING CO.

Incorporated in 1916. Axel Lindstrom managing director. Aim: to can rock lobster. 1922: Lindstrom visited Lüderitz, bought whole output of Karl Albrecht's Cape Lobster Co., sold it under his own label. 1922: Table Mountain C.C. and Lambert's Bay C.C. helped to form new company, South-West Canning Co., to can rock lobster at Lüderitz. 1945: Table Mountain took a one-fifth share (£20 000) in newly-formed St. Helena Bay Fishing Industries. It was an investment company co-controlled by Lambert's Bay C.C. 1947: Table Mountain got licence to process rock lobster at Hottentot Bay, desolate spot 20 miles from Lüderitz. Fish plentiful but no fresh water, roads, or labour. Factory and jetty built, rock lobster processed spasmodically; but effort finally failed. 1947: Table Mountain helped to form Swafil. Transferred its licence and rock lobster quota at Lüderitz to Swafil. 1947: Swafil,

through Table Mountain, took extra shares in St. Helena Bay Fishing Industries - bought shares from Laaiplek Visserye, which pulled out.

TAFELBERG FISHERIES S.W.A. (PTY.) LTD.

Small fishing company with small factory and one trawler. Operating from Lüderitz in 1967.

TRANS-AFRICAN FISHERIES

1930's: operating at Hout Bay. Property of Christian Trautmann. Sending rock lobster tails for cold storage at Cape Town docks. 1946: Trans-African Fisheries helped Trautmann Bros. and Jack Stubbs to form S.A. Sea Products Ltd.

TUNA CORPORATION OF AFRICA LTD. (Tunacor)

Launched as subsidiary of Marine Products Corp. in 1949. Registered capital £250 000. Aim: to exploit tuna, supposedly plentiful 200 - 300 miles from coast. But soon turned to pilchard. 1950: 20 ton-per-hour fishmeal and oil plant into operation. 1952: planned production of 6 000 tons of meal per annum exceeded. Intake capacity increased. Large cannery operating. 1953: S.W.A. Administration limited production. Tunacor not allowed to process more than 30 tons per hour. As subsidiary of Marine Products, Tunacor was member of group which in 1953 included Marine Products, Tunacor, Namib Visserye, and Laaiplek Rock Lobster Packers. Tunacor was controlled by Marine Products, but National Trawling and I. & J. had interests.

UNION AND S.W.A. SALT SNOEK CORP. (PTY.) LTD. (Uniswa)

1957: five companies - I. & J., S.A. Sea Products, Coast Trading, Mid-Western, and Friedman and Rabinowitz - formed a sales organisation for salt snoek - Uniswa.

These companies caught all Walvis snoek, and produced nearly all the salt snoek in S.A. and S.W.A. Most was exported - to Reunion or Mauritius; some was sold on local market.

UNION SMOKERIES

1926: two local fish dealers - Levin's Table Bay Smokeries, and East Ltd. - combined with I. & J. to set up Union Smokeries at Maitland. 1943: as a subsidiary of I. & J., Union Smokeries helped to set up African Inshore Fisheries - to can fish at Velddrif. 1947: Union Smokeries co-operated with African Inshore Fisheries to export smoked fish to Australia.

UNITED FISH CANNERS

Formed in 1949. A management company to control production and sales. Authorised share capital R2 m. Acquired a chain of fish factories between Cape Town and Lüderitz. Founders were I. & J., Tiger Oats, and Standard Packers & Cannery. Aims were to co-ordinate production and sales, pool technical knowledge, and centralise management. United Fish Cannery controlled African Inshore Fisheries, I. & J.'s fish cannery at Maitland, Hickson's rock lobster cannery at Port Nolloth, African Canning Co.'s installations at Lambert's Bay and at Lüderitz, Lüderitz Bay Cannery, and Mulderene Fish & Oil. 1950: United Fish moved Lüderitz Bay C.C.'s 10 ton-per-hour fishmeal plant from Lüderitz to Velddrif. 1952: Mulderene got additional licence, needed new factory; so United Fish and Seafare jointly financed new company, (with old name of Mulderene), to exploit the new licence. In 1953 when Seafare and S.A. Sea Products broke apart following the Stubbs-Gaggins dispute, United Fish Cannery's half share in Mulderene was sold to Sea Products S.W.A. 1955: United Fish controlled two of the six rock lobster licences for Lüderitz; they also controlled the Lüderitz sealing licence originally issued to Mulderene.

1955: S.A. Sea Products bought Tiger Oats holdings in

United Fish, thereby acquired majority holding; so Jack Stubbs became joint managing director of United Fish. 1956: United Fish, S.A. Sea Products, and Swafil jointly formed Federal Fish Packers (a sales company). 1957: Oceana Group formed by link-up between Lambert's Bay C.C., Seafare, S.A. Sea Products, and United Fish. 1959: Stubbs retired. Alan Lees became chairman of United Fish.

VAN RIEBEECK CANNING AND FISHING CORP. (PTY.) LTD.

Started in 1953 by H.S. Ball at St. Helena Bay. Aim: to produce canned fish. Later taken over by Ovenstones.

VITAMIN OILS LTD.

Formed in 1938 by Dr. C.J. Molteno and I. & J. Aim: to recover vitamin oil from stockfish livers. Oil bought by Lever Bros. Later it was found that shark liver oil had even higher vitamin A content. 1943: as subsidiary of I. & J., Vitamin Oils had a share in starting African Inshore Fisheries at Velddrif. 1947: Vitamin Oils formed joint concern with Marine Products and Walvis Bay C.C. to extract fish-liver oil at Walvis Bay. 1948: Vitamin Oils began an experimental production of fish albumen as substitute for egg-white. Based on German discovery. 1948: Vitamin Oils in collaboration with local sweet-making firm started producing agar-agar. Fishing firms collected seaweed. Some agar-agar exported. But Japanese, biggest pre-war producers, rebuilt industry, could produce more cheaply even using S.A. seaweed. 1950: successful process for making synthetic vitamin A led to fall in price of natural vitamins. Vitamin Oils Ltd. was only S.A. firm to continue production of natural vitamin oils from fish.

WALVIS BAY CANNING CO.

Founded by Ovenstones in 1943. Aim: to can snoek, for which there was a big war-time demand. Russell Ovenstone

went to Walvis Bay to run factory. Local fishermen (and Cape fishermen during season) supplied the snoek; but lack of equipment led to poorish results in first year. Results improved as more machinery became available. 1947: company collaborated with Marine Products and Vitamin Oils in project to extract fish-liver oils at Walvis Bay. 1947: snoek production disrupted by snoek "scandal" in Britain. Company began to can pilchard instead. Plant soon proved inadequate, jetty enlarged, factory expanded; Jeck Ovenstone appointed managing director after Russell Ovenstone drowned near St. Helena. Modern fishmeal plant ordered from U.S.

1948: capital increased from £80 000 to £100 000. Shareholders: Ovenstones, Lambert's Bay, Imperial Cold Storage, National Trawling. Gaggins joined the board; 15 ton-per-hour plant installed; fishermen from Cape persuaded to work full-time at Walvis Bay, where they could earn good money. 1949: new pilchard cannery into operation; 8 771 tons processed. (Two other factories were operating at Walvis Bay; in 1950 the three factories had a combined intake of 51 513 tons). 1952: Gaggins sold Lambert's Bay holdings in Walvis Bay C.C. to Ovenstones (he wanted to raise money for Mulderene factory at Walvis Bay).

1953: worried at heavy fishing, S.W.A. Administration limited total S.W.A. shoal catch to 250 000 tons per annum: 46 875 tons each to Walvis Bay C.C., Wesco, Tunacor, and Oceana; 31 250 tons to Namib and New-West. Capacity limits also set - 30 tons per hour for larger companies, 20 tons per hour for smaller. These restrictions meant that Walvis Bay producers now had excess capacities as well as too many boats. Surplus boats were weeded out; and quotas led to better and cheaper use of available fish, as well as to spreading of effort throughout the year.

WES-BANK VISSERYE

1964: A.P. du Preez formed Wes-Bank to exploit new 1 600 000 lb rock lobster quota given by S.A. government. Wes-Bank a wholly-owned subsidiary of Mid-West. The quota was to

operate among certain islands off the coast of S.W.A.; the islands themselves being controlled by the S.A. government. This was the biggest single quota ever awarded in the Republic, and led to protests in Cape Town and in S.W.A. (One island had been proclaimed a rock lobster sanctuary by the S.W.A. Administration). SAFROC complained (a) that the minister had promised unchanged quotas to 1970; and (b) that the quota was disproportionate to other quotas, and would affect the market. Finally the quota was cancelled, and the following re-arrangements took place: (1) Wes-Bank gave all its shares to Angra Pequena, and became wholly owned by Angra Pequena. (2) Wes-Bank got in exchange 750 000 shares in Angra Pequena. (3) Angra Pequena's rock lobster quota was increased from 500 000 lb to 1 893 000 to "compensate" for the quota previously cancelled. (As a result, the total Lüderitz quota was now 5 453 600 lb per annum - of which 1 893 000 went to Angra Pequena, 1 893 000 to Sea Products S.W.A., and 1 666 400 to Swafil. The last two companies had had their quotas cut 10% in 1956, but got no "compensation".)

WEST COAST FISHING INDUSTRIES LTD. (Wesco)

1948: launched by Swafil, Ocean Products, and F.D.C.
 Aim: to build a 20 ton-per-hour and later a 30 ton-per-hour reduction plant at Walvis Bay. Capital £150 000, later increased to £250 000. Wesco ran as subsidiary to Swafil. Col. S.H. Jeffrey managing director of both. 1949: Wesco ready for production. 1953: operating pilchard cannery as well as fishmeal plant. 1953: S.W.A. Administration limited catch and capacity: Wesco allowed 46 875 tons per annum, 30 tons per hour. 1957: Wesco a wholly-owned subsidiary of Swafil. 1967: Wesco had a subsidiary - Northern Fishing Industries of S.W.A. Ltd.

WEST POINT FISHING CORP. (PTY.) LTD.

Founded by Silverman Bros. in 1950 at Slipper Bay in St. Helena Bay. Aim: to process fish in 10 ton-per-hour reduction plant. Silverman Holdings had controlling interest;

company showed immediate profits. 1958: West Point F.C. selling through Silversea Sales (selling company). 1958: West Point had cannery and two 10 ton-per-hour reduction plants at St. Helena Bay. 1965: Paternoster Visserye, newly formed, got licence for rock lobster and 10 ton-per-hour fishmeal plant. As it could not process its own meal, this was done for it at West Point's factory at St. Helena Bay.

WILLEM BARENDSZ

In 1965 S.A. government granted a licence for a factory ship to operate outside the 12-mile limit. The licence was given to a group which included Netherlands Whaling Co., S.M. Druker, and Silverman Bros. The group bought and converted a 30 000 ton former whaling factory ship. The "Willem Barendsz" was the world's biggest factory ship. Into operation off S.W.A. in 1966. Big catches led to complaints of over-exploitation of fish. 1970: after a commission had enquired into over-exploitation, "Willem Barendsz" was "requested" not to fish off the coasts of South Africa or S.W.A.

APPENDIX 'B'

SOME PEOPLE IN THE SOUTH AFRICAN FISHING INDUSTRY

(This is intended merely to amplify Appendix 'A';
it does not pretend to be comprehensive).

DU PREEZ, A.P.

Born 1920. Stellenbosch B.Sc. 1944: helped design fish-cutting machine for Laaiplek Visserye. 1947: left Laaiplek Visserye, founded Bona Fide Visserye at Paternoster, with £3 000 capital raised largely from local farmers. Aim: to process snoek and shark livers. Machinery in garage; du Preez minced, boiled, drove delivery truck. After one year, each investor of £500 got back £550. But prices of vitamin oils fell, market collapsed.

1950: du Preez launched Mid-West Fishing Industries at St. Helena Bay. Used profits from earlier shark fishing to buy low-priced reduction plant - which worked. 1952: he got licence for 20 ton-per-hour reduction plant at Walvis Bay. Formed New-West to exploit licence. (He already had boats fishing for snoek and pilchard at Walvis Bay). New-West into operation 1953. 1954: Mid-West became a public company. Capital £500 000. Operated cannery and 15 ton-per-hour reduction plant; owned 36% share of issued capital of New-West at Walvis Bay.

1958: Mid-West and New-West joined Federal Fish (central selling organisation). 1958: du Preez helped to start Da Gama fisheries at Hout Bay, became managing director. (Da Gama was £230 000 joint venture by Oceana Group and Mid-West. Took over licence and fleet capacity of African Inshore Fisheries at Velddrif. Into operation February 1959. Stubbs chairman). 1961: du Preez helped form Atlantic Tuna Corp. at Hout Bay. Joint venture by Mid-West, Ovenstones, and Oceana. Not successful.

Ovenstones and Oceana withdrew in 1964, du Preez converted it to trawling company.

1963: formed Angra Pequena Viskorporasie to exploit new shoal fish licence at Lüderitz. Also 500 000 rock lobster export quota. Share offer over-subscribed 16 times. Into operation July 1964. Later, Angra Pequena got sealing licence as well.

1964: du Preez formed Wes-Bank Visserye as wholly-owned subsidiary of Mid-West, to operate new 1 600 000 lb rock lobster export quota. This quota, biggest ever awarded by S.A. government, was for certain islands off coast of S.W.A. Licence led to protests, and was finally withdrawn. Instead: (1) Angra Pequena got increased rock lobster quota (1 893 000 lb) to "compensate" for islands quota lost by Wes-Bank. (2) Mid-West gave up all its Wes-Bank shares and acquired instead 750 000 shares in Angra Pequena. (Effect of this was that Mid-West got control of large new quota through Angra Pequena instead of through Wes-Bank).

1964: Mid-West and New-West joined to form Kaap-Kunene. K.K. had as subsidiaries: (1) Friedman and Rabinowitz, (2) Atlantic Tuna Corp., (3) Kuiseb Visprodukte, (4) Colonial Meat Suppliers. (Du Preez was at this time buying ranches in S.W.A., where Colonial Meat had a subsidiary). 1965: du Preez a member of group formed to exploit new 25 ton-per-hour fishmeal licence, issued by S.A. government. Group decided to integrate this licence with existing Mid-West licence at St. Helena Bay, and form new company to exploit combined licence. So Suid-Oranje Visserye Bpk. formed with authorised share capital of R2½ m. Suid-Oranje took over Mid-West assets, but Mid-West got controlling share in Suid-Oranje. Into operation 1967 - start delayed by slow delivery of boats.

1965: du Preez sold his 50% interest in Da Gama for R1,4 m. 1966: K.K. and Ovenstones combined to finance factory ship "Suiderkruis". 1967: K.K. and I. & J. merged. Du Preez became chairman of Irvin-Kunene Holdings, the company which controlled the new group.

GAGGINS, HUBERT

1930's: Gaggins working for shipping firm in Dakar,

Met R. Napier, son-in-law of Axel Lindstrom, founder of Lambert's Bay C.C. (Napier had gone to Dakar to investigate fishing possibilities there). 1938: Axel Lindstrom died, Napier chairman of Lambert's Bay C.C. Engaged Gaggins, initially as £15 per month clerk. 1944: Napier killed in Middle East. Gaggins became chairman and managing director of Lambert's Bay C.C. Big demand for canned fish; all-out production; £45 014 profit made, 100% dividend paid. Pilchards best-paying line. 1947: Swafil formed to can rock lobster at Lüderitz. Lambert's Bay C.C. had big shareholding through Table Mountain C.C.; Gaggins became chairman of Swafil. Lambert's Bay also big shareholder in newly-formed St. Helena Bay Fishing Industries Ltd. - into operation 1948 with Gaggins as managing director. 1948: Gaggins pioneered export of S.A. canned fish to Britain, Malaya, East Indies, etc.

1949: Lambert's Bay C.C. co-operated with S.A. Sea Products. Exchange of shares. Gaggins director of S.A. Sea Products. Stubbs director of Lambert's Bay. 1950: Gaggins formed Seafare Investments, holding company to control investments and centralise management of Lambert's Bay group. 1950: Gaggins made big canned fish deal with Singapore. Seven Chinese importers to import up to 240 000 cases per annum. 1952: Mulderene Fish and Oil Products got licence for new factory at Walvis Bay. Seafare took 50% interest in Mulderene, which set up pilchard cannery and three 10 ton-per-hour reduction plants.

1953: Gaggins-Stubbs dispute. Stubbs left Seafare, Gaggins left S.A. Sea Products. Seafare sold its Walvis Bay interests. 1954: Gaggins signed agreement to sell canned maas-banker under Starkist food label in U.S. Starkist took minority holding in Seafare. Canneries enlarged; but sales were disappointing, and agreement lapsed in 1957.

1955: Gaggins sold Seafare shares to South Atlantic Corp. 1957: South Atlantic sold Seafare shares to United Fish; as a result Stubbs got control of Seafare, and major re-organisation of fishing industry resulted, with creation of Oceana group - amalgamation of Seafare, Lambert's Bay C.C., S.A. Sea Products, Sea Products S.W.A., and United Fish. Stubbs became group chairman. Gaggins retired.

SILVERMAN FAMILY

1903: Ellis Silverman, 18 year old tinsmith from Riga, employed to make tins for newly-established North Bay C.C. at Saldanha Bay. He was given no salary - the French had rejected the whole season's production - but stayed on, completed more cans, hired a horse and cart and sold fish to farmers. 1905: Silverman left North Bay C.C., joined local boat-owner, James Kasner, to found Saldanha Bay C.C. They imported machinery, built cannery, had 200 cases for export in 1909, could only get 35/- a case. 1909: Kasner died. Silverman needed money; coasting skipper Capt. Scharmberg bought Silverman's share of Saldanha Bay C.C. for £100, employed him as factory manager at £20' per month. Production increased.

1912: narrow gauge railway reached Saldanha. Snoek sales rose. Scharmberg retired from sea; other Silvermans joined Ellis; all were prosperous. 1920: Ellis Silverman earning £30 a month as factory manager; Silvermans bought shares in Saldanha hotel. 1925: Silvermans and Scharmberg started Namaqua C.C. at Hondeklip Bay. Plenty of rock lobster, otherwise poor facilities; tins brought from Saldanha. Saldanha factory enlarged. Fishing fleet increased. Motors for fishing boats. 1926: Ellis Silverman got first telephone in Saldanha; also flush sanitation. 1931: prices falling, companies struggling: hard times at Hondeklip. But Silvermans had resources for the lean years. 1937: Scharmberg retired completely, Silvermans in charge at Saldanha. 1930's: Silvermans tried freezing tails at Cape Town docks; built cold store at Saldanha; new plant built for Saldanha Bay C.C.; extra capital raised; harbour tug converted to carry frozen tails.

1939: demand for canned fish began to increase. Silvermans canning maasbanker, snoek, and curried fish. 1942: canning pilchard as well. 1944: Silvermans enlarged Saldanha Bay factory, bought sea-front farm at St.Helena Bay. Late 1940's: Silvermans expanding: fish canning, rock lobster canning, and freezing. Small reduction plant. Sons taking over business. Good profits, fishermen well off, but living conditions at Saldanha still

primitive. Sons taking over control of business. Silvermans had no dealings with F.D.C. 1950: Silvermans started West Point Fishing Corp. at Slipper Bay in St. Helena Bay. Controlled by Silverman Holdings. Installed 10 ton-per-hour reduction plant. Showing profit after six months' operation. Mid-1950's: Silvermans now had big modern factory at Saldanha Bay, controlled West Point at St. Helena Bay, with cannery and two 10 ton-per-hour reduction plants. 1960: Silvermans converted old pilchard boat into refrigerated tuna boat, caught 34 tons on first trip. But tuna fishing finally failed. 1964: Silvermans joined Federal Marine (selling organisation). 1965: Silvermans took 40% share in Willem Barendsz licence. (Silvermans had repeatedly applied for licences for S.W.A., without success; Willem Barendsz offered another means to exploit S.W.A. fish).

STEPHAN FAMILY

1770: Johann Daniel Stephan arrived at Cape from Germany. His son started trading in Cape Town and on the West Coast. 1850's: Stephans were now fishing from St. Helena Bay, trading with farmers, running coasters from Cape Town. 1885: Stephans had 80 large fishing boats and employed 600 men. They ran coasters and controlled West Coast grain trade. Carel Stephan ruled as a feudal lord in Laaiplek. 1900: Stephan Bros. was the largest fishing and trading concern in S.A. But it declined slowly thereafter.

STUBBS, JACK

1920: joined his father's firm, Stubbs' Fisheries. 1938: packing frozen rock lobster tails at Cape Town docks. Visited U.S. to find out why S.A. rock lobster was often rejected by health authorities there. But was virtually put stop to export of frozen tails. 1944: gave evidence before Select Committee on Fishing Industry Development Bill. 1947: formed S.A. Sea Products, group which included Trans-Africa Fisheries, Trautmann Bros., and Duikersklip Fisheries. F.D.C. took $\frac{1}{4}$ share. Modern freezing,

smoking, and reduction plants built at Hout Bay. 1947: Hout Bay C.C. joined S.A. Sea Products. Sea Products increased its capital to £250 000, took over Stubbs' Fisheries, invested in other companies, financed big fishing developments at Hout Bay. 1947: Stubbs and S.A. Sea Products persuaded rock lobster canners to co-operate and form S.A. Frozen Rock Lobster Packers (SAFROC), central selling organisation for whole S.A. rock lobster industry. New York attorney appointed SAFROC's representative in New York.

1949: Stubbs-Gaggins alliance. Sea Products and Lambert's Bay exchanged shares and directorships. 1952: Stubbs-Gaggins dispute. Seafare and S.A. Sea Products disentangled. Seafare sold its S.W.A. shares; Stubbs formed Sea Products S.W.A. to take them over.

1956: Stubbs helped form Federal Fish Packers, a central selling organisation. Originally it included United Fish Canners, S.A. Sea Products, and Swafil. In 1957, when Stubbs gained control of Seafare, Seafare joined as well. Other firms which were not members of Federal Fish Packers nevertheless signed the marketing agreement.

1957: Stubbs formed Oceana Group. This came about as follows: in 1954 there had been three big shoal fishing groups in S.A. - (1) Seafare and the Lambert's Bay C.C. under Gaggins; (2) S.A. Sea Products and Sea Products S.W.A. under Stubbs; (3) United Fish Canners, controlled by Tiger Oats and South Atlantic Corp., a holding company for I. & J. In January 1955 Gaggins had sold Seafare shares to South Atlantic Corp. In February 1955 Sea Products had bought Tiger Oats' holdings in United Fish, so that Stubbs now controlled United Fish. In 1957 South Atlantic Corp. sold its Seafare shares to United Fish. In this way Stubbs gained control of Seafare, and could begin a major re-organisation of the S.A. fishing industry, since Seafare was the holding company for Lambert's Bay C.C. Stubbs formed the Oceana Group, basically a combination of Seafare, Lambert's Bay C.C., S.A. Sea Products, Sea Products S.W.A., and United Fish. Stubbs became group chairman. Gaggins resigned.

1958: Stubbs and A.P. du Preez launched Da Gama

Fishing Industries at Hout Bay. Stubbs chairman, du Preez managing director. 1959: the Cape Times reported: "Good fish and lobster catches have combined to make the re-organisation of the Oceana group of fishing companies a double success."
1959: Stubbs retired.

T A B L E S

- I Catches of inshore fishermen, 1961-70.
(Source: the Du Plessis report)
- II Catches of deep-sea trawlers, 1961-70.
(Source: the Du Plessis report)
- III Rock lobster products and quotas, 1924-74.
(Figures extracted from "Assessment and Management of some marine stocks in Southern Africa" by Garth Newman, Division of Sea Fisheries and Zoological Institute of the University of Stellenbosch, Jan., 1972).
- IV Catches of shoal fish, 1959-73.
(Source: reports of the Division of Sea Fisheries).
- V Shoal fish production, Republic and S.W.A., 1961-70.
(Source: the Du Plessis report, Table A-2).
- VI Catch per unit of effort, hake, Cape Division, 1940-72.
(Source: Report of the International Commission for South East Atlantic Fisheries, Madrid, 1973).
- VII Catches by foreign vessels off South Africa, 1965-72.
(Source: F.A.O. Year Book of Fishery Statistics - catches & landings, Vol.34, 1972).
- VIII Food prices in South Africa, 1938-70.
(From official figures, as shown on the table).
- IX Hake prices in South Africa, 1945-71.
(From official figures, as shown on the table).
- X Prices of South African canned pilchard, 1960-71.
(From official figures, as shown on table).
- XA Graphical comparison of South African fish and food prices, 1945-70.
(Source: as for tables VIII, IX and X)

- XI Trawlermen's Wages in 1943.
(Source: Select Committee on the Fishing Industry Development Bill - SC 4-44 - page 224).
- XII Some bodies controlling or assisting the Fishing Industry.
(Source: the Du Plessis report).
- XIII Fish catches of selected nations, 1938-70.
(Source: F.A.O. Year Book of Fishery Statistics - Catches & Landings - Vol.30, 1970, Table A01).
- XIV Trading account of a rock lobster business.
- XV Profit and loss account of a rock lobster business.
- XVI Balance sheet of a rock lobster business.
- XVII Fixed assets of a rock lobster business.
- XVIII Fishermens' earnings in a rock lobster business.

TABLE I

CATCHES OF INSHORE FISHERIES IN THE REPUBLIC AND S.W.A. IN THOUSANDS
OF METRIC TONS

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
SNOEK	11.0	10.6	10.2	9.1	12.9	12.3	11.8	12.0	8.3	5.4
SHARK	2.3	2.3	2.3	2.3	0.5	0.7	0.8	0.2	0.2	0.2
OTHER	16.3	14.5	14.5	17.6	18.0	20.0	20.0	20.0	20.0	20.0
TOTAL	29.6	27.4	27.0	29.0	31.4	33.0	32.6	32.2	28.5	25.6

TABLE II

CATCHES OF DEEP-SEA TRAWLERS OFF THE REPUBLIC AND S.W.A. : IN THOUSANDS OF
METRIC TONS

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
HAKE	73.5	71.5	70.2	71.1	69.0	85.8	80.3	79.8	70.1	66.8
OTHER	41.1	36.3	30.7	35.7	34.3	40.3	45.1	38.0	36.7	37.8
TOTAL	114.6	107.8	103.9	106.8	103.3	126.1	125.4	117.8	106.8	104.6

TABLE III

PRODUCTION AND QUOTA FIGURES, ROCK LOBSTER, W. CAPE, IN MILLIONS OF LB.

	CANNED	FROZEN	TOTAL	QUOTA
1924	3.6	-	3.6	-
1930	4.7	0.2	4.9	-
1940	3.5	2.3	5.8	-
1944	1.7	0.1	1.7	-
1949-50	3.4	3.1	6.5	6.9 ⁽¹⁾
1952-3	3.7	3.7	7.4	7.3
1953-4	3.7	3.7	7.4	7.3
54-5	2.9	4.2	7.1	7.3
55-6	1.1	6.1	7.2	7.3
56-7	0.4	5.0	5.4	7.3
57-8	0.1	4.4	4.4	7.4
58-9	0.1	7.3	7.3	7.4
59-60	0.1	7.3	7.4	7.4
61-2	0.1	6.7	6.7	6.7
62-3	0.1	6.9	6.9	6.9
63-4	0.1	6.9 ⁽²⁾	6.9	6.9
64-5	0.1	6.9	6.9	6.9
65-6	-	6.1	6.1	6.9
66-7	-	4.7	4.7	6.9
67-8	-	4.1	4.1	6.9
68-9	-	1.1	1.1	5.2
69-70	-	3.9	3.9	5.6
70-1	-	3.7	3.7	3.5
71-2	-	3.5	3.5	3.5
72-3	-	3.7	3.7	3.7
73-4	-	3.8	3.8	3.8

(1) The quota - of 5.9 m. - had first been imposed in the 1946-47 season.

(2) Whole frozen rock lobster included from this date.

TABLE IV
SHOAL FISH - REPUBLIC OF S. AFRICA - 1959 - 1973

YEAR	PILCHARD Ct. (Tons)	MAASBANKER Ct. (Tons)	ANCHOVY Ct. (Tons)	MACKEREL Ct. (Tons)	TOTAL Catch (Tons)	QUOTA
1959	286,796	19,484	-	36,473	342,753	250,000 ⁽¹⁾
1960	350,361	70,970	-	32,055	483,386	250,000
1961	443,476	42,920	-	57,760	544,156	-
1962	452,382	73,211	-	22,293	547,886	-
1963	430,690	25,539	383	14,522	471,164	-
1964	283,018	26,986	105,922	55,367	471,293	-
- 20,2 1965	225,819	61,019	195,871	43,506	526,215	-
- 44,3 1966	125,845	29,571	172,867	61,235	394,548	-
- 35,7 1967	80,963	9,427	304,060	153,071	561,494	-
+ 21,9 1968	103,728	1,453	187,165	99,325	406,557	-
- 48,4 1969	53,552	28,409	188,761	102,344	387,180	-
- 15,5 1970	45,260	?	236,680	85,694	399,222	-
1971	71,838	1,767	203,741	59,832	355,753	400,000
1972	68,456	1,058	308,859	61,206	478,422	400,000
1973	41,861	257	283,489	50,313	451,415	400,000

(1) The quota was often exceeded. This was because fishing was allowed to continue to August 31 each year, irrespective of whether the quota had been reached or not.

TABLE V: SHOAL FISH PRODUCTION: RSA AND SWA, 1961 - 70

Production - in thousands of metric tons

Year	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Fishmeal	178.9	203.8	238.2	252.5	267.8	261.1	344.4	486.3	418.6	236.4
Fish oil	58.9	58.9	47.5	69.4	58.7	50.3	65.3	123.5	100.6	65.9
Canned Pilchard	71.5	67.2	36.8	58.2	64.5	67.3	74.3	54.2	51.6	51.1
Total	323.3	342.3	326.0	388.4	400.1	384.5	487.7	668.5	576.6	356.5

Value of product - in thousands of Rand

Year	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Fishmeal	10 661	15 642	19 807	22 821	33 993	35 992	36 083	37 557	31 809	24 737
Fish oil	5 261	4 442	3 770	8 234	7 794	7 103	6 479	7 222	6 107	8 401
Canned Pilchard	15 620	13 440	7 335	10 319	13 880	14 495	17 800	8 409	9 614	12 407
Total	31 542	33 524	30 912	41 374	55 667	57 590	60 363	53 188	47 440	45 545

TABLE VI

CATCHES OF HAKE AND EFFORT STATISTICS IN THE CAPE OF GOOD HOPE

DIVISION⁺ 1940 - 1972

YEAR	TOTAL CATCH ⁺	C.P.U.E. ⁺ (S. AFRICA)	TOTAL EFFORT	TOTAL EFFORT : AVERAGE OF 2 PREVIOUS YRS.
1940-47	26	14.20	1,831	-
1955	83	12.45	6,667	-
1956	85	11.25	7,556	-
1957	91	11.85	7,679	7,111
1958	94	11.70	8,034	7,618
1959	105	11.70	8,889	7,857
1960	115	12.45	9,237	8,462
1961	107	8.70	12,229	9,063
1962	107	10.20	10,490	10,768
1963	127	10.05	12,673	11,395
1964	123	10.50	11,714	11,564
1965	168	7.80	21,538	12,176
1966	156	7.65	20,392	16,626
1967	146	7.20	20,278	20,965
1968	109	7.20	15,139	20,335
1969	135	6.20	21,774	17,709
1970	124	5.20	23,864	18,457
1971	189	5.10	37,059	22,810
1972	195	4.90	39,796	30,453

⁺ Catch is shown in 1,000 metric tons. Effort is calculated in standard trawler days. The Cape of Good Hope division is bounded by latitudes 30 S. and 40 S, and longitudes 10 E and 20 E.

TABLE VII

CATCHES BY FOREIGN VESSELS OFF SOUTH AFRICA, 1965-72+

YEAR	1965	1966	1967	1968	1969	1970	1971	1972
TOTAL CATCH	2,210	2,370	2,630	3,290	3,060	2,460	2,430	2,930
S.AFRICAN CATCH	1,236	1,249	1,580	2,041	1,787	1,208	1,161	1,113
FOREIGN CATCH	974	1,121	1,050	1,249	1,263	1,252	1,269	1,817

+ The area referred to is F.A.O. fishing area 47, which is bounded by the south west coast of Africa, and by the degrees of latitude 6S and 50S, and the degrees longitude 20W and 30E. Catches are shown in thousands of metric tons.

TABLE VIII : SOUTH AFRICAN FOOD PRICES, 1930-1970.

Index numbers of retail food prices : weighted averages for 9 urban areas.

Yr.	A	B	C	Yr.	A	B	C	Yr.	A	B	C
1930	102.4			48	156.8			60	262	102	
33	91.7			49	161.2			61	267	104.1	78.6
38	100			50	170.5	66.3		62	263	103.5	78.2
39	99.3			51	182	70.9		63	269	104.6	79
40	-			52	214	83.2		64	281		82.6
41	109.9			53	225	87.7		65	298		87.5
42	121.1			54	227	88.5		66	309		90.7
43	131.6			55	235	91.3		67	320		93.9
44	137.4			56	239	93.1		68	325		95.4
45	140.6			57	248	96.4		69	330		96.9
46	144.1			58	257	100		70	344		100
47	152.2			59	258	100.3		71			

Three different sets of figures - for 1930-1950, for 1950-1963, and for 1961-1970 - have been here combined to show changes in retail food prices between 1930 and 1970. The method used is more fully explained on page 179. The figures for Column A, up to and including 1950, are taken from the Year Book of the Union of South Africa, No. 26, p. 340; the figures in Column A after 1950 are obtained by scaling up the figures in Columns B and C. The figures in Column B are from the S.A. Statistical Year Book, 1964, page I-12, col. 179; and the figures in Column B are from South African Statistics, 1972, page H-20, Col. 396.

TABLE IX SOUTH AFRICAN
HAKE PRICES 1945-71

Yr	A	B	Yr	A	B	Yr	A	B
45	6.4		54	9.5		63	11.1	13.3
46	6.5		55	9.5		64	11.3	13.6
47	6.6		56	10.2		65	12.5	15.0
48	6.8		57	10.5		66	13.5	16.2
49	7.2		58	10.6		67	14.5	17.4
50	7.4		59	9.7		68	16.7	20.0
51	7.5		60	9.8		69	17.4	20.9
52	8.8		61	10.3	12.2	70	19.4*	
53	9.4		62	10.8	12.6	71	21.5	25.8

Col. A: Retail prices of unprepared hake in cents per lb. (weighted average for 9 urban areas). Source: the figures for 1945-63 are taken from the Statistical Year Book for the Republic of S. Africa, 1964, page I 8, Col. 80. The figures from 1963 onwards are obtained by scaling down the figures in col. B, in the ratio shown in the years 1961-3.

Col. B: Retail prices of prepared hake in cents per 500 gr (weighted average for 9 urban areas). Source: South African Statistics, 1972, page H 15, col 267.

* No figures are available for 1970. A figure mid-way between the figures for 1969 and 1971 has therefore been taken.

TABLE X: PRICE OF CANNED
PILCHARDS, 1960-1971

Retail prices in cents per 454 gr.

Yr	Price	Yr	Price
1960	14.9	66	14.4
61	15.0	67	15.3
62	15.0	68	15.6
63	14.5	69	15.6
64	14.7	70	16.2 *
65	14.4	71	16.8

The prices are weighted averages for 9 urban areas. Source: S.A. Statistical Year Book for 1964, page I 8, col. 84, and S. African Statistics, 1972, page H15, col. 270.

* No figures are available for 1970; a figure midway between the 1969 and 1971 figures has therefore been taken.

On the next page there is a graphical comparison of the prices shown in Tables VIII, IX, and X.

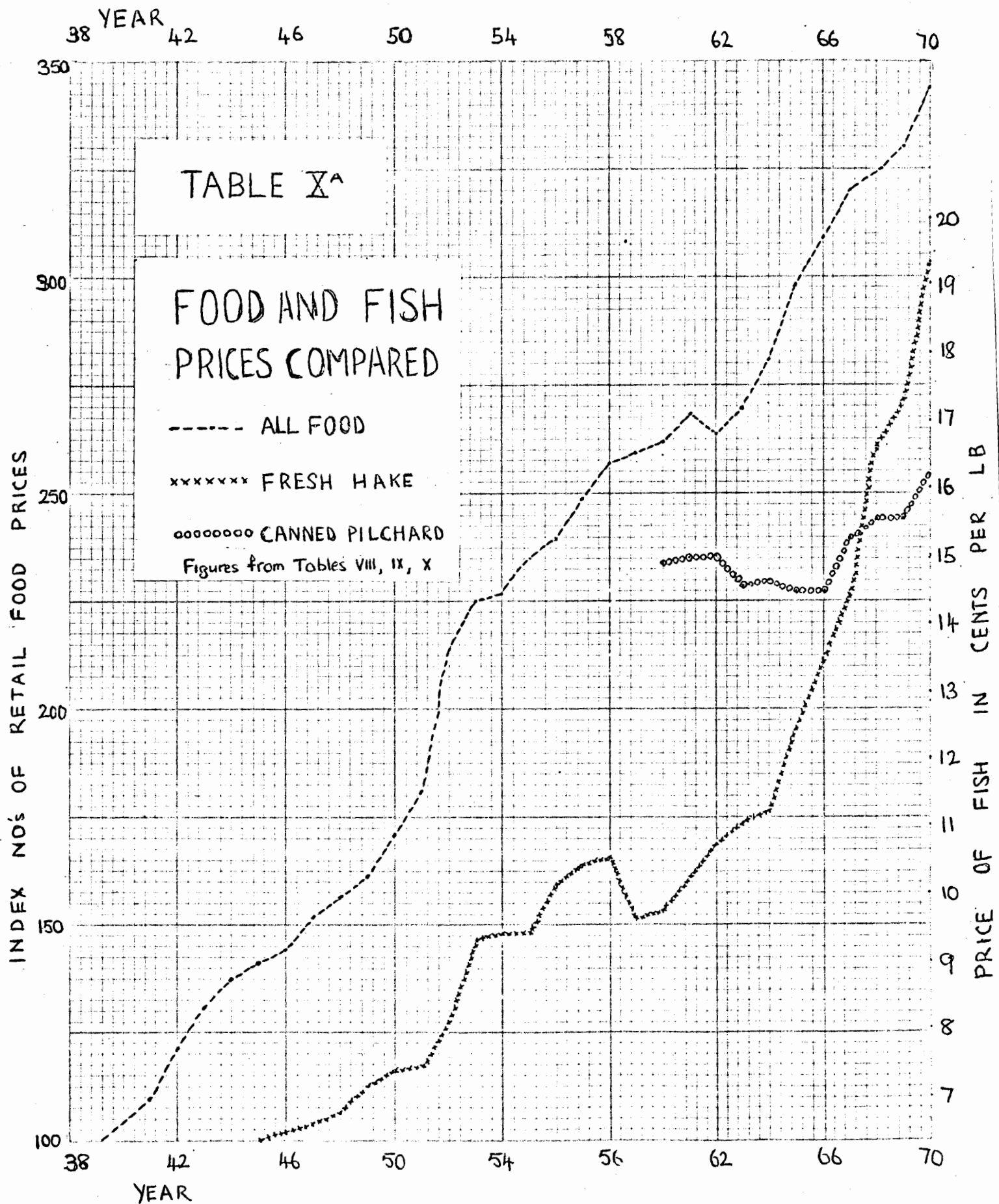


TABLE XI TRAWLERS' WAGES, 1943

Average earnings of trawler ratings, year ended
31 Dec. 1943.

CAPE FISHING GROUNDS	NORTH	EAST
SKIPPER	£ 983	£ 729
MATE	669	473
BOSUN	506	331
DECK HAND	431	291
SPARE HAND	315	249
APPRENTICE	196	179
COOK	317	289
CABIN BOY	157	146
CHIEF ENGINEER	528	474
SECOND ENGINEER	372	345
FIREMAN	301	272
TRIMMER	270	245

The figures include the value of food supplied.

TABLE XII : BODIES CONTROLLING THE FISHING INDUSTRY

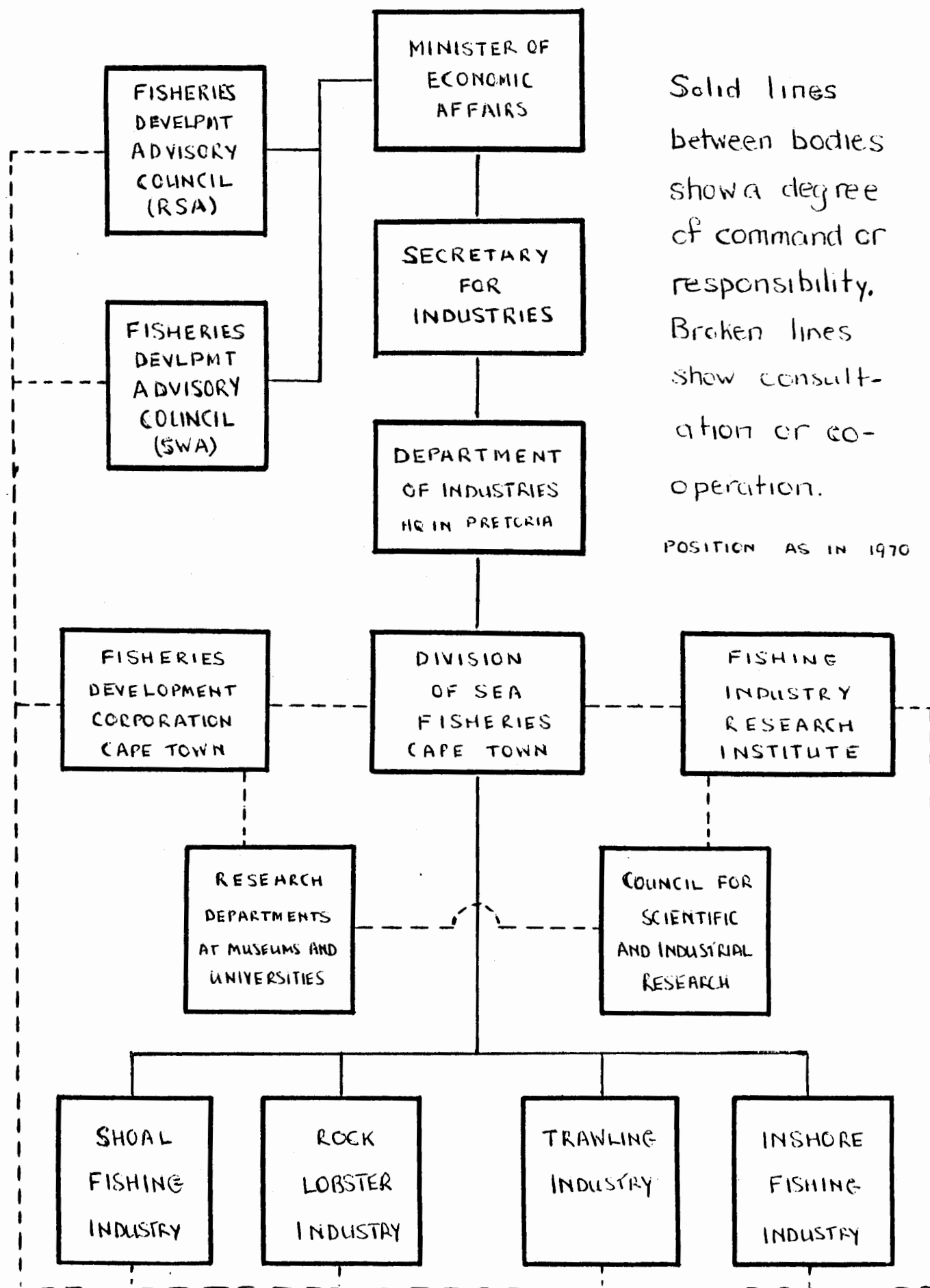


TABLE XIII

FISH CATCHES OF SELECTED NATIONS, 1938-1970

Nominal catches in 1,000 metric tons

Year	1938	1948	1958	1962	1966	1968	1970
World	21 000	19 600	33 300	47 100	57 500	64 300	69 300
Angola	26	113	278	269	330	297	368
Canada	837	1 053	1 008	1 124	1 346	1 499	1 378
Denmark	97	226	598	785	851	1 467	1 227
Japan	3 678	2 581	5 505	6 867	7 104	8 670	9 309
Norway	1 128	1 422	1 442	1 332	2 865	2 801	2 980
Peru	23	84	1 128	7 164	8 845	10 556	12 613
Portugal	247	292	466	527	506	506	498
S. Africa	67	184	652	1 054	1 197	2 028	1 519
Namibia *	2	5	4	7	92	90	87
Spain	409	547	845	1 108	1 363	1 515	1 497
Thailand	161	161	193	340	708	1 089	1 595
U.K.	1 198	1 206	999	944	1 069	1 040	1 099
USA.	2 260	2 417	2 703	2 973	2 523	2 437	2 714
USSR	1 523	1 484	2 621	3 617	5 349	6 028	7 252

* Namibia is the F.A.O.'s name for S.W. Africa. But the areas covered are not identical; and the greater part of what S. African statisticians would call the S.W.A. catch is included by the F.A.O. in the South African catch.

TABLE XIV

ROCK LOBSTER BUSINESS: TRADING ACCOUNT FOR THE YEAR ENDED 30 JUNE 1971

1970				1970			
R		R c	R c	R		R c	R c
11,072	Rock lobster - wages		10,839.50	14,468	Sales: Rock lobster - live	19,077.75	
1,078	Rock lobster - bonus		906.50	25,523	Sales: Rock lobster - dead	<u>22,344.06</u>	41,421.81
3,371	Bait purchases		3,962.97				
879	Fishing gear		767.46				
258	Boats-gear and equipment		288.84				
758	Outboard motor running expenses		746.77				
156	Maintenance of boats		143.47				
508	Maintenance of outboard motors		731.55				
8	Cold storage and pumping plant: running expenses		---				
751	Electricity		639.15				
113	Maintenance of cold storage plant		---				
195	Maintenance of pumping and lighting plant		369.59				
369	Motor Vehicle running expense		442.87				
752	Maintenance of motor vehicles		942.03				
422	Maintenance of buildings		236.08				
884	Wages		926.00				
69	Sundry labour		94.85				
254	Fishermen's recruiting & tuition		257.90				
333	Rations & expenses - Fishermen		301.26				
897	Train & bus fares - fishermen		1,026.85				
792	Compound administration exp.		906.33				
284	Bantu registration fees		258.94				
385	Insurance		387.70				
674	Rent, Rates & Water - Fishing sites		651.00				
31	Bags		31.24				

1970	Depreciation		1970	
825	Buildings	781.00		
5	Water tanks	4.00		
121	Cold storage plant and machinery	113.00		
138	Pumping plant and machinery	114.25		
62	Lighting plant & machinery	15.00		
16	Electrical installation	47.00		
1,259	Motor Vehicles	839.00		
4	Trailer	4.00		
216	Dinghies	172.00		
226	Outboard motors	215.46		
3	Compressor motor	3.00		
2	Diving equipment	2.00		
9	Loose tools	7.00		
36	Sundry equipment	32.00		
50	Furniture	47.50		
8	Office equipment	<u>7.00</u>	2,403.21	
11,718	Gross trading profit transferred to profit and loss account		<u>13,177.75</u>	
39,991		<u>41,421.81</u>	<u>39,991</u>	<u>41,421.81</u>

TABLE XV

ROCK LOBSTER BUSINESS : PROFIT AND LOSS ACCOUNT FOR YEAR ENDED 30 JUNE 1971.

<u>1970</u>				<u>1970</u>			
R		R	c	R		R	c
1,299	Interest paid, less received		730.80	11,718	Gross trading profit transferred from trading a/c		13,177.75
117	Bank charges		121.25				
107	General expenses		141.27				
180	Office rent		180.00				
54	Travelling and entertainment		50.00				
248	Licences		254.00				
17	Stationery		21.61				
162	Telephone, telegrams, postage		211.64				
91	Fixed assets sold and scrapped		218.00				
9,443	Net trading profit carried down		11,249.18				
11,718			13,177.75	<u>11,718</u>		<u>13,177.75</u>	
				9,443	Net trading profit brought down		11,249.18
	Provision for income tax : 1971	2,000.00		3,872	Dividend received - OSWA Investment Ltd.		3,528.17
1,592	Less: amount over, provided for 1971	216.02	1,783.98				
11,723	Net Profit for year transferred to balance sheet		<u>12,993.37</u>	<u>13,315</u>		<u>14,777.35</u>	
13,315			14,777.35				

TABLE XVI

ROCK LOBSTER BUSINESS : BALANCE SHEET AS AT 30 JUNE 1971.

1970		R	c	1970		R	c
R				R			
	<u>Current Liabilities</u>				<u>Current Assets</u>		
508	Sundry creditors	985.39		2,111	Stock on hand	1,982.36	
1,600	Provision for Income tax	2,000.00		219	Advances to fishermen	62.00	
6,210	Loan a/c S.J.Levin(Pty)Ltd	-		230	Deposits	230.00	2,274.36
1,305	Bank overdraft	2,445.64	5,881.03		<u>Intangible Assets</u>		
	<u>Long Term Liabilities</u>			244	Prepaid expenses		327.00
14,400	1st Mortgage Bonds on Residential lands and buildings - Natal Bld.Soc.	13,967.00			<u>Investments</u>		
4,780	- ditto - SANTAM	-	13,967.00	14,800	16,092 Ordinary shares in Owenstone SWA Investments Ltd	14,800.00	
	<u>Capital account</u>			1	Bekbaai Pty.Ltd.1 Ordinary share	1.00	
	61,942 Balance at 30.6.70	66,587.69		926	" " " Capital loan	926.08	
	add:inheritance	200.18		500	2 Debentures - WP Rugby Football Union	500.00	16,227.08
	:Nett profit				(OSWIL Market value,30.6.71 - R28,160)		
	11,723 for year	12,993.37			<u>Fixed Assets, Less Depreciation</u>		
	73,665	79,781.24		52,079	Residential land and buildings (Mortgaged as per contra)	52,079.00	
66,588	7,077 less: drawings	6,626.83	73,154.41	14,981	Factory buildings and Bantu compound	14,200.00	
				44	Water tanks	40.00	
95,391			92,502.44	1,127	Cold Storage plant and machinery	1,014.00	
				1,301	Pumping plant and machinery	1,044.00	
				555	Lighting plant	140.00	
				439	Electrical installations	446.00	
				2,518	Motor Vehicles	1,679.00	
				18	Trailer	14.00	
				862	Dinghies	690.00	
				1,030	Outboard motors	1,012.00	
				35	Compressor motor & diving equipment	30.00	
				36	Loose tools	29.00	
				322	Sundry equipment	290.00	
				944	Furniture	905.00	
				69	Office equipment	62.00	73,674.00
				95,391			92,502.44

TABLE XVII

ROCK LOBSTER BUSINESS : FIXED ASSETS, AT COST, LESS DEPRECIATION TO 30.6. 1971.

	<u>Cost</u>	<u>Aggregate Depreciation</u>	<u>Book Value 30.6.71</u>
1 Residential land and buildings	52,079.00	-	52,079
2 Corrugated iron buildings	1,512.67	937.67	575
3 Rock lobster tank buildings	11,544.25	2,694.25	8,850
4 Compound buildings	6,178.88	1,395.88	4,775
5 Water tanks and attachments	92.52	52.52	40
6 Cold storage plant and machinery	2,235.17	1,221.17	1,014
7 Pumping plant and machinery	1,651.67	607.67	1,044
8 Lighting plant	225.60	85.60	140
9 Electrical installations	508.60	62.60	446
10 Motor vehicles	9,391.04	7,712.04	1,679
11 Trailer	101.75	87.75	14
12 Dinghies	4,177.23	3,487.23	690
13 Outboard motors	2,483.70	1,471.70	1,012
14 Compressor motor	113.50	102.50	11
15 Diving equipment	60.99	41.99	19
16 Loose tools	123.96	94.96	29
17 Sundry equipment	576.99	286.99	290
18 Furniture	1,206.36	301.36	905
19 Office equipment	98.00	36.00	62
	94,353.88	20,679.88	73,674

TABLE XVIII

ROCK LOBSTER BUSINESS: FISHERMENS' EARNINGS : NOVEMBER 1970 - APRIL 1971

	Nov		Dec		Jan		Total		Posn	Feb		Mar		Apr		Tot..No/Ap		Posn	Bonus	1c	Basic	Ret.	Total
																				ea	Pay	Bonus	Pay*
1 Bennett	65	32	39	04	32	20	136	56	5	28	48	30	16	42	40	237	60	5	59	40	26	50	373
2 Nompetshehi	63	32	38	28	32	20	133	80	6	28	48	30	16	42	64	235	08	6	58	77	26	50	370
3 Xazelini	78	80	54	16	44	40	177	36	1	32	20	37	36	41	64	288	56	1	72	14	26	50	437
4 Maqola	78	36	54	16	44	40	176	92	2	32	20	37	36	41	64	288	12	2	72	03	26	50	436
5 Msitelwa	51	92	54	96	25	56	132	44	7	21	76	19	48	35	72	209	40	7	52	35	26	45	333
6 Guzwana	51	16	54	96	25	56	131	68	8	21	76	19	64	35	68	208	76	8	52	19	26	45	332
7 Sithembale	72	24	51	12	27	44	150	80	3	28	28	41	52	35	96	256	56	4	64	14	26	50	397
8 Zwelendaba	72	04	50	72	27	52	150	28	4	29	04	41	52	35	96	256	80	3	64	20	26	50	397
9 Dinibango	35	48	23	56	1	84	60	88	40	6	00	19	80	20	08	106	76	36	26	69	26	40	199
10 Qelana	35	48	23	56	10	64	69	68	34	11	80	14	18	20	16	115	72	32	28	93	26		171
11 Griffiths	53	36	48	20	14	96	116	52	9	15	40	18	76	28	44	179	12	9	44	78	26	45	295
12 Valuhlango	53	36	46	68	15	36	115	40	10	13	40	18	80	27	88	175	48	11	43	87	26		245
13 Hewli	45	52	22	76	18	52	86	80	15	15	32	21	60	23	68	147	40	16	36	85	26	35	245
14 Fumbatha	36	68	31	00	18	12	85	80	16	19	44	19	24	21	48	145	96	17	36	49	26	35	242
15 Vakele	34	56	32	12	18	12	84	80	17	19	28	19	24	21	04	144	36	18	36	09	26		206
16 Makwenkwa	39	52	29	16	30	32	99	00	12	18	56	21	20	25	60	164	36	12	41	09	26	30	261
17 Nkebe	34	04	28	04	25	80	87	88	14	7	04	9	28	18	72	122	92	30	30	73	26		180
18 Mnyentoa	33	40	27	52	12	32	73	24	23	13	04	21	16	26	84	134	28	23	33	57	26	35	229
19 Mpikelwa	33	40	26	20	12	44	72	04	26	10	00	21	16	25	88	129	08	28	2	27	26		187
20 Ntyilontyko	50	48	29	72	22	04	102	24	11	18	56	18	88	36	00	175	68	10	43	92	26	30	276
21 Myekeni	44	04	31	28	22	04	97	36	13	18	56	18	88	22	24	157	04	13	39	26	26		222
22 Kongilasi	34	44	22	00	14	80	71	24	30	8	16	13	48	16	84	109	72	34	27	43	26	15	178
23 Kadula	34	32	22	00	15	00	71	32	29	8	16	13	44	18	36	111	28	33	27	82	26		165
24 Sikenkelele	30	08	25	68	20	04	75	80	19	15	96	15	08	29	04	135	88	21	33	97	26	35	231
25 Mboweni	30	08	24	84	20	16	75	08	21	17	80	15	12	29	04	137	04	20	34	26	26		197
26 Kolakela	21	16	12	72	-	-	33	88	52	-	-	-	-	-	-	33	88	54	8	47	8	25	75
27 Greyton	24	20	13	28	9	96	47	44	46	12	56	11	92	13	72	85	64	45	21	41	26		133
28 Flurile	31	28	20	52	11	32	63	12	38	12	40	14	48	13	56	103	56	39	25	89	26	20	175
29 Magqesha	25	84	10	24	10	32	46	40	47	8	68	13	04	18	28	86	40	44	21	06	26		133
30 Mfuhiswa	29	48	21	16	16	48	67	12	36	6	44	9	40	19	16	102	12	39	25	53	26	8	162
31 Mantane	29	48	21	08	21	00	71	56	28	18	64	21	20	19	60	131	00	29	32	75	26		190
32 Nokwedine	28	20	21	48	15	44	65	12	37	11	28	10	64	16	36	103	40	38	25	85	26	10	166
33 Ndabazitetwa	26	52	12	28	10	92	49	72	44	6	48	10	08	23	16	89	44	43	22	36	26		138
Carried fwd:	1407	56	1024	48	647	24	3079	28	--	535	16	647	16	846	80	5108	40		1277	10			

	Nov		Dec		Jan		Total		Posn	Feb		March		April		Tot.No/Ap		Posn	Bonus		Basic	Ret.	Total
																				Pay	Bonus	Pay	Pay
Brought f.w.d.	1407	56	1024	48	647	24	3079	28		535	16	674	16	846	80	5108	40		1277	10			
34 Wilfred	20	08	15	36	9	88	45	32	48	7	48	12	80	11	92	77	52	47	19	38	26		123
35 Sobobile	20	20	13	44	8	28	41	92	50	5	80	10	56	12	04	70	32	51	17	58	26		114
36 Mtembeni	28	24	28	48	13	72	70	44	33	18	00	30	16	37	04	155	64	14	38	91	26		220
37 Nkowane	27	80	27	84	13	72	69	36	35	17	24	30	04	37	28	153	92	15	38	48	26		219
38 Christopher	22	32	26	72	21	80	70	84	32	16	12	11	12	25	12	123	20	29	30	80	26		180
39 Winile	24	32	25	24	21	40	70	96	31	16	12	11	12	25	00	123	20	29	30	80	26		180
40 Siyana	21	68	14	28	14	44	50	40	43	9	28	19	96	25	00	97	64	41	24	41	26		148
41 Dilizinjaba	23	32	15	28	9	44	48	04	45	6	16	10	00	11	52	75	72	48	18	93	26		121
42 Langa	27	48	23	32	21	16	71	96	27	15	72	22	24	21	12	131	04	26	32	76	26		190
43 Alton	28	56	23	32	21	16	73	04	24	15	72	22	24	24	84	135	84	22	33	96	26		196
44 Samson	28	72	21	68	10	72	61	12	39	7	96	9	44	15	80	94	32	42	23	58	26		144
45 Nelson	32	44	24	64	15	20	72	28	25	8	48	11	60	23	60	115	96	31	28	99	26		171
46 Zandisile	40	04	19	80	18	52	78	36	18	15	32	21	16	18	16	133	00	24	33	25	26		192
47 Pakama	30	04	22	28	23	40	75	72	20	8	40	18	60	29	36	132	08	25	33	02	26		191
48 Private	19	04	21	96	11	60	52	60	42	6	64	10	40	15	80	85	44	46	21	36	26		133
49 Mtshetsheshi	20	60	24	64	15	20	60	44	41	11	20	14	12	33	60	109	36	35	27	34	26		163
50 Wilson	28	32	23	04	22	04	73	40	22	16	92	23	68	29	04	143	04	19	35	76	26	40	245
51 Songelapi	7	36	21	48	15	44	44	28	49	11	28	10	96	34	88	101	40	40	25	35	26		152
52 Kenke	7	63	12	28	10	84	31	00	53	6	92	10	24	24	88	73	04	50	18	26	26		117
53 Douglas	3	00	6	04	7	32	16	36	57	7	16	13	64	15	20	52	36	54	13	09	26		91
54 Amos	6	32	12	76	9	44	28	52	55	6	12	10	04	11	40	56	08	53	14	02	26		96
55 Bevan	1	68	24	00	10	68	36	36	51	7	80	14	32	16	72	75	20	49	18	80	26		120
56 Aron	---	---	14	64	14	44	29	08	54	---	---	---	---	---	---	29	08	55	7	27	8		44
57 Thansabantu	---	---	10	68	10	24	20	92	56	11	64	14	32	20	60	67	48	52	16	87	22		106
58 Winnus shore																			25	50			597
59 George shore	13	80	6	16	7	80	27	76		0	16	11	40	19	36	58	68		14	67	26	50	562
	1890	80	1503	84	1005	12	4399	76		788	80	1014	32	1376	08	7578	96		1894	74			

*But ignoring fares,
travelling expenses,
recruiting bonus, or
tuition fees.

THIRTY-NINTH SCHEDULE BANTU
LABOUR ACT 1964 : APPLICATION
FOR LABOUR

50c. Revenue Stamp (when
a Power of Attorney is
required).

P A R T "A"

The Municipal/District Labour Officer,

.....

1. PARTICULARS OF APPLICANT

I, the undersigned, hereby apply for Bantu labour and submit the following particulars :-

- a) Full name of applicant :
- b) Address :
- c) Telephone Number :
- d) Railway Station where Bantu will be met :

2. PARTICULARS OF VACANCY

Nature of Vacancy :	Ethnic Group (e.g. Sotho, Zulu, Xhosa, Vanda Shangaan etc.) and district from which labour is required.	Number required for each type of vacancy	Period for which labour is required
Rock Lobster (Kreef) catchers			 Months from to subject to renewal by mutual agreement for a further period not exceeding the Authorised Rock Lobster Fishing Season.
	Under 18 years/above 18 years		
	from : to :		

Names and Addresses of Persons previously so employed and whom it is desired to re-employ (if available)

.....
.....
.....
.....
.....
.....
.....

3. PARTICULARS AND CONDITIONS OF EMPLOYMENT

i) Remuneration

Each Bantu is allocated as a member of the two-man crew of a dinghy, with a specific registration number. Payment is based exclusively on the number of kreef legally caught and landed by such two-man crew and is divided equally between them in accordance with the following :-

Each Member of the crew is allocated 7½ cents for every kreef landed that complies with the legal requirements (i.e. not in berry, soft-shelled, undersized, etc., as these must be returned to the sea). In addition, a further one cent per kreef, for catches in which he has a share, will be paid to each crew member upon completion of the full contract period.

OR

Where the practice of the firm is to pay by weight of the catch, each member of the crew is allocated 15½ cents per kilogram of whole kreef (excluding illegal kreef) in which he has a share at the end of the pay-week concerned. In addition, a further 2 cents per kilogram of such whole kreef will be paid to each crew member upon completion of the full contract period.

ii) The Employer undertakes that, if so requested by any Bantu Rock Lobster catcher, he will advance up to R1-00 per week during the Contract period, which will be recoverable from future earnings.

iii) Hours of Work

Because opportunities for fishing are entirely dependent on weather and sea conditions, there are no set hours of employment and no prescribed holidays or days of rest.

iv) Accommodation

Suitable accommodation is provided by the Employer against payment by the Worker of a sum equivalent to one cent per kreef or 2 cents per kilogram of whole kreef whichever basis is utilised for the calculation of his normal earnings. Payment will be effected by direct deduction from earnings at the end of each pay day week.

v) Injury/Disablement

For the period of the Contract the Employer shall provide free medical attention to a maximum of R200-00 per Bantu Worker in respect of all injuries sustained at sea and/or arising out of and in the course of authorised employment.

In the case of death or permanent total disablement (District Surgeon's Certificate required) whilst at sea or arising out of and in the course of authorised employment, the Employer shall pay to the next-of-kin of the deceased (or to the disabled worker) the sum of R500-00.

vi) Use of Facilities and Bait

The Employer shall provide for the use of each two-man crew, a dinghy and nets free of charge and shall likewise at his own expense provide bait.

vii) Rail Fares

The Employer shall bear the rail costs both between the Homelands and his Factory or Works and back to the Homelands upon completion of the Contract period (or earlier with Employer's consent) or he may make alternative transport arrangements satisfactory to the Bantu Affairs Commissioner also at his own expense.

viii) All legally caught kreef are the sole property of the Employer and may not be sold or otherwise disposed of and shall be landed only at such points as directed by the Employer.

4. GENERAL

(a) I hereby deposit an amount of R
with the Bantu Affairs Commissioner/Magistrate at
(place) which should be utilised as follows :-

- (i) Conductor's Fees - R..... (not recoverable)
- (ii) Runner's Fees - R..... (not recoverable)
- (iii) Rail Fares - R..... (recoverable)
- (iv) Rations - R..... (not recoverable)
- (v) Cash Advances - R..... (recoverable)
- (vi) Immigration Permits
(Foreign Bantu) - R..... (recoverable)
- (vii) Medical examination
fees - R..... (not recoverable)

- (b) I request that the Bantu be medically examined before departure by the district surgeon or another medical practitioner and certified suitable for the class of employment specified in paragraph 2 above - any costs thus incurred will be paid by me.
- (c) I request that at least one conductor for every ten Bantu/no conductors be appointed.
- (d) I realise that it is a condition of this application that no Government Department can be held liable in respect of Bantu who are found to be unsuitable for the work which they will be required to perform or who desert en route or afterwards and I undertake not to lodge a claim against any Government Department under any circumstances for any losses which I am caused to suffer either direct or indirect by Bantu who have entered into a contract of employment with me.
- (e) I hereby authorise any White officer of the Labour Bureau concerned to enter into and sign a written contract of employment with the Bantu in terms of this application for which purpose this authority shall be regarded as a special Power of Attorney; provided that such contract or service shall be duly attested by an attesting officer (not being the person who enters into and signs the contract on my behalf).
- (f) I undertake the meaning and effect of the aforementioned undertaking.

PLACE :

DATE :

.....
Applicant's Signature

PART "B" FOR SPECIAL USE ONLY

(In respect of labour required for
a prescribed area)

I, the Municipal Labour Officer of the local labour bureau of
hereby declare that every endeavour to fill the vacancies locally has
failed because

.....
I certify that there is no surplus of workseekers within my area of
jurisdiction.

The Bantu will be accommodated in the following manner -

APPROVED ACCOMMODATION - LICENCED PREMISES

REFERENCE NUMBER

PLACE

DATE

EMPLOYMENT OFFICER, LOCAL LABOUR BUREAU

PART "C"

I declare that an amount of R..... has been deposited at this Office
and that receipt No. dated has been issued
to the applicant. I have no objection to the supply of the labour and
declare that this district labour bureau has no work seekers available
to fill the vacancies.

REFERENCE NUMBER

EMPLOYMENT OFFICER, DISTRICT LABOUR
BUREAU OF

PART "D"

I declare that the necessary labour is not available within the area
of this regional labour bureau and that I am satisfied that it is
essential to produce the labour from some other area.

REFERENCE NUMBER

OFFICIAL DATE STAMP

REGIONAL EMPLOYMENT COMMISSIONER
FOR

N.B. This Form has to be completed in quintuple where the labour
is required in respect of a prescribed area.

REFERENCES

1. See, e.g. Ida Tarbell : History of the Standard Oil Co., (Heinemann, London, 1905).
2. See "Hudson's Bay Company, a Brief History" p. 47. (Published by the Hudson's Bay Co., from Hudson's Bay House, London, 1934).
3. For an example of these regulations, see "Regulation of the Common Fields of Wimeswould" in "English Economic History : Select Documents" (compiled by A.E. Bland, P.A. Brown, and R.H. Tawney) C. Bell and Sons, London, 1914, p.76.
4. E. Lipson : The Economic History of England (Adam and Charles Black, London, 1962) Vol. I, p. 81.
5. Paul Vinogradoff: The Growth of the Manor (George Allen and Col, London, 1911) P. 166.
6. J.A. Crutchfield : Economic Objectives in Fishery Management (in The Fisheries : Problems in Resource Management, edited by J.A. Crutchfield, University of Washington Press, Seattle, 1965).
7. J.A. Crutchfield : The Marine Fisheries : A Problem in International co-operation (American Economic Review, May, 1964, Vol. LIV, No. 3, p. 207).
8. The evidence is quoted by Michael Graham in "The Fish Gate", (Faber and Faber, London, 1943) Chapter XIII.
9. See the Report on the Commission of Enquiry into the Fishing Industry (R.P. 47/1972) paragraphs 2-12, from which much of the information in this section has been extracted. (This report, which will be mentioned frequently in this thesis, will be referred to simply as "the Du Plessis report," after the name of the chairman, Charl du Plessis).
10. Quoted in Michael Graham, op cit., p. 111
11. Figures and tables from E.S. Russell : The Overfishing Problem (Cambridge University Press, 1942) pp. 38-48.
12. Russell, op. cit., p. 42.
13. Op. cit., p. 46.
14. H.F. Taylor: Survey of the Marine Fisheries of North Carolina (Chapel Hill, 1951) (Quoted in H. Scott Gordon : "The Economic Theory of a Common Property Resource : The Fishery," in the Journal of Political Economy, April 1954).

15. W.L. Calderwood, in the Scottish Geographical Magazine, Feb. 1894 (quoted in the Cape Government Paper "Memorandum on the Development of Sea Fisheries G. 61-95).
16. See, for instance, Anthony Scott : Optimal Utilisation and Control of Fisheries in the Economics of Fisheries (F.A.O., Rome, 1957) pp. 42-64.
17. For a fuller discussion of this subject, see Robert Morgan: World Sea Fisheries (Methuen, London, 1956) especially Ch.IX.
18. Ralph Turvey in his introduction to 'The Economics of Fisheries' op.cit.
19. Morgan, op. cit., p. 7.
20. Du Plessis report, para. 12.
21. Ibid., para. 15
22. These figures, and others in this section, have been extracted from the Du Plessis report.
23. See C.F.J. Muller : Die Geskiedenis van die Visserij aan die Kaap tot oor die Middel van die Agtiende Eeu (Argrief Jaarboek vir S.A. Geskiedenis, 1942).
24. See H.M. Robertson : The Economic Development of the Cape under Van Riebeeck, pt.IV (South African Journal of Economics, Vol.13, No. 4, Dec. 1945, p. 247).
25. The Journal of Jan van Riebeeck, Vol. II, page 91 (A.A.Balkema, Cape Town and Amsterdam, 1954).
26. W. Wardlaw Thompson : The Sea Fisheries of the Cape Colony. (Maskew Miller, Cape Town, 1913) p. 38.
27. Peter Kolb: The Present State of the Cape of Good Hope. (Johnson Reprint, New York, 1968).
28. C.F.J. Muller, op. cit., p. 28.
29. South African Fish and Fishing, (Irvin & Johnson, Cape Town, 1963) p. 32.
30. W. Wardlaw Thompson, op. cit., p. 21.
31. South African Fish and Fishing, op. cit., p. 33

32. Letter from Dr H. Becker, M.D., attached to the Cape Government Memorandum of 1895 on the development of sea fisheries (G.61-95).
33. Cape Government : Fisheries Committee of 1892 (G.37-92)
34. G. 61-95, op. cit.
35. Board of Trade and Industries : Report No. 180 of 1935.
36. W. Wardlaw Thompson, op. cit., p. 27.
37. Ibid., p. 30
38. Ibid., p. 69
39. In a memorandum to the Select Committee on the Fishing Industry Development Bill of 1944 (S.C. 4-44).
40. B.T.I. Report 180, op. cit. But figures from other sources do not always seem to tally with this claim.
41. Ibid, p. 45.
42. Wardlaw Thompson, op. cit., p. 51 and p. 87.
43. Selections from the correspondence of John X. Merriman, edited by Phyllis Lewsen (Van Riebeeck Society, Cape Town, 1960) p. xii
44. Wardlaw Thompson, op. cit., Appendix A.
45. Memorandum from J.F. Stubbs to the Select Committee of 1944 (S.C. 4-44) p. 78.
46. Du Plessis report para. 52.
47. Ibid., para.61.
48. W. Wardlaw Thompson, op. cit., p. 25.
49. Ibid., p. 28.
50. Du Plessis report, para.69.
51. B.T.I. Report No. 180 (op.cit) para. 310.
52. Du Plessis report, para. 71.
53. Ibid, para. 74.
54. Select Committee on the Fishing Industry Development Bill (S/C. 4-44) p. 469.

55. See Department of Commerce and Industries : Fisheries and Marine Biological Survey, Investigational Report No. 1 : Savings - Trawl investigations in relation to the Conservation and Regulation of the Agulhas Bank sole fishery, by J.M. Marchand (Government Printer, Pretoria, 1934).
56. See report of the Division of Fisheries No. 13 for 1935.
57. This phrase was used by Dr S.H. Skaife, then Chairman of the Fisheries Development Corporation, in his presidential address to the South African Association for the Advancement of Science, in 1948. The address is printed in the South African Journal of Science, Vol. XLV, 1949, pp. 1-20).
58. B.T.I. Report No. 180 (op.cit) para. 168.
59. Ibid, para. 173.
60. Ibid. para. 176.
61. Select Committee of 1944, para. 271.
62. Ibid., paras. 2813-2815.
63. Ibid, para. 470.
64. B.T.I. Report 180 (op.cit) para. 470.
65. Ibid, paras. 164-167
66. Select Committee of 1944, (op.cit), p. 223.
67. Ibid, para 272
68. Ibid, para. 392
69. Ibid, p. 61
70. Ibid, p. 154
71. Ibid, para. 2479
72. Ibid, p. 457
73. Ibid, Appendix E., p. xxvii
74. Ibid, Appendix A., p.i.
75. B.T.I° Report No. 180, op.cit., para. 323
76. Evidence of Dr C. von Bonde to the Select Committee of 1944 (op.cit) para. 2878.
77. Select Committee of 1944 (op.cit.) p. 352.

78. Report of the Fisheries Committee of 1892 (G.37-1892)
Appendix F.
79. See S.H. Skaife's 1948 presidential address to the S.A.
Association for the Advancement of Science (op.cit).
80. B.T.I. Report 180 of 1935, op.cit., para. 183.
81. Skaife, op. cit.
82. Figures extracted from the annual reports of the Division of
Fisheries, Cape Town.
83. See Fishing for Fortunes by Robin Lees (Purnell, Cape Town,
1969) p. 89.
84. Ibid., p. 89
85. Ibid., p. 90.
86. Ibid., p. 98
87. Select Committee of 1944 (op. cit) p. 273.
88. Ibid. p. 350.
89. Ibid. p. 238
90. Ibid. p. 319
91. See the reports of the Division of Fisheries for 1933, 1937,
1938, 1940, 1948, and 1949.
92. Select Committee of 1944, op. cit., p. 215.
93. Ibid., p. 262
94. Skaife, op. cit.
95. Marine Biological Surveys: Investigational Report No. 1(op.cit).
96. B.T.I. Report No. 180 (op.cit) para. 343.
97. See the Cape Times, 19 Feb., 1938.
98. See Government Gazette for Sept. 18, 1942.
99. Cape Times, 24 Jan. 1944.
100. Cape Times, 4 March, 1944.
101. House of Assembly Debates Vol. 49 Col. 7108
102. Appendix F to the Report of the Select Committee of 1944
(op.cit).

103. Appendix A to the Report of the Select Committee of 1944 (op.cit).
104. These are the main types distinguished in the Du Plessis report (op.cit). There is a certain amount of overlap between the types of research here distinguished.
105. Report of the Select Committee of 1944 (op.cit) p.344.
106. Ibid. p. 377
107. Ibid. p. 202
108. Ibid. p. 353
109. Ibid. p. 2, ff.
110. Ibid. Appendix C.
111. Ibid. Appendix D.
112. Ibid. pp. 115-151
113. Ibid. Appendix E.
114. Ibid. p. 258
115. Ibid., para. 1450
116. House of Assembly Debates, Vol. 49, Col. 7108.
117. Report of the Select Committee of 1944 (op.cit) p.475
118. G.M. Dreosti : The Development of South African Fishing (in Atlantic Ocean Fisheries, edited by Georg Borgstrom and A.J. Heighway - Fishing News Books Ltd. London, 1961).
119. Ibid
120. Du Plessis report, p. 95. The figures are given in 1000's of metric tons, and have been converted to lb.
121. Dreosti, op. cit.
122. Du Plessis report, p. 95. The figures are obtained by adding the totals of fish caught by coastal and by ocean trawling.
123. Dreosti, op. cit.
124. Du Plessis report, p. 95.
125. The figures have been extracted from two supplements to the Standard Bank Review. (1) The Fishing Industry of South and Southwest Africa, by Peter Hjul (undated) p. 15; (2) The Fishing Industry of Southwest Africa by G.M. Dreosti (October 1969) p.7.

126. Hjul, op. cit., p. 15.
127. Du Plessis report, p. 93
128. The figures up to 1960 have been extracted from Dreosti, op.cit; after 1960, from the Du Plessis report.
129. Food and Agriculture Organisation : Year Book of Fishery Statistics (Fishery Commodities) Vols. 23 and 31, Table A4-1.
130. Dreosti, op. cit.
131. During my reading for this thesis, I built up a card index of firms in the Southern African fishing industry. Any information obtained about a firm was entered on its card. I hoped in this way to build up a picture of how the industry changed and developed between 1944 and 1970. This hope was not realised; the information available was insufficient. It is from the information on these cards that this account of firms in the industry in 1970 has been compiled.
132. The exact sources of the figures used are given in Tables VIII, IX and X.
133. Official Year Book for the Union of South Africa, No. 26, for 1950, p. 940, Table (i)
134. Select Committee of 1944, op. cit., p. 224.
135. Ibid, Appendix I, p. xliv
136. South African Statistics for 1972, pp. G-4 and G-7.
137. See Table VIII and explanation on p. 179
138. The Financial Mail, Oct., 17, 1969.
139. Robin Lees, op. cit., p. 177.
140. Ibid., p. 158.
141. Select Committee of 1944, p. 215.
142. The Financial Mail, Oct. 17., 1969, p. 35
143. The information in this section has been obtained from the Annual Reports of the Division of Sea Fisheries.
144. See the evidence given to the Select Committee of 1944 (op.cit) by representatives of the Coloured Advisory Council (p.453 ff); also the memorandum, from J.C. Bodenstein (Appendix A).

145. Du Plessis Report, paras. 740-749.
146. Ibid. para. 781.
147. Ibid. paras. 784, 785.
148. Ibid. para. 801.
149. See L.P.D. Gertenbach: Licence Limitation Regulations : the South African System, in the Journal of the Fisheries Research Board of Canada, Vol. 30 p. 2077.
150. Charl du Plessis, the Director of Fisheries, speaking at a meeting in Ottawa in 1961, and reported in F.A.O. Fisheries Report No. 5, Rome, 1962.
151. Du Plessis Report, para. 487.
152. Information for the table extracted from Gertenbach, op.cit.
153. Gertenbach, op.cit., p. 2083.
154. Board of Trade and Industries, Report No. 337. The Marine Oils Industry of the Union (Pretoria, 1953).
155. The figures in this section have been extracted from an unpublished paper, Restrictions on Pelagic Fishing in the Republic of South Africa, by R. Crawford, of the Division of Sea Fisheries, Cape Town, 1973.
156. The figures in this section have been extracted from the Du Plessis report, p. 44 ff.
157. Figures extracted from Assessment and Management of some Marine Stocks in Southern Africa, unpublished paper by Garth Newman (Division of Sea Fisheries, Cape Town, and Zoological Institute, University of Stellenbosch) January 1972.
158. See Du Plessis report, p. 49. The figures on S.A. rock lobster that follow are also from the Du Plessis report.
159. Du Plessis report, p. 51.
160. Ibid., p. 54.
161. Ibid., p. 81
162. Ibid., Table 7-2.
163. F.A.O. Yearbook of Fishery Statistics (Catches and Landings) Vol. 34, Table C-28.

164. Du Plessis report, p. 45.
165. Ibid., para. 534
166. Ibid., para. 396.
167. Report of the Second Session of the International Commission for South-East Atlantic Fisheries (Madrid, December 1973) p.55.
168. Unpublished figures obtained by G. Newman and D. Pollock of the Division of Fisheries, Sea Point.
169. Gertenbach, op.cit., p. 2080.
170. B.T.I. Report No. 337, op. cit.
171. Gertenbach, op. cit., p. 2080.
172. B.T.I. Report No. 337, op. cit., para. 302.
173. Du Plessis Report, para. 205.
174. B.T.I. Report No. 337, op. cit. Table XXIV, p. 68.
175. Ibid., para. 219.
176. Ibid., para. 294.
177. Private communication.
178. Lord Taylor: Poverty wealth, and health; or getting the dosage right. (British Medical Journal, 25 October 1975). The Scandinavian figures, and the comparison with 1936, are from the same source.
179. Robert Morgan: World Sea Fisheries (Methuen and Co. London, 1956) pp. 83-86.
180. The information given in this chapter has for the most part been extracted from the Annual Reports of the Fisheries Development Corporation. I have given a number of more specific references in the text; but I have not referred every statement made to a particular page of a particular report. To have done this would have involved an uncomfortably large number of references. In any event, the particular report from which a statement is extracted is often clear from the statement itself.
181. First Annual Report, p. 4.
182. Second Annual Report, p. 3.
183. Third Annual Report, p. 3.

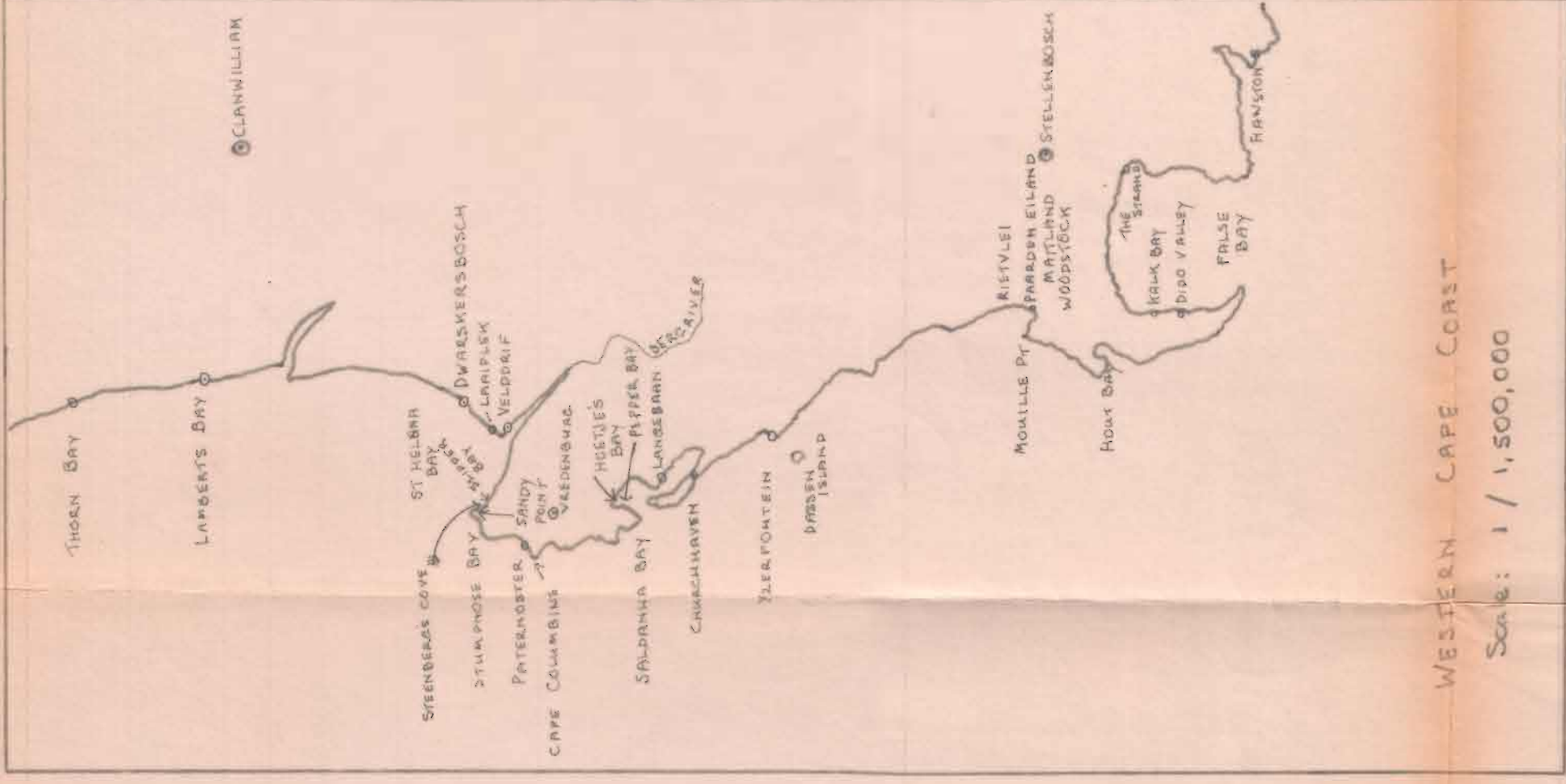
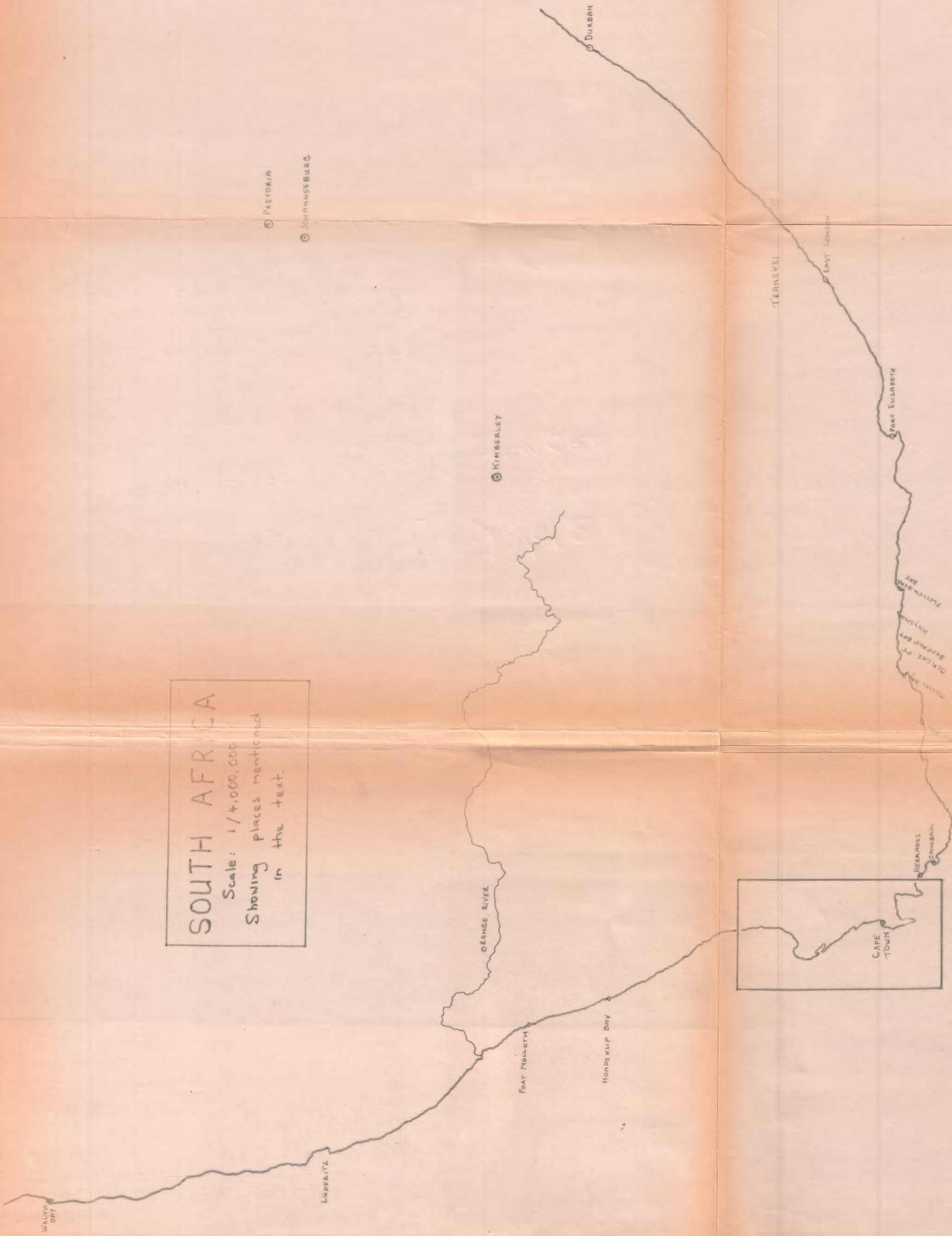
184. Sixth Annual Report, p. 5
185. First Annual Report, p. 5
186. Fourth Annual Report, p. 3.
187. See e.g. Eighteenth Annual Report, p. 5; nineteenth, p. 4; twenty-first, p. 4; twenty-fourth, p. 4.
188. Third Annual Report, p. 5
189. Second Annual Report, p. 5
190. Fifth Annual Report, p. 3
191. Sixth Annual Report, p. 6
192. Ninth Annual Report, p. 3
193. Ninth Annual Report, p. 6
194. First Annual Report, p. 3
195. Fourth Annual Report, p. 3
196. Nineteenth Annual Report, p. 5
197. Du Plessis report, p. 73
198. Fisheries Development Corporation, First Annual Report, p. 4.
199. Fourth Annual Report, p. 1.
200. Nineteenth Annual Report, p. 4
201. Twenty-second Annual Report, passim.
202. Twenty-third Annual Report, p. 1.
203. Twenty-third Annual Report, p. 6
204. Twenty-fourth Annual Report, p. 7
205. Seventh Annual Report, p. 4
206. Ninth Annual Report, p. 4
207. Tenth Annual Report, p. 4
208. See, for instance, the Du Plessis report, paras. 752, 781.
209. Du Plessis report, para 988.
210. Ibid. para. 494.
211. Robert Morgan: World Sea Fisheries (Methuen, London, 1956) p. 245. Morgan does not explain how he arrives at his figure.

212. South African Statistics, 1972 (Government Printer, Pretoria.)
Table G-4.
213. In the F.A.O. Yearbooks of Fishery Statistics. Some fuller
figures extracted from the F.A.O. Yearbook of Fishery Statistics
(Catches and Landings) Vol. 30, 1970, Table A01 are given in
Table XIII.
214. Morgan, op. cit., pp. 246 and 247.
215. Du Plessis report, paras, 181, 182.
216. Ibid., Table A-2.
217. See F.A.O. Fisheries Report No. 5, Rome, 1962.
218. Annual Report of the Division of Sea Fisheries, No. 37, for
1969, p. 6.

SOUTH AFRICA

Scale: 1/4,000,000

Showing places mentioned
in the text.



WESTERN CAPE COAST

Scale: 1/1,500,000

BIBLIOGRAPHY

- Anson, Peter F. : British Sea Fishermen, (William Collins, London, 1944).
- Anson, Peter F. : Fishermen and Fishing Ways (George Harrap and Co., London, 1932).
- Board of Trade and Industries : Report No. 180 of 1935.
- Borgstrom, D. & Heighway, A.J. (Eds.) : Atlantic Ocean Fisheries (Fishing News Books, London, 1961).
- Bromley, Daniel W. : Economic Efficiency in Common Property Natural Resource Use : A Case Study for the Ocean Fishery, (Ph.D. Thesis, Oregon State University, 1969).
- Brown, Seyom, and Fabian, Larry : Diplomats at Sea. (General Series reprint 282, The Brookings Institution, Washington, D.C., 1974).
- Cape of Good Hope : Memorandum on the Development of Sea Fisheries. Report 61 of 1895. (G 61-95).
- Cape of Good Hope : Report of the Fisheries Committee, 1892. (W.A. Richards & Sons, Government Printers, Cape Town).
- Christy, F.M., and Scott, A. : The Commonwealth in Ocean fisheries (John Hopkins University, Baltimore, 1965).
- Comitini, S., and Huang, D.S. : A study of Production and Factor shares in the Halibut Fishery. (Journal of Political Economy No. 75, 1967).
- Commission of Enquiry into the Fishing Industry. (RP47/1972) (Referred to in the text as the "Du Plessis report").
- Crawford, R. : Restrictions on Pelagic Fishing in the Republic of South Africa. Unpublished paper, Division of Sea Fisheries, Cape Town.

Crutchfield, J.A. : Common Property Resources and Factor Allocation. (Canadian Journal of Economics and Political Science, No. 22, 1956).

Crutchfield, J.A. : Economic Objectives of Fishery Management. In "The Fisheries" -- (University of Washington Press, Seattle, 1965).

Crutchfield, J.A. : The Marine Resources : a Problem in International Co-operation. (American Economic Review, Vol. 54, 1964, pp. 207-218).

Crutchfield, J.A. : Valuation of Fishery Resources. (Land Economics, Wisconsin University Press, No. 38, 1962).

✓ Culley, Michael : The Pilchard - Biology and Exploitation. (Pergamon Press, Oxford, 1971).

DS 639.47755
CUL

✓ Cushing, David : The Detection of Fish (Pergamon Press, Oxford, 1973).

DS
639.22
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Division of Sea Fisheries, Cape Town : Annual Reports.

Dreosti, G.M. : The Development of South African Fishing. (In Borgstrom & Heighway, op.cit.).

Du Plessis Report : (see under "Commission of Enquiry into the Fishing Industry").

Edmonds, David C. : Reasons underlying the development of the Peruvian Fishing Industry in the post World War II period. (Ph.D. Thesis, The American University, 1972).

English Economic History : Select Documents. (Compiled by A.E.Bland, P.A. Brown, and R.H. Tawney). G. Bell & Sons, London, 1914.

Fisheries Development Corporation : Annual Reports.

Food and Agriculture Organisation of the United Nations.
Year Books of Fishery Statistics, various volumes.

Gordon, H. Scott : An Economic Approach to the Optimum Utilisation of Fishing Resources. (Journal of the Fisheries Research Board of Canada, 1953).

Gordon, H. Scott : "The Economic Theory of a Common Property Resource : The Fishery". (Journal of Political Economy, Vol. 62). (University of Chicago Press).

Graham, Michael : The Fish Gate. (Faber and Faber, London, 1943).

Hjul, Peter : The Fishing Industry of South and South-West Africa. (Supplement to the Standard Bank Review, Johannesburg; undated).

Howell, Norman (editor) : South African Fishing Industry Handbook and Buyer's Guide. (S.A. Shipping News, Cape Town, 1951).

Hudson's Bay Company : a Brief History. (Published by the Hudson's Bay Co., Hudson's Bay House, London, 1934).

International Commission for South-East Atlantic Fisheries : Report of the Second Session. (Madrid, December, 1973).

Irvin and Johnson : South African Fish and Fishing, (Cape Town, 1963).

✓ Jones, F.R.H. : (editor) : Sea Fisheries Research. (Elek Science; London, 1974).

Kolb, Peter : The Present State of the Cape of Good Hope. New York, Johnson Reprint Corporation, 1968. (Reprint of the 1731 edition).

Lees, Robin : Fishing for Fortunes. (Purnell, Cape Town, 1969).

Marine Biological Survey : Investigational Report No. 1 - Savings-trawl investigations in relation to the conservation and regulation of the Agulhas Bank sole fishery. By J.M. Marchand. Government Printer, Pretoria, 1934.

✓ Morgan, Robert : World Sea Fisheries. (Methuen, London, 1956). Ds 639.22
MAR

Muller, C.F.J. : "Die Geskiedenis van die Visserij aan die Kaap tot aan die Middel van die Agtiende Eeu." (Argief Jaarboek vir S.A. Geskiedenis, 1942).

Newman, Garth : Assessment and Management of Some Marine Stocks in Southern Africa. Unpublished paper. (Division of Sea Fisheries, Cape Town, and Zoological Institute, University of Stellenbosch) January, 1972.

✓ Ommaney, F.D. : A Draught of Fishes (Longmans, London, 1965). 547 0MM

Paulana, Dennis F.: A General Economic Model for Commercial Fisheries and its application to the Californian Anchovy Fishery. (Ph.D. Thesis, University of Washington, 1970).

↑ 2 Perry, Josephine : Fish Production. (Longmans Green and Co., New York, 1940). DS 639.2 PER

Putterill, M. : Analysis of Developments in the South African Hake Fishing Industry. (M.B.A. thesis, University of Cape Town). Cape Town, 1970.

Ricker, W.E. : Handbook for Computations for Biological Statistics of Fish Populations. (Canadian Fisheries Research Board : Bulletin No. 119 : Ottawa, 1959).

✓ Rounsefell, George, and Everhart, W.H. : Fishery Science : Its Methods and Applications. (John Wiley and Sons, New York, 1953). DS 639.2 ROU

↑ Russell, E.S. : The Overfishing Problem. (Cambridge University Press, 1942).

Scott, A.D. : The Fishery : the Objectives of Sole Ownership. (Journal of Political Economy, 1955).

Scott, A.D. : Natural Resources : The Economics of Conservation (University of Toronto Press, 1955).

Scott, Peter : Otter-Trawl Fisheries of South Africa. (Re-printed from The Geographical Review, Vol. XXXIX, No. 4, 1949). American Geographical Society, New York.

Skaife, S.H. : Presidential address to the S.A. Association for the Advancement of Science, 1948. (Re-printed in the S.A. Journal of Science, Vol. XLV, 1949).

Smith, V.L. : The Economics of Production from Natural Resources.
(American Economic Review, Vol. 58, 1968, pp. 409-431).

South African Shipping News and Fishing Industry Review : (S.A.
Trade Newspapers Pty. Ltd., Cape Town). Various issues.

Tarbell, Ida : History of the Standard Oil Company. (Heinemann,
London, 1905.)

Thompson, W. Wardlaw : The Sea Fisheries of the Cape Colony. (Maskew
Miller, Cape Town, 1913).

Turvey, R. : On Divergence between Social Cost and Private Cost.
(Economica, No. 30, 1963, pp. 309-314).

Turvey, R. : Optimization and Sub-Optimization in Fishery
Regulations. (American Economic Review, Vol. 54,
1964, pp. 64-76).

Turvey, R. and Wiseman, J. (Eds). : The Economics of Fisheries.
(F.A.O., Rome, 1957).

Union of South Africa : Report of the Select Committee on the
Fishing Industry Development Bill of 1944 (S.C. 4-44).

Union of South Africa : Report of the Select Committee on the Sea
Fisheries Bill. (S.C. 12-1939).