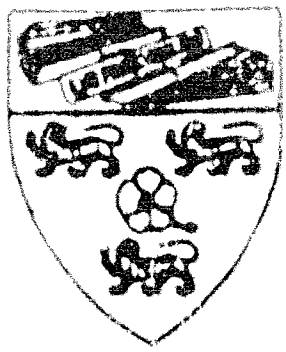
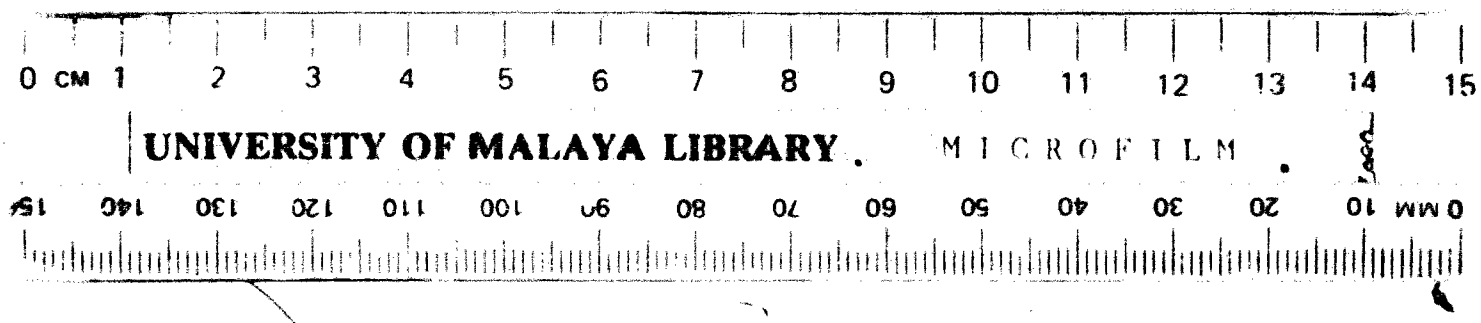


MULA

ECONOMICS OF CERTAIN FISHING EQUIPMENT IN BESERAH

An Academic Exercise
Presented to the University of Malaya in Part Fulfillment
Towards the Degree of Bachelor of Arts with Honours in Economics



By

SALLEHUDDIN BIN MOHAMED

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PREFACE

I wish to express my gratitude to the following who had helped me in one way or another during my field-work in Beserah:

Che' Osman b. Sulaiman, Regional Fisheries Officer,

South East Malaya, Kuantan

Mr. Koh Ee Hock, Assistant Fisheries Officer, Kuantan,

Datok Nebeng, Beserah,

Che' Hoali, State Development Officer, Pahang,

Datok Penghulu, Beserah,

Che' Wan Mansor b. Wan Muda, Beserah.

I am particularly grateful to Ungku Abdul Aziz, University of Malaya for making my field-work possible and for supervising my work. Also I am indebted to Mr. Lim Chong Yah, Ministry of Commerce and Industry, Singapore, and Dr. D.W. Brown, University of Malaya, for making constructive criticism on this academic exercise.

Finally, I wish to express my thanks to others who had given me assistance in one way or another.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATION

CHAPTER I.

INTRODUCTION.

A. PURPOSE

The importance of fishing industry as a means of livelihood in the Federation of Malaya may be realised by the fact that nearly 50,000 people are engaged in this occupation.[1] The main problem connected with this occupation is the low general levels of income of the fishermen as attested by the various efforts of the Government to improve their levels of living. Successful remedial measures, however, cannot be undertaken unless the various economic aspects of the fishing industry have been well studied. In this academic exercise an attempt is made to study some economic problems connected with fishing equipment. It is hoped that this analysis will throw some light on the possible remedial measures for the financial reconstruction of the rural economy.

B. SCOPE

A sample survey of the fishing equipment was carried out in the fishing villages in Beserah, a Mukim in the District of Kuantan, Pahang, from June 4 to July 21, 1958. The villages covered were Kampong Di-Pantai and Kampong Seberang Che' Let. Although these two villages are located near each other, the characteristics of their fishing industries do differ. Firstly, there are certain types of nets found

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1. Federation of Malaya Annual Report 1957.

in one which are not found in the other. Pukat Payang is only found in Kampong Di-Pantai while Pukat Tangkol and Pukat Sudu are found only in Kampong Seberang Che' Let. And secondly, as regards the hook and line fishing, individual fishing is predominent in Kampong Di-Pantai while in the other group fishing that constitutes almost all the fishing units engaged in hook and line fishing. Apart from these differences, they share the common features of the fishing industry in Beserah. The writer, therefore, feels that there is no necessity to discuss the two villages seperately.

C. METHOD

The materials analysed in this academic exercise were obtained through personal interviews. Ninety fishermen and other people connected in one way or another with the fishing industry were interviewed. Apart from interviewing, the writer spent much time in observing the fishermen maintaining and repairing the nets and boats and on two occasions the writer had the opportunity to see how 'unjang' (artificially made fish shelter) - an important form of intermediate capital - were constructed. The sources of the data shown in the Tables in this academic exercise were all from personal interviews unless stated otherwise.

D. DIFFICULTIES

The major difficulties confronted by the writer were in obtaining informations regarding the returns accrued to the various types of nets. This is because the fishermen concerned did not keep

records of their earnings, nor the volume of their catch. The people who really knew the annual returns to various types of nets were the Chinese fish dealers in Beserah because not only they had the monopoly of the fish market in Beserah but also they owned most of the major types of nets and boats there.[2] But to obtain these data from them was very difficult indeed, in fact impossible, because they were not willing at all to reveal the informations. This inavailability of adequate data on income was indeed a handicap to the writer, particulary in trying to compare the income derived from the different types of net operations.

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CHAPTER II

CAPITAL EQUIPMENT

A. FISHING METHODS AND EQUIPMENT

There are only two methods of fishing practised in Beserah, and these are (a) fishing by hook and line, and (b) fishing by nets.[1]

(a) Hook and line Fishing

These may be divided into two types: namely, 'Mengail Parang' and 'Mengail Unjang'. The former is a small fishing unit consisting of one fisherman only, and the craft used is correspondingly small, between 15 to 17 feet in length. The technique of fishing is by using wooden floats to which hooks and lines are attached. 'Mengail Unjang', on the other hand, is a handline fishing, operated at the 'unjang' or fish shelters which are constructed out of tree leaves. The unit consists of three fishermen and the size of boats used is between 18 to 20 feet in length. Both of these types of hook-and-line fishing entail the use of a small net (Jaring Umpan') for the purpose of catching baits of small fish. The size of the net is about 12 fathoms long and 3 fathoms wide with 2 inches mesh.

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[1] In some other fishing areas for example Kelantan, Trengganu, and Singapore can be found other types of fishing methods and a greater variety of nets.

(b) Net-Fishing

In this method of fishing various type of nets are used, and these can be classified as follows:

Seine Nets:	Pukat Tarek
	Pukat Payang
Gill/Drift Nets:	Pukat Dalam
	Pukat Hanyut
Gill/Lift Nets:	Pukat Sudu
	Pukat Tangkol

The above classification, as the names suggest, are based on the different methods of operations.[2] As Table 1 shows, a unit of net fishing consists of 5 to 25 fishermen depending on the types of nets used. The crafts used vary in size between 22 to 42 feet, also depending on the kinds of nets. In the case of Pukat Sudu and Pukat Tangkol, their operations require 3 and 5 boats (25 feet) respectively.

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2 Details on the operations of these nets can be found in 'The Fishing Methods of Kelantan and Trengganu' by M.L.Parry in the Journal of the Malayan Branch of the Royal Asiatic Society, Vol. 27, June 1954.

TABLE 1

A SUMMARY OF FISHING GEAR

BESERAH, 1958

Types of nets	Size of mesh (in inches)	Size (in fathoms)	No. of men in crew
Pukat Tarek	0.3 0.5 0.75 1.25 2.0	180	10 - 14
Pukat Payang	22 2 0.75 0.5	200	15
Pukat Dalam	2	130	10 - 14
Pukat Hanyut	1.5	100x3	3 - 5
Pukat Sudu	1.25	32 x 22	15
Pukat Tangkal	1.25	32 x 32	25

TABLE 2

NUMBER OF FISHING UNITS IN BESERAH, JULY 1958

Types of unit		Number
Hook and line:	'Mengail Parang'	61
	'Mengail Unjang'	48
Net fishing:	Pukat Tarek	28
	Pukat Dalam	24
	Pukat Payang	2
	Pukat Sudu	2
	Pukat Hanyut	2
	Pukat Tangkol	1
TOTAL		168

From Table 2 above it can be seen that out of 168 fishing units in Beserah 109 units are engaged in hook-and-line fishing, and only 59 units are engaged in net fishing. The reason for this distribution is that the capital investment needed for a net fishing is far too large for most of the fishermen to undertake[1] and, as will be discussed presently, most of the boats and nets engaged in the net fishing are not owned by the operators themselves. Another notable feature shown by Table 2

[1] See page 14 and page 20 on costs.

is the direction of investment among the nets: there is a heavy concentration of investment in the Pukat Tarek and Pukat Dalam. The main reason for this is that it is more profitable to operate Pukat Tarek and Pukat Dalam than other types of nets. Pukat Tarek and Pukat Dalam are in fact make up a unit.[4] This is made possible because while Pukat Tarek is operated during the day only; Pukat Dalam is operated during the night only. To operate Pukat Dalam alone is unprofitable because, unlike other nets, its catch is very much subject to seasonal variations: it can only be used for a period of four to five months in a year when mackeral, for which it specialises, are available. The writer has no statistical evidence to compare the returns to various units because adequate income data were not available (See Chapter 1). However, the concensus of opinion among the fishermen interviewed was that income is the main reason for this direction of investment.[5]

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[4] In the Table there are 28 Pukat Tarek and only 24 Pukat Dalam. This discrepancy can be accounted for by the fact that Pukat Tarek and Pukat Dalam do not invariably make up a unit. The other 4 units of Pukat Tarek have no Pukat Dalam.

[5] Of course, one may argue that income is the obvious reason in determining direction of investment. But in the case of fishing industry this may not be so. There are other reasons such as skill.

B. OWNERSHIP OF CAPITAL EQUIPMENT

A significant feature in the distribution of ownership of boats and nets is that only 30 percent of the boats and nets used in the net fishing operations are owned by the operators themselves. Those who operate their own fishing gear are mainly the wealthier group, who not only have extra fishing gear to loan but are also landlords. On the other hand about 72 percent of the boats used in handline fishing are owned by the operators themselves. This is because the boats used are comparatively small and are therefore within the means of the fishermen to buy. Those who have no boats of their own are those who are engaged in 'Mengail Unjang' because the boats used are bigger and more expensive than those used for 'Mengail Parang'.

C. LOANS OF CAPITAL EQUIPMENT

(a) Sources

Fishermen can borrow fishing equipment from two sources: the Malay lenders, and the Chinese Towkays. The Malay lenders, as pointed out earlier, are also mainly engaged in fishing. As for the Chinese Towkays, there are four of them in Beserah who collectively own 60 percent of the big boats and nets. At the same time they are engaged in dried fish industry and have largely the monopoly of the fish market. They have, in fact, established monopsonistic as well as monopolistic positions.

(b) System of loans of capital equipment

There is a difference between the loan of capital equipment used for hook-and-line fishing and net fishing. In the hook-and-line fishing only the boats are loaned while the remaining equipment ('Jaring Umpan', hooks and lines) is provided by the borrowers themselves. In the net fishing, the boats and the nets together are lent out. These loans are made to the heads of the crews; the crew members themselves have no direct connection with the lenders.

The costs of maintaining and repairing the boats and nets are borne by the lenders themselves.

A very important economic problem concerning the loans of capital equipment is that, in the case of the Chinese lenders, a condition is attached in which the borrowers are obliged to sell their fish to them only. It can be seen, therefore, that by controlling the fishing equipment these Chinese Towkays strengthened their monoplistic position in the market.

(c) Rates of interest [56]

The rate of interest charged on the loan of capital equipment is not on the basis of time-period but rather on the volume of production. The time of payment is normally at the end of gainful fishing days. From the point of view of the lenders this basis

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[56] Among the fishermen, this rate of interest is considered as 'Bahagian' or the share of the capital equipment.

is perhaps the best because the nature of the fishing industry is such that there is a seasonal fluctuation in the income of the fishermen. Therefore it would be difficult to base the interest rate on a time-period (for example, on an annual basis).

In the case of hook and line fishing the rate of interest on loan of boats powered by engines is 10 percent of the gross catch for the boats and the engines respectively. In the case of net fishing, the rate of interest is rather complicated. The rate of interest for the engine is 20 percent of the gross catch. This rate is higher than that in the case of handline because the engine used is bigger. The rate of interest on the boat and the net taken together is 20 percent of the remaining income. The calculation of the rate of interest can be shown as follows:

<u>Hook and line fishing</u>

Given gross income per fishing day	- $100.00
Interest on engine + interest on boat - 20% of $100/	- $ 20.00

<u>Net fishing</u>

Given gross income per fishing day	- $100.00
Interest on engine - 20% of $100/	- $ 20.00
Remaining income	- $ 80.00
Interest on boat and net-20% of $80/-	$ 16.00

D. SHARES OF CAPITAL EQUIPMENT

According to the traditional system of division of income among the fishermen,[67] the boats, nets and engines have their shares in the income because of their contributions in the production. The shares due to these capital equipment are similar to those of the rates of interest shown above. In fact, those rates of interest on the loans of fishing equipment are based on this traditional system of division of income. In the distribution of the earnings, the owner-operator of the fishing equipment will first apportion the shares due the capital equipment, and the remainder of the income will then be divided according to the traditional distribution of income.

E. CHINESE FISH DEALERS AS SUPPLIERS OF ENGINES

It has been mentioned earlier that the Chinese fish dealers are the major owners of big boats and nets in Beserah. With respect to engines, however, a different situation exists: none of these Chinese dealers owns any engine, although all their crafts are motor-driven ones. These engines are owned by the heads of the crews to whom they have lent the fishing equipment. These engines are bought by these Chinese dealers first and the

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[67] Details concerning the traditional division of income among the fishermen can be found in 'Income Sharing in the Fishing Industry in Trengganu', an Academic Exercise presented towards the Degree of Bachelor of Arts with Honours in Economics, University of Malaya, Session 1957/58.

heads of the crew repay them at the rate of 20 percent of the value of every catch until all has been settled. While the payment for the purchase of the engines comes from the gross income derived from the labour of all the members of the crew, the engines will ultimately be owned by the heads of the crew only which logically the engines should be the common property of the whole crew. This system is indeed very unsatisfactory, because it is clear exploitation on the part of the heads of the crew over the rest of the members of the crew.

CHAPTER III

BOATS

A. TYPES OF BOATS

Five types of boats are found in Beserah and these are Kueh, Sekochi, Payang, Gelibat and Jalak Kong. Except for the last type,[1] each type is generally associated with a certain method of fishing: Kueh is generally used for Pukat Tarek and 'Mengail Parang', Sekochi for Pukat Sudu, Pukat Tangkol, and 'Mengail Unjang', Payang for Pukat Payang and, Gelibat for 'Mengail Parang'.

B. COST OF BOATS

Types of boats have no influence on the cost of boats. The important elements that influence the cost of a boat are the material it is made of and the workmanship embodied in it. Generally the small boats are made of a certain kind of light wood called 'kayu lempong' for the simple reason that it is most suitable for crafts of 1 to 3 man capacity. The bigger boats are constructed out of tougher wood known as 'kayu chengai,' which is more expensive than the other type. The workmanship embodied is important because a well constructed boat can last much longer than a poorly constructed boat.

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1. Jalak Kong has no specific function. There is only one of its type in Beserah, and it is used for Pukat Tarek.

From Table 3 it can be realized why most of the big boats, as mentioned in Chapter II, are not owned by the operators themselves. These boats are beyond their financial capacity to purchase. Even some of those who own small boats (15 to 20 feet long) have been financially assisted by the two Co-operatives in Beserah in purchasing their boats.[2]

TABLE 3

COST OF BOAT

IN RELATION TO SIZE AND MATERIAL

Size (length in feet)	Type of material	Cost ($)
15 - 17	Kayu lempong	200 - 300
18 - 20	Kayu lempong	300 - 400
21 - 22	Chengai	500 - 600
34 - 42	Chengai	1,000 - 1,600

C. MAINTENANCE AND REPAIR

Unlike a net (which will be discussed in the next Chapter), the annual cost of maintenance and repair is relatively little. Only about $30.00 a year is expended on maintenance of big boats,

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[2] Yahya bin Haji Talib: "Comparative studies on two co-operatives in Beserah", an Academic Exercise written as part of the requirements for the degree of Bachelor of Arts with Honours in the University of Malaya, Session 1958/59.

and this amount is correspondingly smaller for smaller crafts. The forms of maintenance necessary for a boat are painting and refining the 'gegala'[3] both of which serve to prevent water from absorbing into the wood. An item that requires regular replacement is the anchor rope which costs about $10.00 and which needs replacement once in every two years.

In the case of boats which are not owned by the fishermen themselves, the work of maintenance and repair is done by the operators themselves although, as mentioned in Chapter 11, the cash expenses are borne by the lenders.

D. ANNUAL DEPRECIATION CHARGE

As compared to nets, the annual depreciation charge of a boat is relatively small. This is because of the life of a boat is much longer than that of a net. It is estimated that a boat made of 'kayu chengai' can last for about 25 years, while a boat made of 'kayu lempong' can last for about 15 years. From the various costs of boats shown in Table 3, the annual depreciation charge may be estimated as shown in Table 4.

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[3] A kind of paste used to fill in any gap between the planks.

TABLE 4

ESTIMATED ANNUAL DEPRECIATION CHARGE OF BOATS

Size of boat (in feet)	Average estimated cost ($)	Material made of	Estimated life(yrs.)	Annual dep. charge (to nearest $)	% of av. est. cost (to nearest % ge)
15 - 17	250	Lempong	15	17	7
18 - 20	350	Lempong	15	23	7
21 - 23	550	Chengai	25	22	4
34 - 42	1,300	Chengai	25	52	4

E. MECHANIZATION

About 65 percent of the boats in Beserah are propelled by engines,[4] and the remaining 35 percent are small boats engaged in individual fishing ('Mengail Parang'), which are propelled by sails. However, among boats used for 'Mengail Unjang', although engines are used, sails are not discarded so as to reduce fuel expenditure. The engines used are of various horsepowers depending on the size of boats and the costs range between ~~$500~~ $450.00 to $750.00

Mechanization has undoubtedly brought several advantages to the fishermen. A few main ones may listed here. No longer depending

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[4] All the engines used are outboard motors because Beserah has no deep lagoons or deep river mouth suitable for the anchorage of inboard crafts.

on wind, the fishermen are able to go fishing more often than would be possible if sails were used. This is particularly true in the case of big boats. The fishermen are able to come back earlier and thereby have more time to dry and mend their nets. This is important because drying the net is a form of maintenance and mending the net is essential for effective operation of the net. Mechanization has enabled the fishermen engaged in Pukat Tarek which operates in-shore to make fishing trips without delay whenever shoal of fish ('ikan bilis') are located. All these advantages are conducive to increasing the productivity of the fishermen. It is regretable that, owing to inavailability of sufficent data, the writer is unable to estimate the effect of mechanization on the number of fishing days or on income.

Although the use of engines has several advantages, the cost of maintenance is high. Data collected show that the average cost of maintenance of engines with an average life of three years was $45.00 from January to June 1958. Apart from high cost of maintenance, the use of engines requires working capital on fuel. For a net fishing, each fishing trip requires about two gallons of petrol while in the case of handline fishing one gallon is required (because the former use bigger engines). Thus, whilst there is a fixed cash expense on fuel for every fishing trip, the returns are most uncertain. It often happens that fishermen obtain no catch at

all for days. Under such circumstances they are driven to seek financial help from the Chinese Towkays or Malay lenders of fishing equipment - more often from the former - paying them back when there is a catch.[5] It can be seen that working capital on fuel is a financial problem to the fishermen.

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[5] An incident that took place while the writer was in Beserah may be quoted here to illustrate the problem faced by the fishermen. For nearly two weeks a certain Pukat Tarek unit was unable to obtain any catch at all. Because of this the Chinese fish dealers stopped supplying the credit for the fuel. Consequently that fishing unit was unable to operate for a number of days until a friend of the head of the crew helped to by the fuel.

CHAPTER IV

NETS

A. TYPES OF NETS

Types of nets used for net fishing as well as for hook and line fishing ('Jaring Umpan') have already been discussed in Chapter II.

B. COST OF NETS

(a) Effect of imported on Japanese nets on initial cost

Since the introduction of Japanese nets some years back, almost all nets found in Beserah have been from Japan.[1] Prior to this, nets were made from cotton twine made in Trenggganu. Although the Trenggganu cotton twine is generally believed to be longer-lasting than the Japanese nets, a lot of time is involved in making a net from it. It is estimated that it takes three months for two men to make a complete net using the Trenggganu twine as compared to only two weeks by using the Japanese net. The greater amount of time taken contributes to the higher cost of making a net using the Trenggganu cotton twine. It is estimated that by using the Japanese nets, the initial cost of making a net has now been reduced by about 10 percent.

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[1] These Japanese nets are of various meshes. The work involves in making a complete net is merely by joining the various sections according to the size of meshes required.

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[1] These Japanese nets are of various meshes. The work involves in making a complete net is merely by joining the various sections according to the size of meshes required.

(b) Estimated costs of nets

Table 5 shows the estimated costs of the various types of nets found in the area under survey. The cost of each type varies according to its size. From these figures and from the costs of boats and engines estimated in the last chapter, it can be seen that the initial outlay required to operate any of the major types of nets (Pukat Tarek, Pukat Dalam, Pukat Payang, Pukat Sudu, and Pukat Tangkol) is between about $2,500 and $3000.

TABLE 5

COMPARATIVE COSTS OF NETS

Type of net	Cost ($) (Initial)
Pukat Payang	1,200 - 1,500
Pukat Tangkol	1,200 - 1,400
Pukat Sudu	1,200 - 1,400
Pukat Tarek	1,000 - 1,300
Pukat Dalam	800 - 1,000
Pukat Hanyut	400 - 500
Jaring Umpan	50 - 60

B. MAINTENANCE AND REPAIR

Nets are maintained by a process called 'samak,' the aim of which is to strengthen the nets. For nets other than 'Jaring Umpan' the material used is a kind of tree bark known as 'Kulit nyirih'[2] while for 'Jaring umpan' eggs[3] are used. The frequency of this process of maintenance depends on the frequency of the fishing operations; on the average this is done once in every three weeks. It is estimated that about $150.00 are spent on 'kulit nyirih'[4] and about $10.00 on eggs in a year.

Less working capital is involved in repairing a net than in maintaining a net. The net is often torn during its operation, and the material used to mend these damage parts is the Trengganu cotton twine, which involves in a year a total cost of about $15.00 for the big nets and about $2.00 for 'Jaring Umpan'.

Reference has already been made in Chapter II that, where the equipment is borrowed by the operators, the cost of maintenance and repair is borne by the lenders. In the case of

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[2] The tree-bark, sold in bulk, is cut into small pieces and these are boiled for about 12 hours so as to extract the juice. The net is then dipped into the liquid when it has become cool.

[3] Only the white of the egg is used, and this is mixed with water into which the 'jaring umpan' is dipped.

[4] For each process of samak, one picul of 'Kulit Nyirih' is required costing $12.00 per picul.

Chinese lenders they not only bear the cost of maintaining and repairing of their fishing equipment but also that of 'samak' and minor repairs of nets belonging to fishermen from whom they buy the fish. This has the effect of strengthening their control over fish sold on the market because these fishermen are obliged to sell their fish to these Chinese Towkays.

Nets are maintained and repaired by the operators themselves irrespective of whether the nets are owned by the fishermen themselves or have been lent to them. Unlike boats, a net requires regular repair. Practically after every fishing trip the work of mending the net has to be done because the net is always damaged in varying degrees during its operation. The responsibility of mending the net lies with the head of the crew of the unit, but in practice he is always helped by the rest of the crew members. For their assistance the head of the crew usually gives them some extra money from his own share of income whenever the catch is good, the amount varying between 50 cents to a dollar according to the amount of catch and the discretion of the head. When the work of repairing is unusually heavy the head of the crew treats them to some cakes and light drinks at the end of the work.

C. <u>ANNUAL DEPRECIATION CHARGE</u>

Calculation of the annual depreciation charge of a net is

much more involved than that of a boat. The whole net does not get worn off at the same time; certain sections of it wear out faster than other sections and therefore need earlier replacement. This process goes on until the original materials have all been replaced and in time the original replacements are again replaced and so on. To calculate the annual depreciation charge, therefore, it is best to base on how long the material can really last. Table 6 shows the estimated average life of various types of fishing nets.

TABLE 6

ESTIMATED AVERAGE LIFE OF NETS

Type of net	Life (in years)
Pukat Dalam	4½
Pukat Hanyut	4½
Pukat Payang	3½
Pukat Sudu	3½
Pukat Tangkol	3½
Pukat Tarek	2½
Jaring	2½

From Table 6 it can be seen that not all nets have the same longevity. Pukat Dalam and Pukat Hanyut can last longer than the other types of Pukat because their operations, as mentioned in Chapter II, are merely seasonal. Of the other types of Pukat which operate throughout the year, Pukat Tarek has the shortest life because, being beach seine, it is more intensively used.

TABLE 7

ESTIMATED ANNUAL DEPRECIATION CHARGE OF NETS

Type of net	Average estimated cost ($)	Average life (Years)	Average Annual Dep. charge	%ge of Av. est. cost
Pukat Tarek	1,150	2½	460	40
Pukat Payang	1,350	3½	386	28
Pukat Sudu	1,300	3½	371	28
Pukat Tangkol	1,300	3½	371	28
Pukat Dalam	900	4½	200	22
Pukat Hanyut	450	4½	100	22
Pukat Umpan	55	2½	22	40

From Table 7 above it can be seen that the annual depreciation charge of a major type of net, particularly Pukat Tarek, is of a substantial amount. This amount is particularly large when compared to the annual depreciation charge of a boat which is, as shown in Chapter II, slightly over $50.00 only at the most.

CHAPTER V

UNJANG AND FLOATS

A. UNJANG

An 'unjang' is an important fishing gear without which certain fishing methods are rendered impracticable. It is an artificially made fish shelter which, when placed in mid-sea, attracts shoals of pelagic fish. It is made of tree leaves which are attached to bamboo poles, the ends of which are heavily weighted by stones to enable the leaves to submerge in the water. This form of fishing gear is used, but with different technique, by those fishermen engaged in 'Unjang' handline, Pukat Sudu and Pukat Tangkol.[1]

The creation of an 'unjang' involves only a small amount of capital but a large amount of labour. The only components of an 'unjang' that require capital expenditure are the bamboo poles. For an 'unjang' 2 bamboo poles of 30 to 40 feet long are required, and their cost varies between $2.00 and $2.50 each depending on the size and quality. The other components leaves (or locally known as 'leret'), ratan ('tali unjang') and stones - involve no capital expenditure; the leaves and stones are obtained in the area, while the ratan is acquired from the nearby jungle.

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[1] Further details on the technique of using the 'unjang' can be found in "Journal of the Malayan Branch of the Royal Asiatic Society, Vol. 27, 1954.

The 'unjang' is made co-operatively by the members of the crew of the fishing unit concerned. With three men working on it, the total amount of labour input may be shown as follows:

To get the ratan	6	working hours
To get the stones and the bamboo poles	8	working "
To get leaves	5	" "
To fix the various components	4	" "
Total	23	" "

An 'unjang' can be considered as intermediate capital because it can only last for one fishing season, after which the unjang' is destroyed by the monsoon. During the period of its use the leaves are replenished once in every three months.

B. FLOATS

As pointed out in Chapter II, a float forms an important fishing gear in hook-and-line fishing ('Mengail Parang'). It is made of a certain kind of soft wood known locally as 'kayu terpa,'. To the float a hook-and-line are attached. The floats are made by the fishermen themselves during the off-season. Although each unit of 'Mengail Parang' requires between 18 to 22 floats, double the number actually needed are made because very often most of the floats will be lost during the year, and replacements are therefore necessary.

The floats, too, are considered as intermediate capital because although the wood itself can last for a number of years, there is a tendency, as pointed out earlier, for the floats to get lost during fishing period.

CHAPTER VI

INCOME

A. FACTORS AFFECTING INCOME

There are a number of factors affecting the incomes earned from fishing. The three main ones, however, are (a) number of possible fishing days in a year, (b) size of catch, and (c) prices of fish. The following is the analysis of these factors.

[a] Number of possible fishing days in a year

The number of days in a year in which fishing is possible is limited by the monsoon which breaks out around mid-November and lasts until mid-January. During this three-month's period fishing by means of nets is completely impracticable because the sea is too violent for such operations. The source of income for those who are engaged in that mode of fishing is therefore completely closed. For those engaged in hook-and-line fishing, however, fishing is still possible, because there are times when the sea is less violent, but generally for only about 4 or 5 days a month. The reason why the fishermen venture the risk at these times is that 'ikan tenggeri' in this period are particularly abundant, and therefore the volumes caught are exceptionally large. Further inducement for taking this risk is that during the monsoon the demand for fish is "strong"

relative to supply and therefore fish fetch very high prices.

Apart from the monsoon, the number of fishing days is further curtailed by the fact that on Fridays the fishermen generally do not go to work[1].

Thus the number of possible fishing days in a year is estimated to be around 245 days for net-fishing and 260 days for handline fishing[2].

However, given those figures of fishing days in a year, it does not mean that every fishing day is gainful. The fishing occupation has the special characteristic that the efforts of the fishermen are not definitely and consistently rewarded; there are times when no catch is obtained at all. It is estimated that only about 18 days at the most are gainful in a month.

[b] Volume of catch

The volume of catch varies according to season which again varies from year to year. It was the consensus of opinion among the fishermen whom the writer interviewed that in the first half of 1958 (January to June) the catch was poor compared to the

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1 Friday is the day for the Moslems to go for Friday Prayer.

2 The figures do not take into account the unpredictable whether changes which render fishing impossible during the off-monsoon period.

preceeding years. The fluctuation in catch within a fishing season itself may be illustrated by the instance during the writer's period of survey: a unit of Pukat Tarek hauled 30 piculs of 'ikan bilis' in one day, but in the preseeding two weeks the total volume hauled did not amount even to 5 piculs.

[e] Prices of fish

The price of fish affects the income of fishermen significantly, and the price of fish suffers frequent fluctuations. These price variations are intensified by the action of the middlemen. This is particularly true in the case of the price of 'ikan bilis'. The sole buyers of the 'ikan bilis' in Beserah are five Chinese fish dealers, who are engaged in the dried fish industry. When the volume of catch is large for many days in a row, these Chinese fish dealers lower the price substantially. Apart from their monopolistic position, their bargaining power is all the more strengthned by the fact that over 50 per cent of the total number of Pukat Tarek units are owned by them, and as pointed out in Chapter I, the fishermen using their fishing gear have to sell their catch to these Chinese.

These fishermen who are not obliged to sell their fish to the Chinese 'Towkays' or to the the Co-operatives[3] sell their

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3 There are two Co-operatives in the area under survey; for details see: Yahya bin Haji Talib: "Comparative Studies of Co-operatives in Beserah" An Academic Exercise as Part of the Fulfilment of for the Degree of Arts with Honours in Economics, Seccion 1958/59.

fish to the middlemen locally known as 'Praeh', who are mainly Malays. The system of buying the fish by these middlemen is not based on the actual value of the catch but merely on estimated value, which is apparently much lower than actual value[4]. This form of exploitation is another major factor in lowering the income of the fishermen.

B. ESTIMATED INCOME OF FISHING UNITS

[a] Net-Fishing Units

To come to any close estimate of the annual gross income accrued to various types of fishing units of indeed difficult. Not only does the income fluctuate but also as mentioned in Chapter I, fishermen generally do not record their earnings, and it was found impossible to obtain the data regarding the volume of fish for the year from the Chinese dealers.

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4 The writer had the opportunity of observing the buying of fish by these middlemen. When the fish is landed, these middlemen crowd around it and estimate the value of without even weighing the fish. Then, each middlemen writes down his estimate on a small piece of paper or the palm of his hand. When all are ready, they compare their estimates and one who has the highest estimated value of the fish gets the fish.

However, the writer has been able to make a case study of the gross income accrued to one unit of Pukat Tarek and one unit of Pukat Dalam for the last six months, as shown in Table 12 and Table 13[5]. Although these figures are inadequate for arriving at an estimated average annual income per unit of Pukat Tarek and Pukat Dalam, they certainly do throw some light on the possible amount of gross returns to the fishing units concerned. Bearing in mind the fact that the fishing period is early 1958 showed a decline in the volume caught compared with the previous few years, it is not unsafe to conclude that it is possible for a unit of Pukat Tarek to earn a gross annual income of around $5,000. And, as pointed out in Chapter II, it may be conservatively estimated that the total gross annual returns this fishing unit to be around $7,000, since Pukat Dalam is operated by the same crew of Pukat Tarek using the same boat.

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5 The writer obtained the figures in both Table .?. and Table .?.. from one of the crew who has been keeping the records of the earnings since the beginning of the fishing season. He is the only fisherman in the Pukat units in the area under survey who records the earnings consistently; the others do not keep record at all. That these records of earnings for both Pukat Dalam and Pukat Tarek are obtained from the same person can be explained by the fact that, as pointed out in Chapter III, the same crew operates both nets. The earnings recorded, however, are only the shares of the crew at every gainful day. The figures, both the Tables above are, therefore, arrived at after the writer has claculated the various 'shares' that go to capital equipment and added these 'shares' to the figures obtained. All the figures pertaining to income are brought to the nearest dollar.

[c] Hook-and-line Fishing Units

Based on available data, the average gross annual income per unit of hook-and-line fishing from April 1957 to March 1958 was about $750.00.

TABLE 8

GROSS RETURNS TO PUKAT TAREK UNIT (CASE STUDY)

FROM JANUARY TO JUNE 1958.

Month	Income per gainful day ($)	Total Income ($)	Total No. of Gainful days.
January	36 35 45 48 54 70 53	341	7
February	30 33 33 27 12	135	5
March	36 27 28 30 72 63 234 108 460 639 18 24 34	1774	13
April	30 50 30 14	124	4
May	19 28	47	2
June	36 25 192 355 99 52 28 76 54	945	10
Grand Total		3366	41

TABLE 9

GROSS RETURNS TO PUKAT DALAM UNIT (CASE STUDY)

FROM JANUARY TO JUNE 1958

Month	Income per gainful day ($)	Total Income ($)	Total No. of gainful days
March	144 78	222	2
April	84 97 90 148 135 25 70 80	735	8
May	145 115 475 100	834	4
GRAND TOTAL		1791	14

C. RETURNS TO CAPITAL

From the estimated gross returns to Pukat Tarek/Pukat Dalam unit as shown earlier, it is now possible to estimate the net returns to the boat and the nets of the unit. It has been shown in Chapter II that the owner of the net-fishing unit gets 20 per cent of the remaining income after the 'share' of the engine (20 percent) has first been subtracted from the gross income as the share of the boat and the net irrespective of whether he operates them or he lends them out. Thus, from the estimated gross annual returns of $7,000.00 accrued to a fishing unit of Pukat Tarek/ Pukat Dalam, it can be calculated that the gross annualreturns to the boat and the nets are about $1,120.00. From the estimated

annual depreciation charge and the cost of repairs and maintenance of the fishing equipment as shown in Chapter III and Chapter IV, the net annual returns may be calculated as follows:

Complete Budget

Received by owner		$1,120.00
Paid by owner:		
Boat: Annual depreciation charge	$	52.00
Maintenance and repairs	$	35.00
Pukat Tarek: Annual depreciation charge	$	460.00
Maintenance and repairs.....	$	165.00
Pukat Dalam: Annual depreciation charge.....	$	200.00
Maintenance and repairs[6]	$	60.00
Total	$	972.00

From the above figures it can be shown that the net annual returns are $148.00, or given the total initial average costs of the boat and the nets to be $ 3,350.. as estimated in Chapter III and Chapter IV, the rate of returns is about 4.5 per cent. It is possible for the rate of returns to capital to be higher than this estimated rate because, as mentioned earlier, the

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6 The annual cost of maintenance and repair of Pukat Dalam is less than that of Pukat Tarek because its operations are seasonal.

estimate on the annual gross income . ther conservative.

Owing to inavaility of adequate informations on the income of other types of net-fishing units it is not possible to compare the rates of returns to the investment in the various types of net-fishing units.

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CHAPTER VII

CONCLUSION

The forgoing analysis of the capital equipment in the fishing industry in Beserah has thrown some light upon certain problems which deserve some comments.

By far the most important problem is the unsatisfactory distribution of capital ownership. As it has been pointed out, there is a heavy concentration of big boats and nets in the hands of a few, particularly the Chinese Towkays. This is indeed highly undersirable both from the economic as well as from social point of view. Economically, this heavy concentration of capital in the hands of the Chinese Towkays contributes to a greater strenthening of their monopolistic and monopsonistic position in the market which they have already established. Being mainly engaged in the dried fish industry, they are now sure of their source of wet fish which at the same time they can buy at the lowest possible price. Socially, the fishermen concerned are reduced to nothing more than servitude. They are not merely borrows of capital equipment owing the lenders only the interest rates; they have no choice in the disposal of their produce so as to obtain maximum possible income. There is thus a curtailment of freedom for a producer to gain legitimate returns to his efforts.

Of course, freeing the fishermen from the bondge of the capitalists does not solve the whole problem. The monopsonistic position of these towkays may be weakened[1], but their monopolistic position in the sale of fish still remains for want of competition. Therefore, the problem of price is still left unsolved.

Another problem that requires attention is the system of loans of capital equipment. It has been shown in Chapter I that the capital equipment is loaned to the head of the crew only in the case of net fishing. By virtue of the fact that he only has direct connection with the lender, his share of income is considerably larger than that of the rest of the crew; there is thus inquitable distribution of income. If loans of capital equipment were to be made by any public body it would be better perhaps to give them to the whole crew so that there could be a more equitable distribution of income - perhaps by establishing a Pool Ownership System.

As has been discussed in Chapter III, there has laready been a tendency towards lower cost of production in respect of nets. However, the cost of maintenance of engines is still fairly high. This is because of the lack of proper technical knowledge on the part of the fishermen in the use and maintaining once of the

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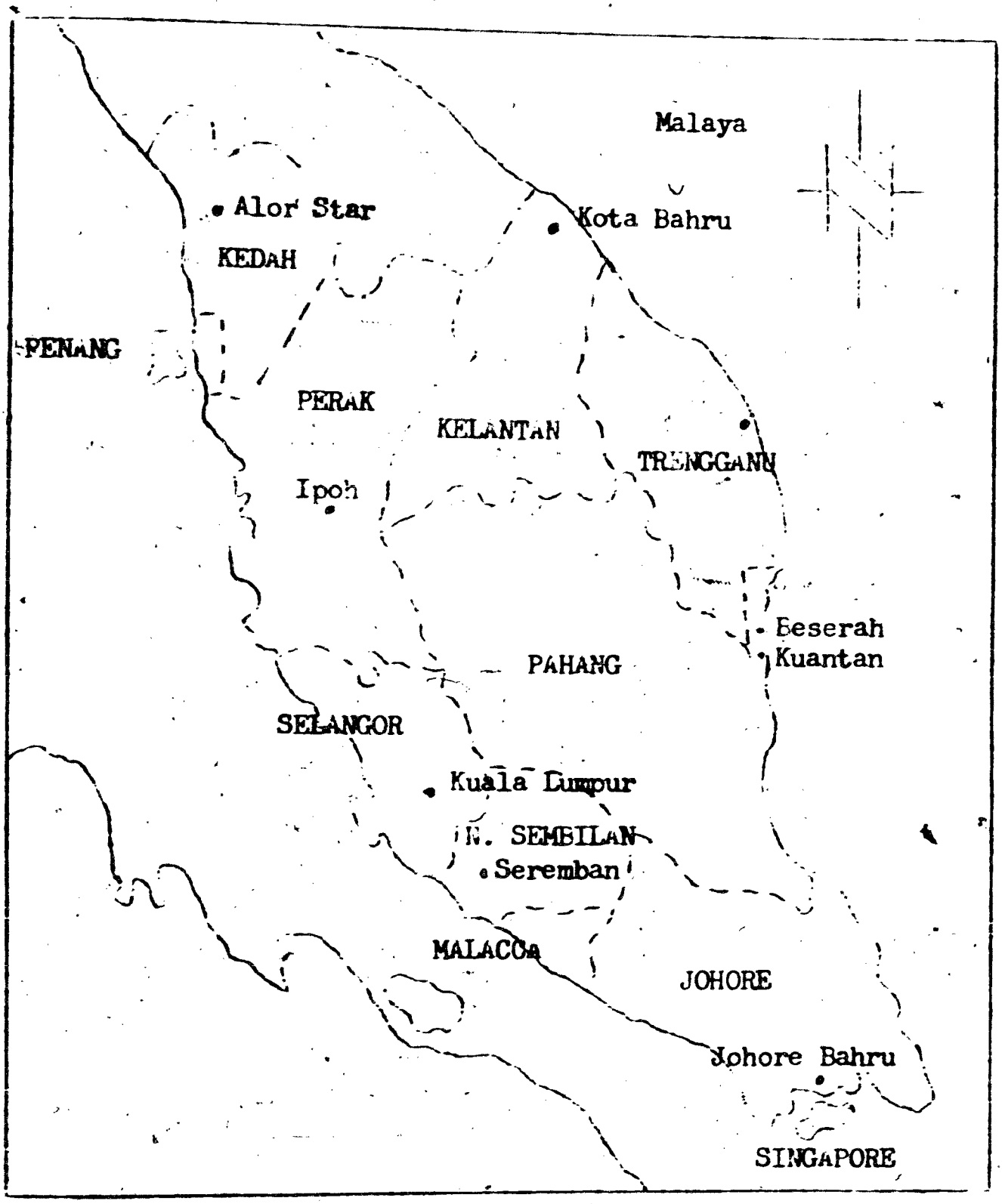
1 The Chinese Towkays are also the main suppliers of credit.

engines. Costs of production might be lowered still further if the fishermen were given adequate informations regarding proper use of and also the techniques of repairing the engines. In Singapore, for example, the Fisheries Department has introduced what is known as 'Fisheries Mobile Unit' to instruct the fishermen how to maintain and repair the engines. The results have been very satisfactory.

And finally there is the problem relating to the current expenditure on maintaining on fuel. In view of the fact that the flow of income of the fishermen is highly irregular, there would be a great need for a regular credit supply with reasonable rates of interest to the fishermen for their current expenditure if the fishermen were to have their own capital equipment. In this respect, co-operatives would perhaps serve the purpose.

ANNEX I.

MAP OF MALAYA (Map 1)

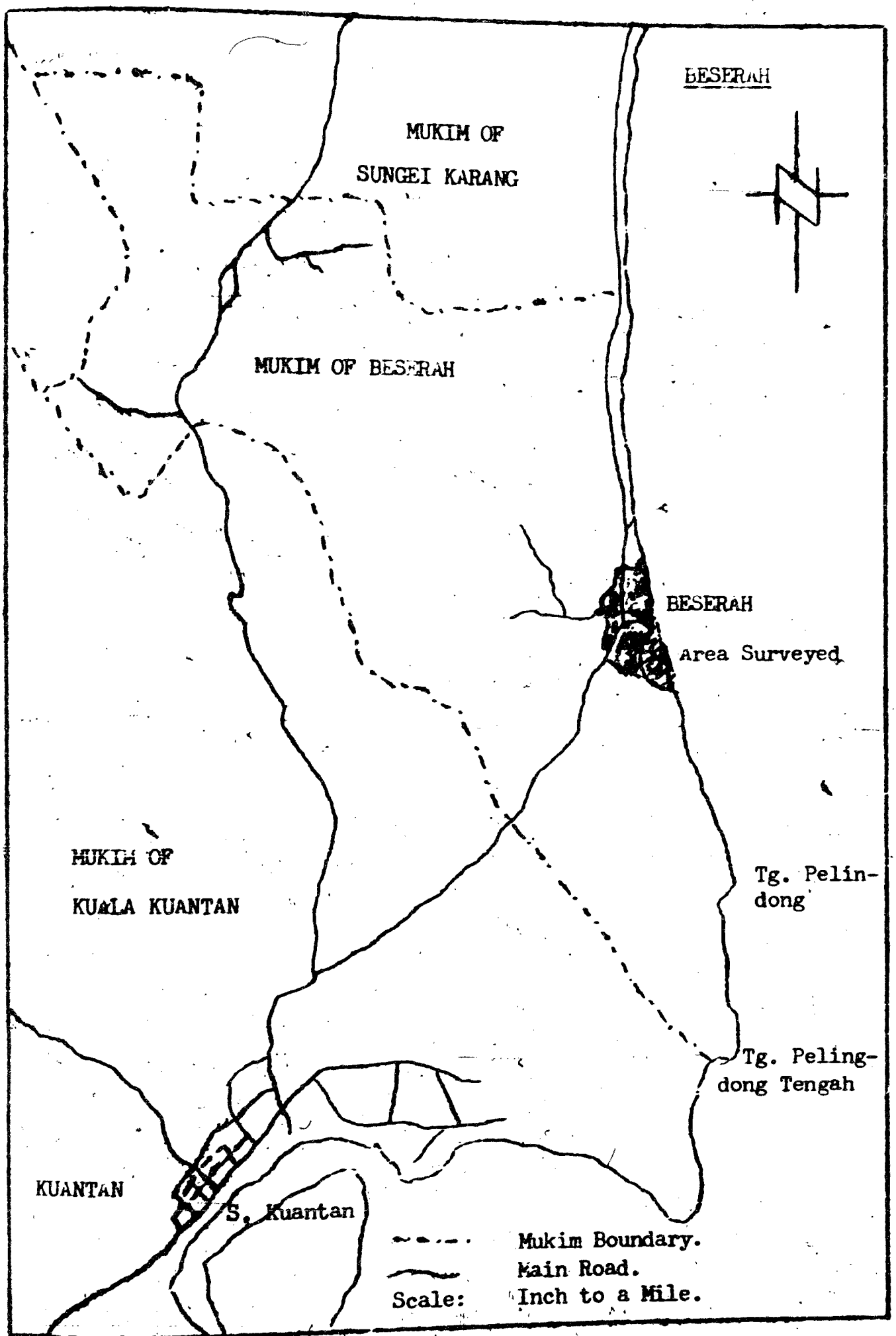


Scale:

0 20 40 60 miles

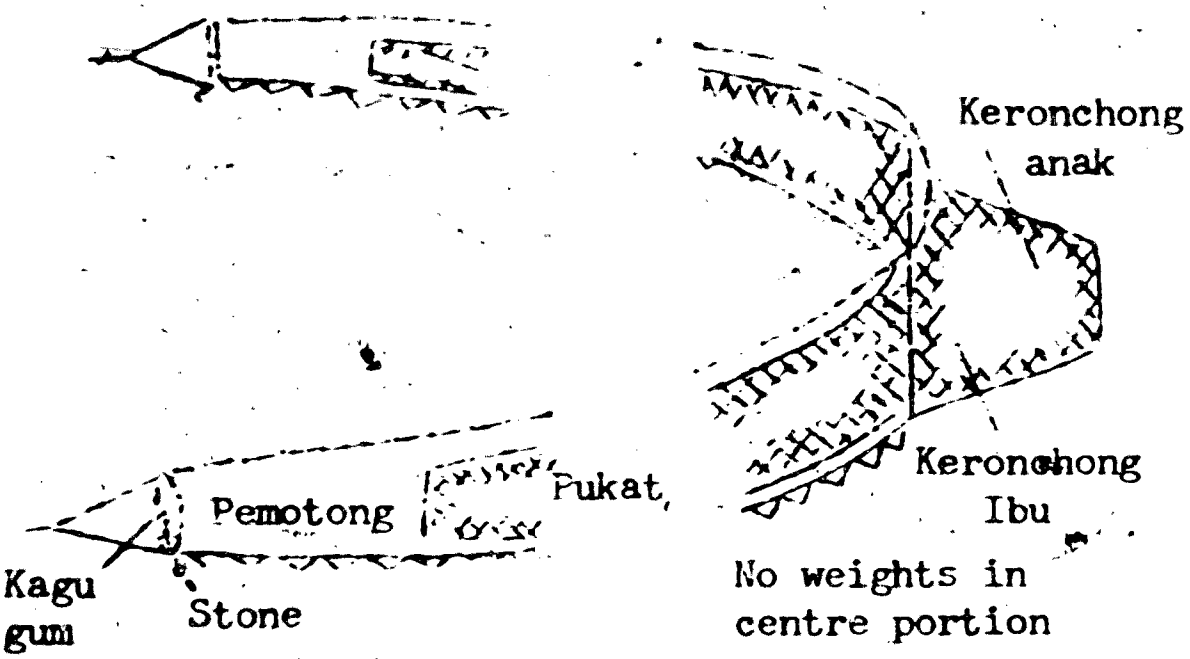
0 cm 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

MAP OF MUKIM BESERAH (Map 2)



APPENDIX II

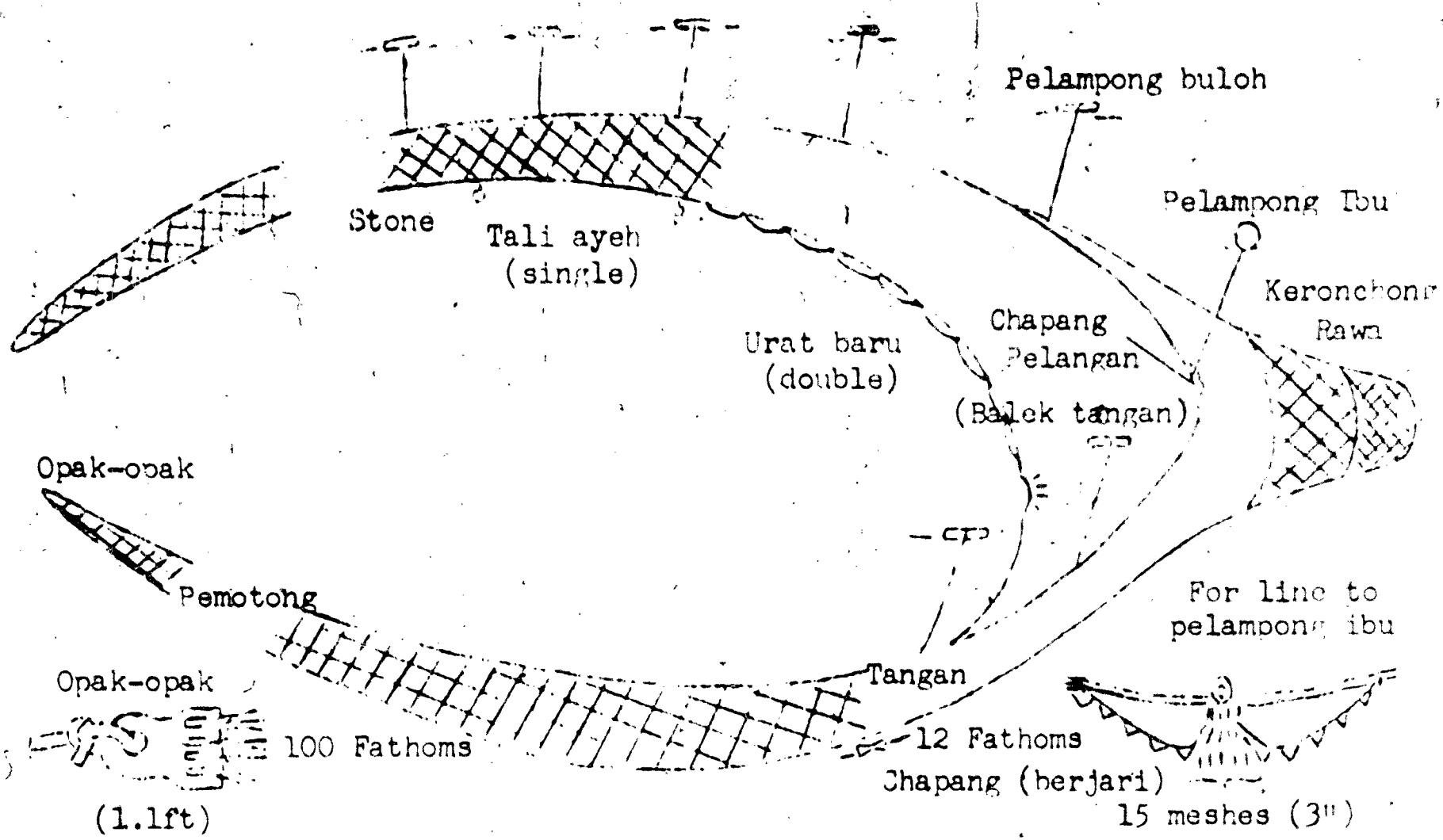
PUKAT TAREK



(Taken from the Journal of the Malayan Branch of the Royal Asiatic Society, Volume 27, 1954).

Diagram I

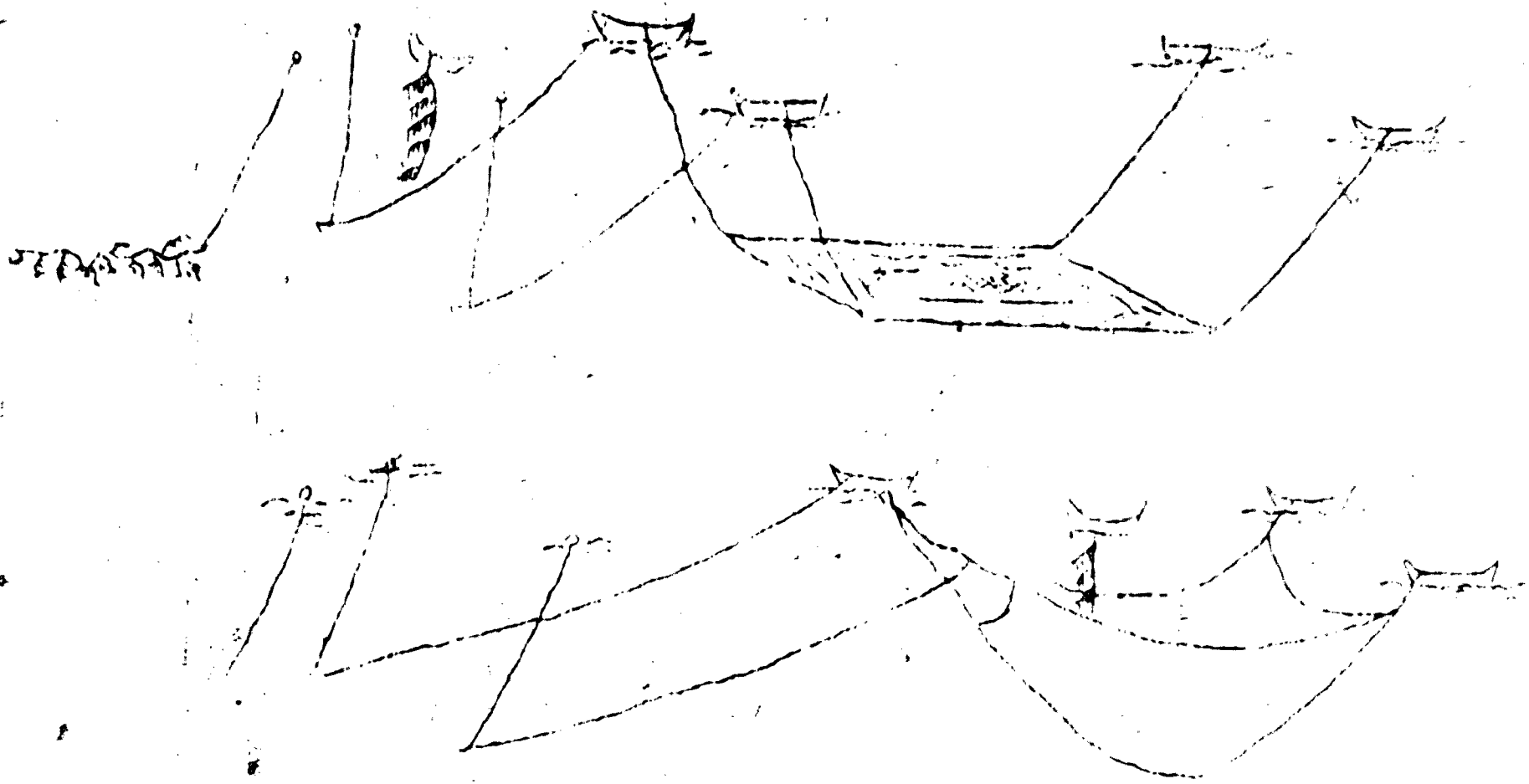
PUKAT PAYANG



(Taken from the Journal of the Malayan Branch of the Royal Asiatic Society, Volume 27, 1954).

Diagram H2

Operation of Pukat Tangkol

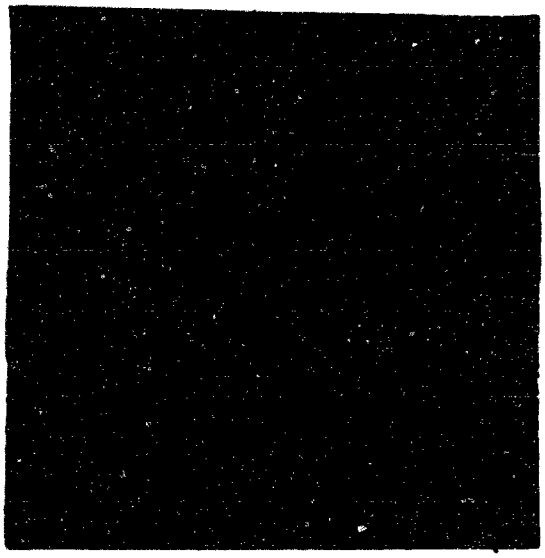


(Taken from the Journal of the Malayan Branch of the Royal Asiatic Society, Volume 27 1954).

Diagram ~~III~~ J

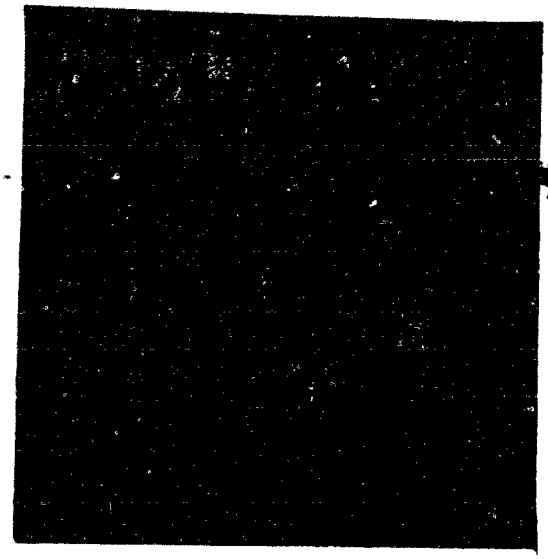
APPENDIX III

Photo 1



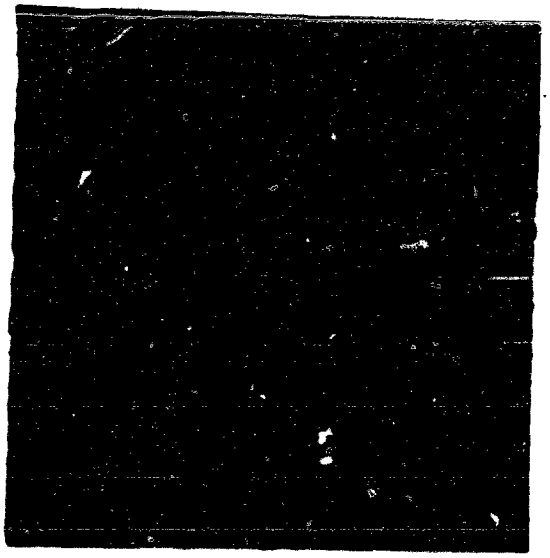
EUEH

Photo 2



SEKOCHI

Photo 3

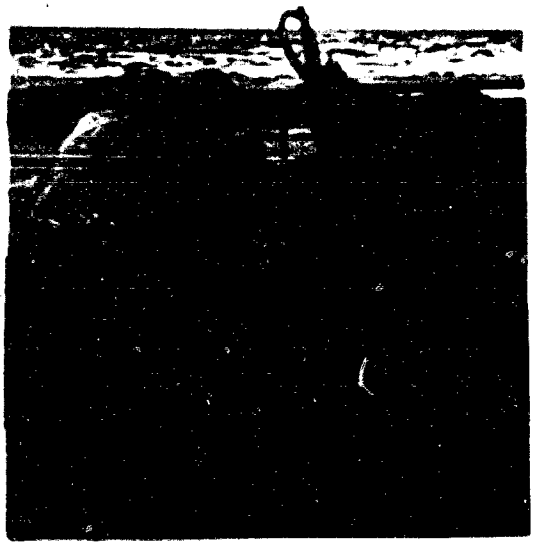


GELIBAT

Photo 4

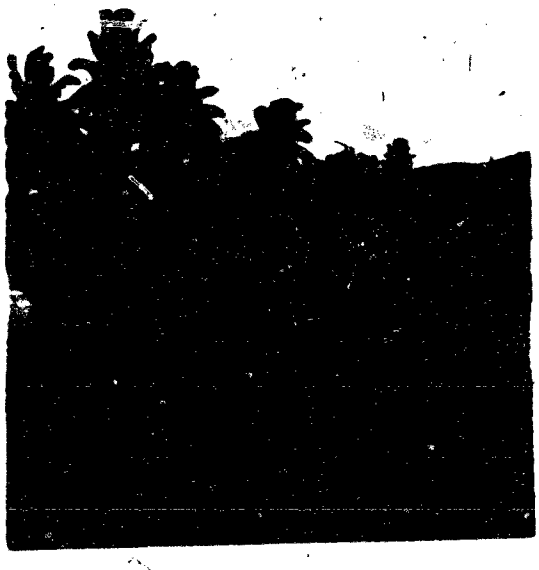
JALAK KONG

Photo 5



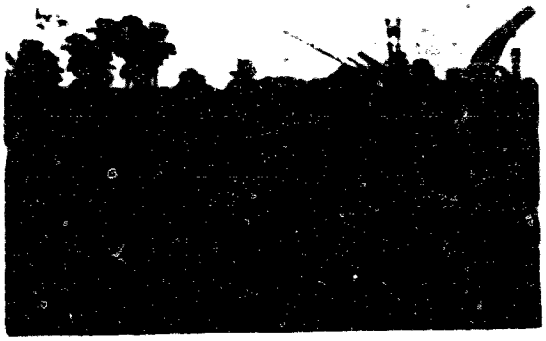
'SAMAK'
(Dying the not)

Photo 6



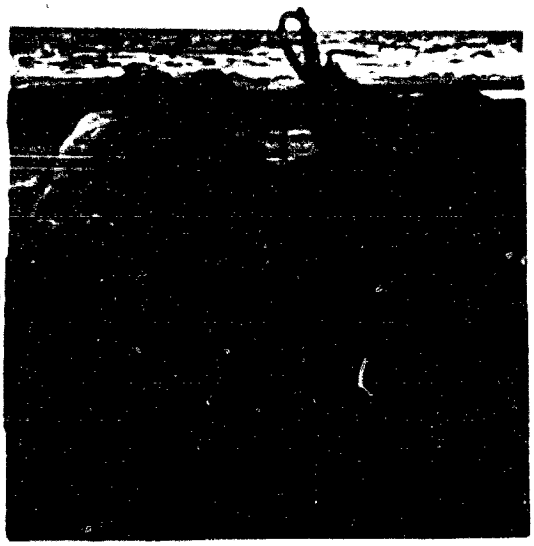
HAULING THE BOAT

Photo 4



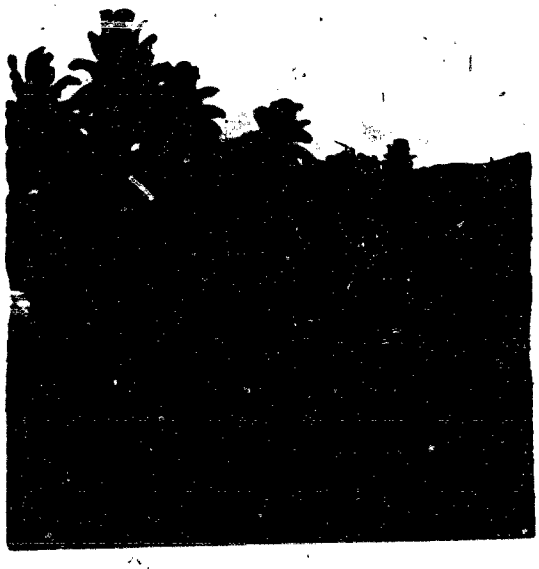
JALAK KONG

Photo 5



'SAMAK'
(Dying the net)

Photo 6



HAULING THE BOAT