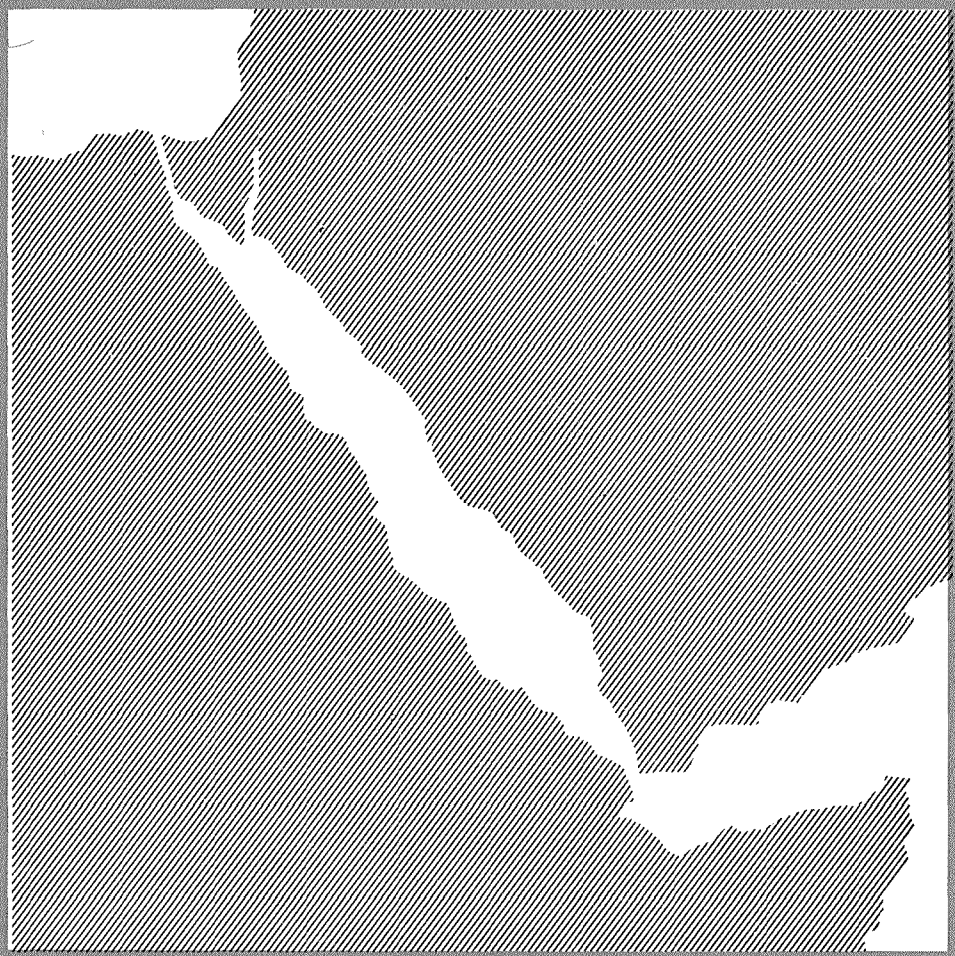


RAB 77/008/17

DEVELOPMENT OF FISHERIES IN AREAS  
OF THE RED SEA AND GULF OF ADEN

YEMEN ARAB REPUBLIC  
A SURVEY SYSTEM FOR QUICK ESTIMATES  
OF SOME SECTORS OF THE FISHING INDUSTRY  
PART TWO



UNITED NATIONS DEVELOPMENT PROGRAMME  
FOOD AND AGRICULTURE ORGANIZATION  
OF THE UNITED NATIONS

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PART TWO

( November 1979 )

BY

M. EID

Statistician, RAB/77/008

The views expressed in this report are  
those of the Expert and not necessarily  
those of FAO.

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A. PROGRAMME OF WORK :

Reconnaissance Statistical Survey in the southern part of the Yemen Arab Republic :

This pilot survey is considered as a continuation of the survey which was conducted in July 1979 and covered the northern part of the country . For the implementation of the survey , the survey system used is the same as the one employed for the northern part of the country . The survey is conducted during the period 15 November to 30 November 1979.

B. INTRODUCTION :

1. Background Information :

There are four major fishing villages/landing places on the southern part of the YAR coast : Khawkha, Mocha, Dubab and Bab El-Mandab .

With the exception of the last one , for which the permission to visit it was not forthcoming within the period assigned , the other three landing places were visited.

During our visit to Khawkha, we were informed about Kattaba as being a productive fishing centre. Consequently , it was added to the schedule .

Regarding the inland fish markets, Zabid was chosen for recording marketing data, due to its important situation.

Despite arriving in Sana'a on 15 November 1979, due to unavoidable delays, the trip :

- (i) from Sana'a to Hodeidah began on 20 November ( 15/16 November being holidays at UNDP ) ;
- (ii) from Hodeidah to Khawkha was delayed until 25 November since the greenlight to proceed was only given at 19.00 hours on 24 November ; and
- (iii) to Mocha and Dubab, in order to avoid more delays, the counterpart was sent to Taiiz to get the necessary permission and then joined the team at Khawkha.

Also, to save time, Zabid market was chosen to be visited first in the early morning of 25 November, after which we proceeded to Khawkha on the same day in the afternoon. Thus, four major landing places and a fish market were covered in five days .

2. The Plan :

The same plan which was applied in the northern part of the coast, i.e. carrying out the three surveys simultaneously instead of consecutively, was followed in this trip.

3. Major Principles :

The same principles on which the plan of the previous trip relied were also followed.

4. Execution Strategy :

Although we managed to camp at the landing places, we could not make any use of the tents and camping equipment which we carried due to the strong wind which was blowing. Nevertheless, we were at the landing places early in the morning to receive the first landing units.

Following the catch that was weighed and recorded at the landing place to the wholesale market was applied to Mocha. At Khawkha, catches were weighed at Khawkha wholesale market into which pour the catches from the Khawkha and Wayera landing places .

Due to the cooperative work of the team, we were able to weigh nearly the whole catch at Mocha and most of it at Khawkha, in addition to the whole quantity of fish which was brought to Zabid market was weighed, with the exception of some sharks which could not be hung on the balance.

5. Discussions with Fishermen :

Meetings with experienced fishermen were held at each of the landing places at Mocha and Dubab, where there were no head fishermen. Information was obtained from the Chief of Development at Khawkha and Kattaba due to the passive response of the head fishermen .

6. Photographs :

The report is supplemented with 96 photographs that may help to give a more complete picture. Some photos have been devoted to showing some of the major species, others for illustrating fish processing.

7. The team :

This report is the outcome of hard work and cooperative efforts of the team which consisted of :

Counterpart :

Mr. A. Saleh, Fisheries Department, Ministry of Agriculture, YAR

Enumerators :

Mr. A. Shamy	}	fishermen's Training Centre, Hodeidah
Mr. Abd EL-Hamid		
Mr. Abdullah		

It is worth noting that Mr. M. Gaffar, Fisheries Officer, Hodeidah participated in the supervision of the field work at Zabid.

C. LANDING PLACES AND WHOLESALE MARKETS :

KHAWKHA :

1. Background Information :

The coast of Khawkha consists mainly of four villages : Khawkha, Wayera, Kattaba and Abazahr, in addition to two minor villages called Mosheig and Heima. The first two villages, Khawkha and Wayera, are very adjacent; the distance between them is about 1 km. Moreover , their catches pour into the Khawkha wholesale market. Consequently, Khawkha and Wayera landing places have been investigated simultaneously.

Since we were informed that the fishing activity at Kattaba may be more than that at Khawkha and Wayera, a visit to Kattaba was made separately.

2. Landing Places :

There are no facilities of any sort at both of the landing places at Khawkha and Wayera.

3. Fishing Units :

Although we arranged with the head of the fishermen for a meeting with some fishermen, their response was negative. The required information, however, was obtained from the Chief of Development at Khawkha .

The number of fishing units at each of the four villages is as follows :

<u>Village</u>	<u>No. of fishing units</u>	
	<u>Sambuks</u>	<u>Houris (Mech.)</u>
Khawkha	18	35
Wayera	7	25
Kattaba	17	45
Abazahr	33	8
	<hr/>	<hr/>
	75	113

All the sambuks are of the large-sized tonnage type, i.e. 10-15 tons, and their engine power ranging from 50-55 hp.

In summer, all sambuks and big houris go fishing at distances of 20 miles from the Khawkha coast at the fishing grounds of Elfoot, Elbaha, Hasba and Harmala. The fishing depth may exceed 40 fathoms.

In winter, all the sambuks and large houris ( or 3 tons ) go fishing at the Yemeni isles at Luhaya ( Backlan ) and Jizan. It takes 1.5 days to reach Jizan, where they stay continuously for six months, then return to rest at Khawkha for six months. Only small mechanized houris and non-mechanized ones operate at Khawkha during this season.

In autumn, some sambuks go fishing at Khoba and Luhaya and sometimes at Hodeidah.

Since Khawkha and Wayera are adjacent, the number of fishing units, as counted at 10.30 hours on 26 November, was as follows :

Houris :

Mechanized	30
Non-mechanized	34
Rafts	4

No sambuks were seen. Houris were of a small and medium size ( Pns. 123 and 124 ) . At Wayera, we noticed that houris were kept under dry plant shelters ( Pns. 125 and 126 ) . On windy days, it is said that most of the fishermen on houris use sails instead of engines. Some small houris ( oars ) are especially used for fishing immature anchovy ( wasef ) (Photo 127 ). There were stones in some houris; we were informed that fishermen use these stones in their houris for balancing the boat ( Photo 128 ).

Rafts are made by joining light dry branches together ( Photo 129 ).

#### 4. Boat building :

There are no workshops for building fishing units at Khawkha, but there are several scattered boatbuilders for building hulls ( Photo 130 ). The value of a small houri is approx. YR 5 000, a medium one costs YR 10 000 ( excluding engine ) and a large one YR 80 000 ( excluding engine). The value of a sambuk ranges from YR 150 000 to YR 200 000 ( excluding engine ).

#### 5. Fuel :

Petrol is purchased from Khawkha at YR 42 for 20 litres including YR 2 for transportation ).

#### 6. Ice and salt :

Small blocks of ice ( 25 kg ) are purchased from Zabid at YR 12 block and large blocks ( 100 kg ) from Taiiz at YR 50/block. Salt which is purchased from Yokhtal, near Mocha costs YR 75 per sack ( 75 kg ).

#### 7. Collecting statistical data :

##### 7.1 Execution strategy :

The execution strategy for recording data on the beach and at the wholesale market simultaneously may be summarized as follows :

- (i) locating one enumerator, provided with a car, to cover both of the adjacent landing places ( Khawkha and Wayera ) for recording the time of arrival, type of fishing units , number of fishermen, type and power of engine and gears used ;
- (ii) locating two enumerators, with the tripod-balance, at the Khawkha wholesale market for weighing the catches brought from the two landing places and recording values ; and
- (iii) my supervision concentrated mostly on operations at the market. I was able to supervise at the landing places when the counterpart returned from Taiiz at 13.00 hours and joined the team .

8. Number of landings :

The total number of landing units ( houris, rafts and fishermen ) on 26 November at Khawkha and Wayera was 29 , distributed as follows :

Houris :

Mechanized	6
Non-mechanized	20
Rafts	2
Fishermen	1
	<hr/>
	29

All the mechanized houris that landed on that day had Yamaha engines of 8 hp. The distribution of the landed fishing units is shown in Table 28 .

The high percentage of sail houris ( Table 28 ) needs explanation; since it was a windy day, most of the fishermen used sails instead of engines.

9. Particulars of the catch :

At 8.30 hours, landings began at Khawkha when an immigrant Ethiopian fisherman landed a big turtle ( approx. 80 kg ) ( Phs. 131 and 132 ). Although this quantity should be taken into account when computing production estimates, it has to be excluded from marketing activity, since it was for family consumption.

We noticed that some fishermen prefer to cut the heads and tails off of the sharks on the beach ( Photo 133 ). Fish are threaded together to form bundles ( Photo 134 ) by means of plant leaf passed through gills ( Photo 134 ) bundles of fish are then washed in the sea before marketing ( Photo 135 ) . Birds clean the beach by eating the waste ( Photo 136 ).

Landing ended at 13.30 hours .

9.1 Immature anchovy :

It is worth noting that 90 kg of immature anchovy ( called wasef ) was landed ( Photo 137 ), 40 kg of which was landed by a small houri ( oars ) ( Photo 127 ) at Khawkha at 9.00 hours and 50 kg by a raft at Wayera at 9.15 hours. The two quantities were sold on the beach for a total amount of YR 100. We were informed that the ( Wasef ) is delicious and is eaten like nuts after being lightly smoked.

9.2 Species caught :

As has been mentioned before, the balance was located at Khawkha wholesale market , into which the landed fish pours from both Khawkha and Wayera, with the exception of ( wasef ), which is usually sold on the beach .

Consequently, the total catch by species and values is shown in the 'Fish Marketing' section .

Table 28 :

Number of fishing units  
that landed on 26 November at Khawkha & Wayera

Fishing unit	Engine		Units landed		%
	Type	hp	No.	%	
1. Houris :					90
(i) Mechanized	Yamaha	8	6	23	21
(ii) Non-mechanized (19 sail + oars)			20	77	69
Total houris			26	100	
2. Rafts			2		7
3. Fishermen			1		3
GRAND TOTAL.....			29		100

10. Fishermen :

The number of fishermen, operating in winter, as estimated by the Chief of Development at Khawkha, ranges from 50 to 70.

Unless the six-month trips to Jizan made by fishermen on sambuks and large houris are to be considered as a temporary migration, it could be said that there is no migration of fishermen to or from Khawkha.

The total number of fishermen on fishing units that landed on 26 November was 70 , out of which 64 percent work on sail-houris and 30 percent on mechanized ones. Table 29 shows the number of fishermen on each type of fishing unit. From this table it is obvious that the average number of fishermen on sail houris is more than two. This explains that sails were temporarily used on most of the houris when fishing on a windy day.

11. Fish Marketing :

11.1 The Wholesale Market :

11.1.1 Site :

The wholesale market at Khawkha is not situated on the beach. The distance between both of the two landing places and the market is about 1.5-2 km. Some fishermen shift their catches from the beach to the market by small cars when the landed catch is large ( Photo 138 ), others by donkeys. For small quantities, fishermen carry their catches to the market.

The wholesale market at Khawkha is not a building ; it is just a shelter on an area of approx. 240 m<sup>2</sup> ( 20 m x 12 m ) ; the ground is covered with dust ( Photo 139 ). Under the shelter are tables used for cutting fish ( Photo 140 ). Nevertheless, workers

prefer to cut fishes on the ground ( Photo 141 ).

#### 11.1.2 Auctions :

We managed to weigh all of the catches brought to the market before being auctioned. We succeeded in fact in weighing most of the catches ( approx. 70 percent )( Photo 142 ). However, at 14.45 hours, the patience of the fishermen and the auctioneers seemed to run out and they refused to weigh any more, with the exception of the last fisherman , who agreed to weigh.

Thus, from 14.45 hours onwards until 14.58, near the end , we were obliged to record the number of fish under auction . Values of fish were recorded as usual as soon as the values were settled.

Auctions began as soon as the first catch was brought to the market at 10.50 hours . All varieties were auctioned in numbers, not on a weight basis. The last quantity of fish was brought at 14.58 hours.

#### 11.1.3 Auctioneers :

At the market, there were three auctioneers, including the ' Ackel ' ( Chief ) of the market ( Photo 143 ). Ten percent of the total value of the catch is the usual percentage paid to auctioneers by fishermen at the Khawkha wholesale market for conducting auctions .

Table 29 :

Number of fishermen on fishing units that  
landed on 26 November 1979 at Khawkha and Wayera

Fishing unit	hp	No. of units landed	Fishermen	
			No.	%
1. Houris:	8			95.7
(i) Mechanized		6	21	30.0
(ii) Non-mechanized (19 sail+oars)		20	46	65.7
Total houris		26	67	
2. Rafts		2	2	2.9
3. Fishermen		1	1	1.4
GRAND TOTAL		29	70	100.0

11.1.4 Species brought to the market :

The total catch brought to the wholesale market from Khawkha and Wayera on 26 November excluding immature anchovy ( 90 kg ) which was sold on the beach was 821.3 kg. The distribution by species is as follows :

<u>Species</u>	<u>Quantities (kg)</u>	<u>%</u>
Sharks	213.5	26.0
Scads	215.0	26.2
Jacks	82.7	10.0
Kingfish	12.3	1.5
Black Kingfish	31.0	3.8
Queen fish	88.5	10.8
Barracuda	17.0	2.1
Thread fin breams	12.5	1.5
Sea cat fish	12.2	1.5
Emperors	3.5	0.4
Others	133.1	16.2
	<u>821.3</u>	<u>100.0</u>
	=====	=====

Photos 144,145 and 146 show some of the species brought : Scads, Kingfish and Emperors respectively.

11.2 Value of the catch :

By recording the values at the market, we were able to get the total value of the catch .

11.2.1 Gross Value :

The total value of the catch amounted to YR 5 527. If we add to it the value of the immature anchovy ( Wasef ), which was

sold on the beach at YR 100, the total value of the whole catch ( producer value ) would be YR 5 627 .

11.2.2 Net Value :

The procedure for computing the net value which is applied at Khawkha is as follows :

a. deduct the following items from the gross value :

(i) auctioning commission

- subtract 10 percent from the gross value

(ii) depreciation of engine

- from mechanized boats, subtract one third of the remainder for the depreciation of engine

- for non-mechanized boats, this item is not effective.

(iii) the owner of the boat

- subtract one third for depreciation of boat and gears and for other expenses ( ice, salt, etc. )

b. the remainder is the net value that is distributed among the fishermen who participate in the fishing and who make the catch.

11.3 Producer prices :

The average price/kg of some varieties, including mixed varieties, was as follows :

<u>Variety</u>	<u>Percentage of catch</u>	<u>Quantity auctioned (kg)</u>	<u>Value YR</u>	<u>Average price/kg YR</u>
Sharks	26.0	125.0*	450	3.6
Scads	26.2	215.0	2 420	11.3
Jacks	10.0	82.7	720	8.7
Kingfish	1.5	12.3*	385	31.3
Black Kingfish	3.8	24.0*	160	6.7
Queen fish	10.8	65.0*	105	1.6
Barracuda	2.1	5.0	30	6.0
Thread fin breams	1.5	12.5	90	7.2
Sea cat fish	1.5	7.7*	7	0.9
Emperors	0.4	3.5	50	14.3
Mixed varieties/ others		268.6	1 110	
		<hr/>		
		821.3	5 527	
		=====		

\* Some of the catch was sold mixed with other species.

The producer price of the immature anchovy ' Wasef ' ( 90 kg ) which was sold on the beach for a total amount of YR 100 was YR 1.1.

#### 11.4 Inflow of fish :

As soon as the first catch was brought to the market at 10.55 hours, the auction began. By 12.00 hours, nearly one quarter of the total catch had reached the market. At 14.58 hours the last quantity was brought.

The inflow of fish hour by hour is shown below :

<u>Time</u>	<u>Quantity</u>	<u>A c c u m m u l a t i v e</u>	
10.55	133.5 kg	133.5 kg	16 percent
12.00	60.2	193.7	24 percent
13.00	21.5	215.2	26 percent
14.00	147.0	362.2	44 percent
14.58	459.1	821.3	100 percent

11.5 Buyers :

Buyers can be divided into two main categories :

- (i) local buyers ( for local consumption ) ; and
- (ii) traders, who buy large quantities ( about 90 percent ) of the fish to be salted or smoked before transportation .

12. The Retail Market :

The retail market is situated on an area of approx. 12 m<sup>2</sup> ( 4 m x 3 m ) covered with a dried plant roof. It is in front of the wholesale market ( Photos 147 and 148 ) and has an ice box .

As the fish are sold in numbers, the retail price for one fish of some of the species was :

<u>Species</u>	<u>No. of fish</u>	<u>Price</u>	<u>Remarks</u>
Scads	3	YR 14	
Emperors	1	YR 15	
Black Kingfish	(piece)	YR 10	Approx. one quarter kg
Kingfish	(piece)	YR 10	" " " "

13. Fish Processing :

Traders and owners of ovens bought most of the catch (about 90 percent ) to be processed before transportation.

Fish processing is very primitive. There are two methods for processing fish at Khawkha .

13.1 Salting :

The procedure is summarized as follows :

- by using a sharp knife, an opening is made along the abdominal side of the fish ;
- the abdominal system is extracted by the knife and sometimes the fingers ; and
- an adequate quantity of salt is inserted inside the opening.

Most of the species of fish could be salted ( Photo 149 ), especially sharks, which are on the top of the list. After cutting the heads and tails, large quantity of salt is put on top of each heap ( Photo 150 ), then they thoroughly mix the pieces of shark with salt . Salted pieces of sharks are then packed into small containers ( Photo 151 ).

### 13.2 Smoking :

There are two ovens for smoking fish at Khawkha. Iced fish is not suitable for smoking .

The procedure is summarized as follows :

- fishes are prepared for smoking by extracting the abdominal system ;
- the fish are hung on ropes and left for sometime to dry ( Photo 152 ) ; and
- the fish are then put into ovens to be smoked over a no-flame fire ( Photos 153 and 154 ).

KATTABA :

1. Background information :

Kattaba is one of the most important villages on the Khawkha coast. It is about 8 km from Khawkha.

2. Landing place :

The landing place is located directly on the beach. At 7.00 hours, at first sight, it looked deserted. At 8.00 hours, some fishermen came and stood idly on the beach. There is no port or any other facility, only an ice box with a cover on it fixed with nails which seemed as if it had not been used in a long time ( Photo 155 ).

3. Number of fishing units :

Due to the passive response of the head fisherman at Kattaba, we could not arrange a meeting with him and the other fishermen . Consequently, we were not able to get any information about the fishing units. However, the only information we have about them is that given by the Chief of Development at Khawkha ( Page 5 ).

On the beach were some scattered houris ( Photo 156 ). The number of fishing units counted at 9.00 hours on 27 November was as follows :

Houris :

Mechanized	12
Non-mechanized	17
<u>Rafts :</u>	4
	<hr/>
	33

No sambuks were in sight.

Photos 157 and 158 show a mechanized houri and a non-mechanized one respectively. Photo 159 shows a net ( very small mesh ) that was found in a houri on the beach .

4. Boat building :

There are no workshops for building or repairing fishing units . The hull of a houri is purchased from Khawkha.

5. Fuel :

Since there are no fuel stations at Kattaba, fuel is purchased from Khawkha. The price of 20 litres is YR 50 ( including transportation ).

6. Ice :

There are no ice plants at Kattaba. Usually, fishermen there do not use ice in their fishing trips.

7. Number of landings :

The total number of landing units ( houris and rafts ) on 27 November 1979 was 30, distributed as follows :

<u>Fishing units</u>	<u>No.</u>	<u>Remarks:</u>
Houris :		
Mechanized	26	
Non-mechanized	3	One landed twice
Rafts :	1	
	<hr/>	
	30	

Landing began at 09.05 hours and ended at 14.20 hours. But, the time sequence of the landing at Kattaba was peculiar and unique.

Nearly an hour elapsed between each of the first four fishing units, then a rush of landing followed. At 13.25 hours, three units landed their catches simultaneously and two units landed at 13.30 hours . Twenty-seven units landed within two hours and the landing place seemed to be a bee-hive. Photographs 160 and 161 together show the landed fishing units at 14.00 hours. The times of arrival are shown in Table 30.

Table 30 :

Time of arrival of fishing units that landed on 27 November 1979 at Kattaba

Serial Number	Time of arrival		Fishing units landed		
	H	M	Type	Engine Type	Hp
1	9	05	Non-mech.		
2	10	20	Raft		
3	11	20	Non-mech.		
4	12	25	Mechanized	Yamaha	8
5	12	27	"	"	8
6	12	40	"	"	8
7	12	45	"	"	8
8	12	48	"	"	15
9	12	50	"	"	8
10	13	00	"	"	15
11	13	02	"	"	8
12	13	05	"	"	15
13	13	08	"	"	15
14	13	10	"	"	8
15	13	15	"	"	15
16	13	18	Mechanized	Johnson	15
17	13	25	"	Yamaha	15
18	13	25	"	"	15
19	13	25	"	"	15
20	13	30	"	"	15
21	13	30	"	"	8
22	13	33	"	"	8
23	13	40	"	"	8
24	13	45	"	"	8
25	13	30	"	"	8
26	13	52	"	"	15
27	13	55	"	"	8
28	14	00	"	"	15
29	14	10	Non-mech.		
30	14	20	Mechanized	Yamaha	15

7.1 Execution strategy :

To confront the rush at the landing place and also to record the prices of fish at the wholesale market, the operational stage situation necessitated dividing the team into two groups : the first consisted of two enumerators, under my supervision, for recording particulars of boats, and the second consisted of an enumerator and the counterpart for recording fish prices at the wholesale market.

7.2 Engines :

Eighty seven percent of the total number of houris that landed on that day were mechanized with outboard engines. Ninety-six percent of these mechanized houris had Yamaha engines and the remaining four percent Johnson. It was noticed that most fishermen took their outboard engines ashore; to avoid metal corrosion that may ruin the engines.

The distribution of the fishing units that landed on 27 November is shown in Table 31.

8. Particulars of the catch :

We were able to weigh the catch of the first three fishing units ( Photo 162 ), i.e. two non-mechanized houris and a raft , which amounted to 11.7 kg. It is worth noting that the first houri ( Photo 163 ) landed its catch ( 9.1 kg ) at 09.05 hours then went fishing again and returned and landed its catch ( 1.4 kg of mixed varieties )( Photo 164 ) at 11.20 hours.

A raft, which was fishing not far from the beach, was visible ( Photo 165 ). At 10.20 , a fisherman landed with his raft. After fishing for four hours, he had caught only four fish ( Photo 166 ) that weighed 1.2 kg ( Photo 167 ).

From photo 166, it is obvious that the fisherman, who landed on the raft, was of middle-age . This indicates that rafts are not exclusively for aged fishermen. Therefore, the socio-economic class of fisherman may be considered as another factor.

### 8.1 Species caught :

We managed to weigh the catch that landed. Despite the rush of landings, we could have weighed the catch, or part of it by using the two balances which we carried with us, without weighing each variety separately.

But, due to the uncooperative, passive response of the head fisherman who arrived on the beach at 11.30 hours, the fishermen, who seemed under his influence, refused to weigh even part of the catch. The fisherman's attitude became clear when he asked us to inform him why fishermen at Hodeidah refused to weigh their catch

The total catch is estimated at 1 670 kg. The eye-estimates of the catch by species were as follows :

<u>Species</u>	<u>Estimated weight (kg)</u>	<u>Percentage</u>
Sharks	350	21
Rays	50	3
Kingfish	200	12
Black Kingfish	70	4
Queen fish	100	6
Scads	250	15
Jacks	200	12
Emperors	50	3
Sail fish	25	2
Others	375	22
	<hr/>	<hr/>
	1 670	100

Sharks were left on the beach ( Photo 168 ) where their heads and tails were cut off and the skins removed ( Photo 169 ). Photograph 170 shows the only sail fish that was caught.

Table 31 :

Number of fishing units that landed  
on 27 November at Kattaba

Fishing Unit	Engine		Units landed		%
	Type	hp	No.	%	
1. Houris :					97
(i) Mechanized					87
	Yamaha	8	13	50	
	Yamaha	15	12	46	
	Johnson	15	1	4	
Total.....			26	100	
(ii) Non-mechanized (2 oars + sail)			3		10
Total houris.....			29		
2. Rafts :			1		3
GRAND TOTAL.....			30		100

9. Fish marketing :

9.1 The wholesale market :

9.1.1 Site :

The wholesale market at Kattaba is situated on the beach. It is not a building, just a dust-covered area without any shelter ( Photo 171 ). An ice-box is available, but it seemed that it had not been used for a long time ( Photo 155 ).

9.1.2 Auctions :

It is worth noting that the catch ( 9.1 kg ) made by the houri which arrived at 09.05 hours was sold on the beach at YR 35. Similarly, the catch ( 1.4 kg ) by the same houri, which arrived at 11.20 hours, was sold at YR 15.

The catch ( 1.2 kg ) which was made by the raft that arrived at 10.20 hours was brought to the market, but was thrown away because it was inedible.

Auctions began at 12.25 hours, i.e. as soon as the rush of landings started. All varieties of fish were auctioned in numbers, not on a weight basis. Auctions ended at 14.30 hours. The head fisherman stayed at the market until the last auction.

9.1.3 Auctioneers :

At the market, there were four auctioneers. Unlike Khawkha, 5 percent of the total value of the catch is the usual percentage paid to auctioneers by fishermen as a commission for conducting auctions .

9.2 Value of the catch :

Since four auctions were held simultaneously, the operational stage at the market needed at least four enumerators for recording the values of all the auctions . The counterpart and an enumerator were able to record the producer prices of the major varieties auctioned .

9.3 Producer prices :

As all of the varieties of fish were auctioned in numbers, the producer prices of numbers of fish were as follows :

<u>Species</u>	<u>No.of fish</u>	<u>Estimated weight</u> (kg)	<u>Producer Price</u> YR
Kingfish	1	2.5	65
"	1	7.0	250
"	1	1.5	25
"	2	2.5	150
"	1	5.5	180
"	1	1.5	40
Scads	30	6.0	135
Jacks	1	6.0	100
Black kingfish	1	2.5	50
Queen fish	1	5.5	50
" "	1	5.5	90
Emperors	15	4.5	245
Barracudas	5	3.0	66
Sharks	1	20.0	50

9.4 Buyers :

Buyers can be divided into five main categories :

- (i) local retail traders, who buy small quantities of fish for local consumption ;

- (ii) small traders, who buy small quantities of fish (about 10 percent of the total catch ) to be transported fresh by motor cycle to places nearby ( Photo 172 ).
- (iii) traders, who buy fish to be transported fresh ( approx. 15 percent ) by car ( Photos 173,174 and 175 ) to Hais and Garrahy;
- (iv) owners of ovens, who buy fish ( approx. 20 percent ) to be smoked before transportation ( Photo 176 ) ;
- (v) big traders, who buy the majority of fish ( approx. 50 percent ) which are moved by porters ( Photo 177 ) to huts nearby where :

- the skins of sharks are removed ( Photos 178, 179 ) and then the flesh is cut into pieces and packed in small containers after salting ; and
- fish, like Kingfish and Black Kingfish are cut into pieces ( after cutting off their heads and tails ) and then packed in small containers after being salted ( Photo 180 ).

Salted fish is then transported in the evening by car ( Photo 181 ) to Hais or Garrahy.

At 15.00 hours, we visited one of the two large huts for salting fish, where we found the head fisherman ( Photo 182 ).

#### MOCHA :

##### 1. Landing Place :

There are no facilities at the landing place. Since the coast at Mocha is open, it is affected by strong wind and high waves. Due to the strong wind, we could not camp on the beach. Nevertheless, we were at the beach before 07.00 hours. Like Hodeidah, a fisherman has to cross a road approx. 10 m in width in order to shift the catch from the beach to the market ;

which is quite a burden and is dangerous as well.

2. Fishing units :

The number of fishing units as counted on 28 November was as follows :

<u>No.</u>	<u>Type of boat</u>
14	Mechanized houris
11	Non-mechanized houris
—	
25	Total

No sambuks were observed.

We were informed by some experienced fishermen , in the presence of the Fisheries Guide ( Ministry of Agriculture ) in the fishermen's meeting on 28 November ( Photo 183 ) that the estimated number of fishing units is 45 houris, most of which are mechanized ones .

3. Boat building :

There are no workshops for building or repairing hulls of fishing units at Mocha . The hull of a houri is built or repaired at Khawkha . A small houri , excluding engine , costs YR 10 000 and a large one YR 12 000.

4. Fuel :

Fuel is purchased at Mocha from the fuel station , which is 1 km from the beach , at YR 10.5/gallon .

5. Ice and salt :

Since the duration of a fishing trip is usually less than six hours, fishermen in Mocha do not use either ice or salt .

6. Number of landings :

Landings of fishing units began at 08 05 hours and ended at 10.55 hours . The total number of landing units ( houris , rafts and fishermen ) on 28 November 1979 was 18, distributed as follows :

<u>Fishing unit</u>	<u>No.</u>
Houris ( Mechanized )	15
Rafts	1
Fishermen ( on foot )	2
	—
	18

We were finformed that all fishermen at Mocha land their catches at Mocha only . Regarding external fishing units that may land at Mocha , we were informed that some houris from Khawkha used to land at Mocha , but this operation was suspended one year ago .

7. Engines :

We were informed by fishermen at the meeting that most of the fishermen own more that one engine of a particular type and power, in addition to some accessories .

Engines and their accessories are usually purchased from the Yamaha agent at Mocha or from Hodeidah . An engine of 8 hp costs YR 3 400 and one of 15 hp costs YR 4 400 .

Eighty-three percent of the landings were houris . All houris that landed on that day were mechanized with outboard engines , of which 93 percent were of the Yamaha type .

The distribution of the fishing units that landed on 28 November is shown in Table 32 .

8. Particulars of the catch :

Due to the cooperation of the fishermen ,most of the catch was weighed ( Photo 184 ) with the exception of one heavy shark (Photo 185).

All the catch was landed without containers. The total net weight of the catch on that day was 274.6 kg. Ninety-one percent of the total catch was made by the mechanized houris, six percent by the raft and three percent by the two fishermen .

8.1 Species caught :

Forty-two percent of the total catch was tuna ( Photo 186 ) . Twenty-two percent was sharks ( Photo 185 ) , which were caught by one houri with an Evenrude 6 hp engine .

Table 33 shows the net weight and average catch/unit.

Table 32 :

Number of fishing units  
that landed on 28 November at Mocha

Fishing Unit	Engine		Units landed		%
	Type	hp	No.	%	
1. Hours :(Mechanized)	Evenrude	6	1	7	83
	Yamaha	8	11	73	
		15	2	13	
		25	1	7	
	Total.....			15	
2. Rafts			1		6
3. Fishermen			2		11
GRAND TOTAL.....			18		100

Table 33 :

Net weight and average catch per fishing unit  
that landed at Mocha on 28 Nov. 1979

Fishing Units	hp	Catch		No. of units landed	Average Catch / Unit
		kg	%		
1. Houris: Mechanized					17
	6	61.0	22.2	1	61
	8	131.7	48.0	11	12
	15	40.0	14.6	2	20
	25	18.0	6.5	1	18
Total.....		250.7	91.3	15	
2. Rafts					16
		16.0	5.8	1	16
3. Fishermen					4
		7.9	2.9	2	4
GRAND TOTAL.....		274.6	100.0	18	15

The composition of the catch may be summarized as follows :

<u>Species :</u>	<u>Kg.:</u>	<u>Percentage:</u>
Tuna	114.5	42
Jacks	57.3	21
Kingfish	23.0	8
Emperors	7.4	3
Mulletts	4.0	1
Sharks	61.0	22
Others	7.4	3
	<hr/>	<hr/>
	274.6	100

It was noticed that the Kingfish that landed at Mocha was of a remarkably large size. For instance, two of this species weighed 15 kg., of which one was 110 cm in length ( Photo 187 ). A bigger one weighed 12.5 kg ( Photo 188 ). Also one of the jacks, which was 60 cm in length, weighed 3.5 kg ( Photo 189 ). Three of the tuna weighed 8 kg. Sixtythree percent of the tuna was caught by boats with 8 hp engines . Photo 190 , shows one of the jacks .

9. Fishermen :

The number of fishermen , as estimated by some fishermen at the meeting, is approx. 120, of which 30 are seasonal. It is said that there is no migration to Jizan.

The total number of fishermen on the fishing units that landed on 28 November was 30 , most of which ( 90 percent ) work on mechanized houris.

Table 34 shows the numbers of fishermen on fishing units that landed on 28 November and average catch per fisherman.

Table 34 :

Number of fishermen on fishing units that landed at Mocha on 28 November 1979 and average catch per fisherman

Fishing Units	hp	No. of units landed	No. of fishermen	Catch (kg)	Average catch / fishermen (kg)
1. Houris ( mechanized )					9
	6	1	1	61.0	61
	8	11	19	131.7	7
	15	2	5	40.0	8
	25	1	2	18.0	9
Total.....		15	27	250.7	
2. Rafts					16
		1	1	16.0	16
3. Fishermen					4
		2	2	7.9	4
GRAND TOTAL.....		18	30	274.6	9

10. Fishing gears and fishing trips :

Since fishing at Mocha is considered to be coastal fishing, fishermen do not allow anybody to use nets in fishing along the coast in order to maintain the stock. They mostly use hooks in fishing . The three only exceptional cases in which nets are used :

- (i) fishing Indian mackerel ;
- (ii) fishing wasef ( small anchovy ) ; and
- (iii) fishing mullets ( arabi, fishermen on foot ).

Three gallons of fuel are consumed each fishing trip. It takes three hours to reach the fishing grounds and return back, in addition to three hours for fishing . The depth of fishing is generally 15-20 fathoms .

11. Fish Marketing :

11.1 The fish retail market :

11.1.1 Site :

The fish retail market at Mocha is situated approx . 20 m from the landing place. A road of about 10 m in width separates them. It consists of just a shelter from the heat of the sun and some tables . The market is approx. 20 m<sup>2</sup>( 10 x 2 m ) ( Photo 191 ). The ground is covered with dust. There is neither a water supply nor ice-boxes available .

11.1.2 Auctions :

With the exception of the summer season , in which fish are plentiful, no auctions are held at the market. Fishermen sell their catches in numbers directly to the retail merchants.

## 11.2 Value of the catch :

Following the catch, which has been weighed, to the market, where it was sold to the merchants, enabled us to get a first-hand value ( producer value ) of the whole catch.

### 11.2.1 Gross value :

The total value of the catch landed on 28 November amounted to YR 2 445 : YR 2 260 ( or 92 percent ) was the value of the catch made by the mechanized houris ; YR 160 ( 7 percent ) by the raft and only YR 25 ( 1 percent ) by two fishermen on foot using nets. Table 35 shows the total and average values/fishing unit.

### 11.2.2 Net value :

The value of the catch as shown in Table 35 is , in fact, the gross value . The procedure that occurs in Mocha for distributing the value differs slightly for mechanized boats :

- the owner of the boat ( including expenses ) one share
- the engine depreciation ;  $\frac{1}{2}$  share
- fishermen : one share

Of course, there are no deductions for the raft or the fishermen on foot either . Thus, the net value of the total catch is reduced to YR 1 089, which is distributed among the fishermen who participated in making the catch ( Table 36 ).

### 11.2.3 Producer prices of some major varieties :

Except in a few cases in which some varieties were sold in mixtures, the average price/kg of some of the major species was as follows :

Table 35 :

Total value, average value and  
average catch per fishing unit at Mocha

Fishing unit	hp	No. of units landed	Catch		Value		Average/ unit	
			kg	%	YR	%	Catch	Value
1. Houris ( Mechanized )	6	1	61.0	22.2	130	5.3	17	151
	8	11	131.7	48.0	1 580	64.6	61	130
	15	2	40.0	14.6	445	18.2	12	144
	25	1	18.0	6.5	105	4.3	20	222
							18	105
Total.....		15	250.7	91.3	2 260	92.4		
2. Rafts							16	160
		1	16.0	5.8	160	6.6	16	160
3. Fishermen							4	12
		2	7.9	2.9	25	1.0	4	12
GRAND TOTAL.....		18	274.6	100.0	2 445	100.0	15	136

Table 36 :

Gross and net value of the catch and  
Average net value per fisherman

Fishing unit	hp	No. of units landed	No. of fishermen	Value ( YR )		Average Net val./ Fisherman (YR)
				Gross	Net	
1. Houris : ( Mechanized )						33
	6	1	1	130	52	52
	8	11	19	1 580	632	33
	15	2	5	445	178	36
	25	1	2	105	42	21
Total.....		15	27	2 260	904	
2. Rafts						160
		1	1	160	160	
3. Fishermen						12
		2	2	25	25	
GRAND TOTAL.....		18	30	2 445	1 089	36

<u>Species</u>	<u>Catch</u> <u>KG</u>	<u>Value</u> <u>YR</u>	<u>Average price/kg</u> <u>YR</u>
Tuna	111.3*	735	6.6
Kingfish	23.0	560	24.3
Jacks	55.0*	815	14.8
Sharks	61.0	130	2.1

\* some of the catch was sold mixed with other species .

### 11.3 Inflow of fish :

The activity started at the market when the catch of the first boat arrived at 08.05 hours. At 10.55 hours, the last quantity of fish was brought to the market.

The inflow of fish, hour by hour , is shown below :

<u>Time</u>	<u>Quantity</u>	<u>Accummulative</u>	
08.05	69.0 kg	69.0 kg	25 percent
09.00	71.9	140.9	50 percent
10.00	62.6	203.5	73 percent
10.55	71.1	274.6	100 percent

### 11.4 Buyers :

Buyers at the market in this season of the year, can be divided into two main categories :

- (i) local buyers ( consumers and owners of restaurants );and
- (ii) traders, who buy small quantities for transportation to places nearby .

The destination of the catch that was landed on 28 November and the mode of transport used was as follows :

- (i) local buyers : 231.6 kg were consumed locally ;
- (ii) transportation to nearby places ( Tobany village ):
  - 18 kg of tuna, carried by motor cycle ( Photo 192 )
  - 25 kg of tuna, carried by another motor cycle .

11.5 Some retail prices :

Fish is sold in numbers at the market.

Sharks are usually sold after cutting them into pieces; i.e. they are sold by piece. Some consumers prefer to buy one fish and sometimes a part of one fish of another species, like tuna (Photo 193 ) and jacks. Some retail prices are shown below :

<u>Species</u>	<u>Retail price/fish (YR)</u>
Jacks	50
Kingfish ( 12.5 kg )	450
Sharks ( piece 25- 30 cm )	20-30

DUBAB :

1. Background information :

At approx. 07.00 hours on 29 November, we reached Dubab, which is 45 km from Mocha and took 1½ hours to reach using a sandy road as a short cut .

Since there is no head fisherman at Dubab, a meeting was arranged with an experienced fisherman from whom the information was obtained.

2. Landing place :

The level of the road is higher than that of the landing place by 4-5 m. There is neither a port nor any other facilities at the

Dubab landing place .

3. Fishing units :

The number of fishing units anchored off-shore, as counted at 08.00 hours on 29 November , was as follows :

Sambuks	1
Houris ( mechanized )	7
	<hr/>
	8

The sambuk was a 4-piston Yanmar engine. The distribution of houris by type and engine power was as follows :

<u>Engine type</u>	<u>hp</u>	<u>No.</u>
Yamaha	15	1
Yamaha	25	1
Yamaha	40	1
Evenrude	40	1
Yamaha	45	2
Yamaha	48	1
		<hr/>
		7

We were informed by the fisherman that the fishing fleet consists of :

(i) Sambuks -26 :

Most of them have a Yanmar engine distributed as follows:

<u>hp</u>	<u>No.</u>
27	6
34	7
55	8
75	5
	<hr/>
	26

(ii) Houris - 20 :

Most of them have Yamaha engines, distributed as follows:

<u>hp</u>	<u>No.</u>
15	7
20	3
25	1
40	6
45	2
48	1
	<hr/>
	20

4. Fishing activity :

In winter, most of the sambuks and some houris ( about two thirds ) go fishing in Somalia, Sudan and Jizan, due to the strong wind that could last several days in this season. They return to Dubab in the summer. The rest of the units stay at Dubab and go fishing, on non-windy days at 06.00 hours and return after five or six hours.

Fishermen on foot catch mullets by a mullet net. The production of one fisherman is on the average four mullets/day ( approx. 6 kg ). One fish is sold for YR 20 .

5. Number of landings :

No fishing activity took place on that day due to the strong wind.

6. Boat building :

There are no workshops for building or repairing hulls at Dubab. Hulls are purchased from Khawkha or Salif, or sometimes from Luhaya .

7. Engines :

Engines are purchased from Hodeidah and sometimes form Jizan.

8. Fuel :

Fuel is obtained from Mocha .

9. Fish marketing :

There is no wholesale market at Dubab. Like Mocha, the fish are sold in numbers, without auction, directly to the traders.

9.1 Value of the catch :

The total value of the catch is divided into two : one half for the owner of the fishing unit ( including depreciation and expenses) and the other half is distributed amongst the fishermen who participate in the fishing and make the catch.

9.2 Destination of the catch :

There are no ovens for smoking fish at Dubab. Fish are either transported :

(i) fresh to ; Taiiz, Hagda and Hagaria ; or

(ii) salted to : Hais and Zabid.

9.2.1 Transportation expenses :

Fish are usually transported by cars. The owner of the car takes a 50 percent share of the value of the marketed fish. The share includes all expenses and ice.

D. INLAND FISH MARKETING :

Zabid Market :

1. Background information :

We managed to visit Zabid fish market, which was eliminated from the schedule during the previous trip in July 1979 due to lack of time .

The fish retail market at Zabid is 92 km south of Hodeidah. The road that connects them is paved and it takes 80 minutes to reach Zabid.

2. Description :

The fish retail market at Zabid is part of the general retail market. It is approx 120 m<sup>2</sup> ( 12 m x 10 m ) and is surrounded by stone walls with one entrance. It consists of nine shops and a small store. On the right side there are four shops ( 2.5 m in width each ) (Photo 194 ). At the front there are two shops of the same width. There is a small store besides them ( Photo 195 ). On the left side there are only three shops, two of which are 2.5 m in width and the third slightly bigger ( Photo 196 ). The entrance is at the rear side ( Photo 197 ).

In front of each shop are one or two tables for cutting the fish into pieces ( Photos 198 and 199 ). There are stones on the tables for sharpening knives ( Photo 198 ). Near the tables are jars containing water for washing the fish before cutting them ( Photo 200 ) and 201 ). There are no ice boxes except at one shop ( Photo 202 and 203 ). Retail merchants prefer to stay near their tables, outside the shops.

From the hygienic point of view, the Zabid retail market is comparatively better than other markets, but inferior to Taiiz market.

The floor is covered with a cement layer. The water supply is outside the market. There is a drain which is badly situated at the entrance ( Photo 197 ). A wheel-barrow for removing fish scraps was evident ( Photo 204 ).

The area of the store is only about  $6 \text{ m}^2$  (  $2 \text{ m} \times 3 \text{ m}$  ). It contains six boxes ( Photo 205 ) of which only two were full of fish covered with ice ( Photo 206 ). Although the floor of the store is made of cement, it is covered with water which leaks from the boxes ( Photo 205 ).

### 3. Statistical Data :

#### 3.1 Collecting Statistical Data :

On 25 November , we managed to reach Zabid market before the arrival of the first car carrying fish to the market. At 06.45 hours, we were there with our tripod-balance ready for use .

At the market we found small quantities of fish on the tables. We were informed that the fish was left over from the previous day and had been brought from Metaina. The approximate weight of the fish left over was as follows :

<u>Species</u>	<u>Quantity (kg)</u>	<u>Remarks</u>
Emperors	2.5	
Jacks	3.5	Only two fish
Kingfish	50.0	In two boxes in the store

The two jacks were weighed ( 3.5 kg ) Photo 207 ) and one of them was measured ( 48 cm ) ( Photo 208 ).

At exactly 10.00 hours, a car carrying five containers of fish with ice and five sharks arrived from Hodeidah ( Photos 209 and 210 ).

Most of the fish brought were weighed, with the exception of four sharks, which we could not hang on the balance ( Photo 21 ). The shark which, we weighed was 53 kg .

The estimated total net weight of fish brought from Hodeidah on 25 November was as follows :

<u>Species</u>	<u>Quantity (kg)</u>	<u>Percentage</u>
Emperors	66	13
Kingfish	64	13
Tuna	102	20
Sharks	273	54
	<hr/>	<hr/>
	505	100

Fishes were distributed, without auction, amongst nine retail merchants, who hung them in front of their shops ( Phtotos 212, 213).

One kingfish was measured ( 80 cm ) and then weighed ( 2.4 kg ) ( Photo 214 ). Similarly, one tuna was measured ( 40 cm ) and then weighed ( 0.75 kg ) ( Photo 215 ).

### 3.2 Retail prices :

Since fish were sold in numbers to consumers, the retail prices per fish were as follows :

<u>Species</u>	<u>Retail Price/Fish</u>	
Kingfish	YR	17.5
Jacks	YR	20.0
Tuna	YR	12.0

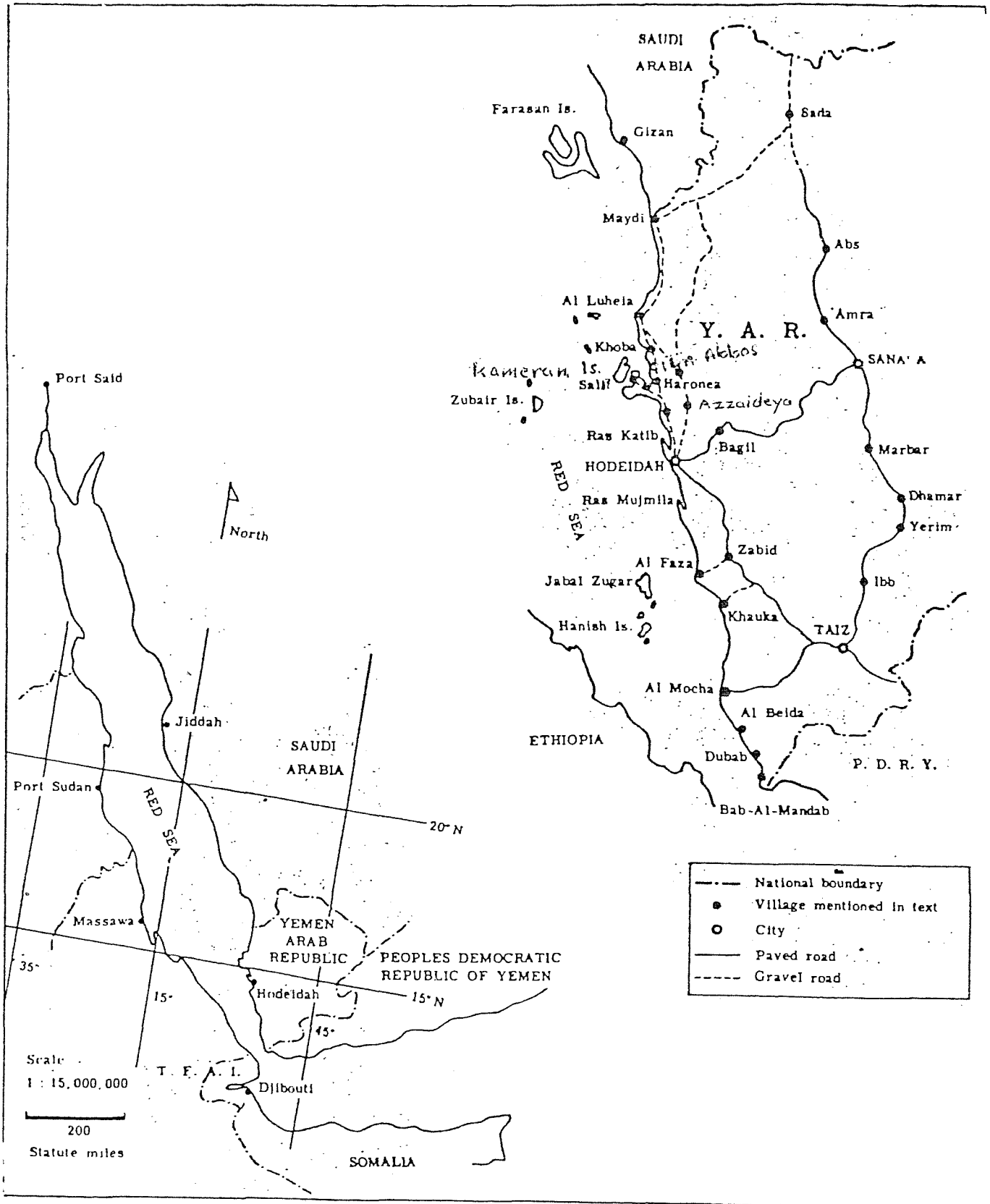
Sharks were sold differently. They were cut into pieces and then sold by piece. A piece that was approx. 25-30 cm, cost YR 15.

It is worth noting that when they began to cut the sharks ( Photo 216 ), they found 31 small sharks in three of the sharks ; four in the first shark, which weighed approx. 40 kg ; seven in the

second, which weighed 55 kg ( Photo 217 ); and 20 in the biggest one, which weighed approx. 70 kg ( Photo 218 ). We were informed that small sharks are sold to consumers at YR 5 each .

APPENDIX (1) :

YEMEN ARAB REPUBLIC



Sketch of the main cities and roads in the Yemen Arab Republic and a map of the geographical location of the Y. A. R.

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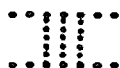


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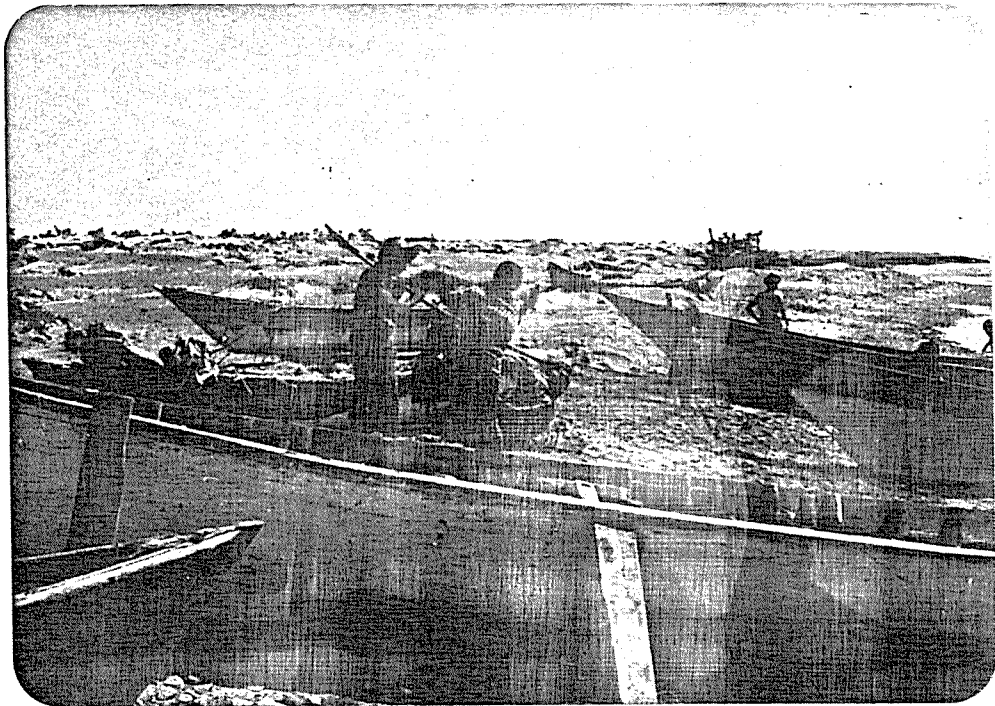
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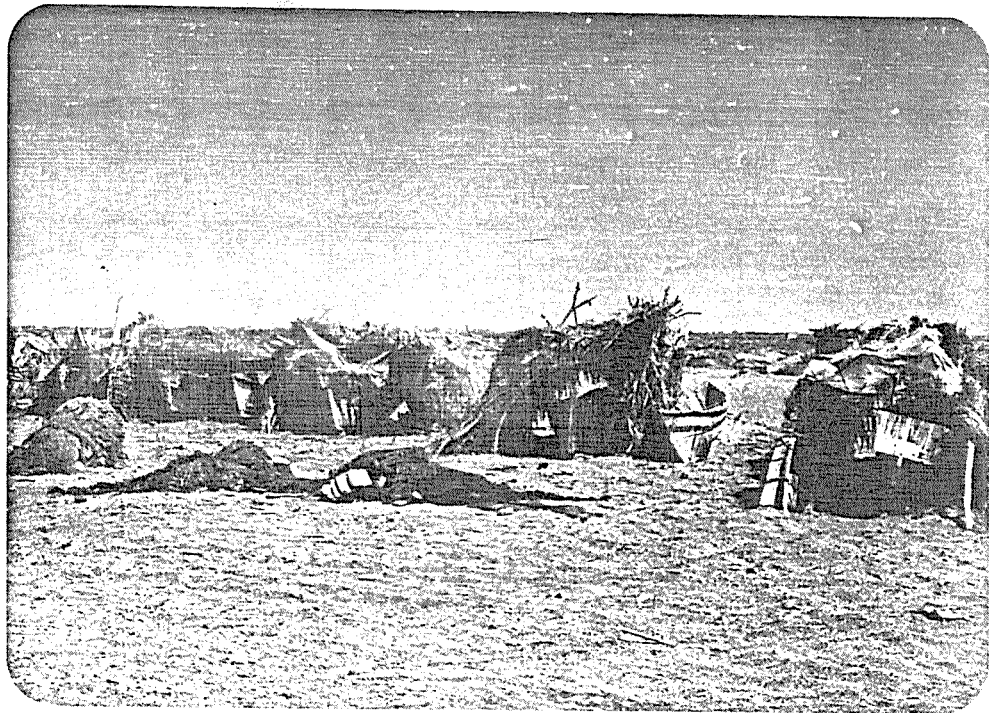
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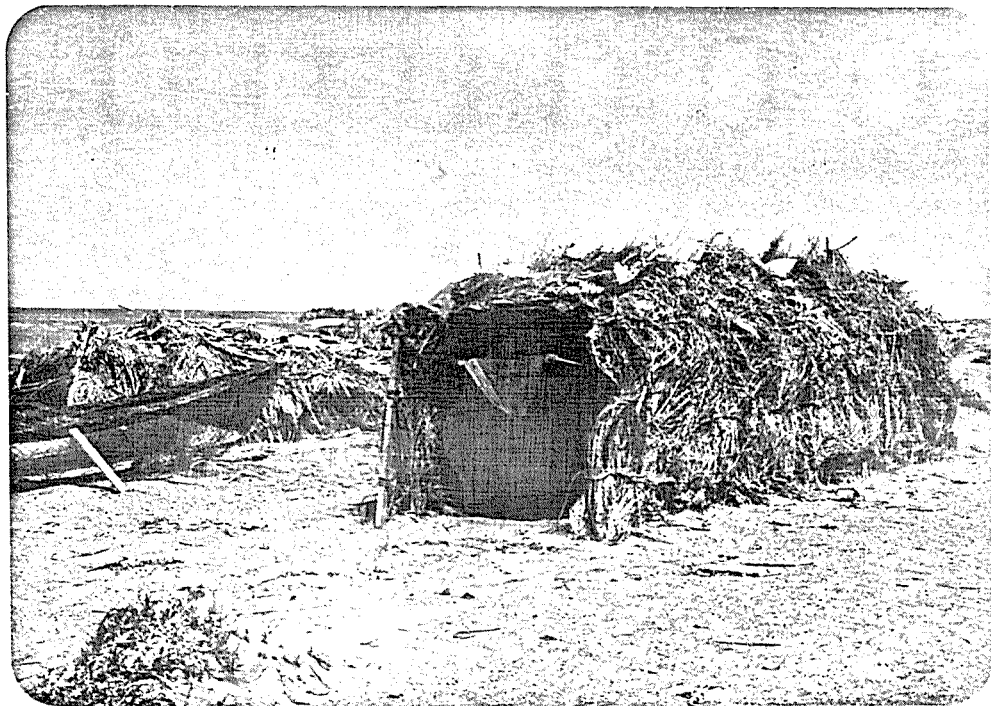
Ph. 123 : A houri of medium size



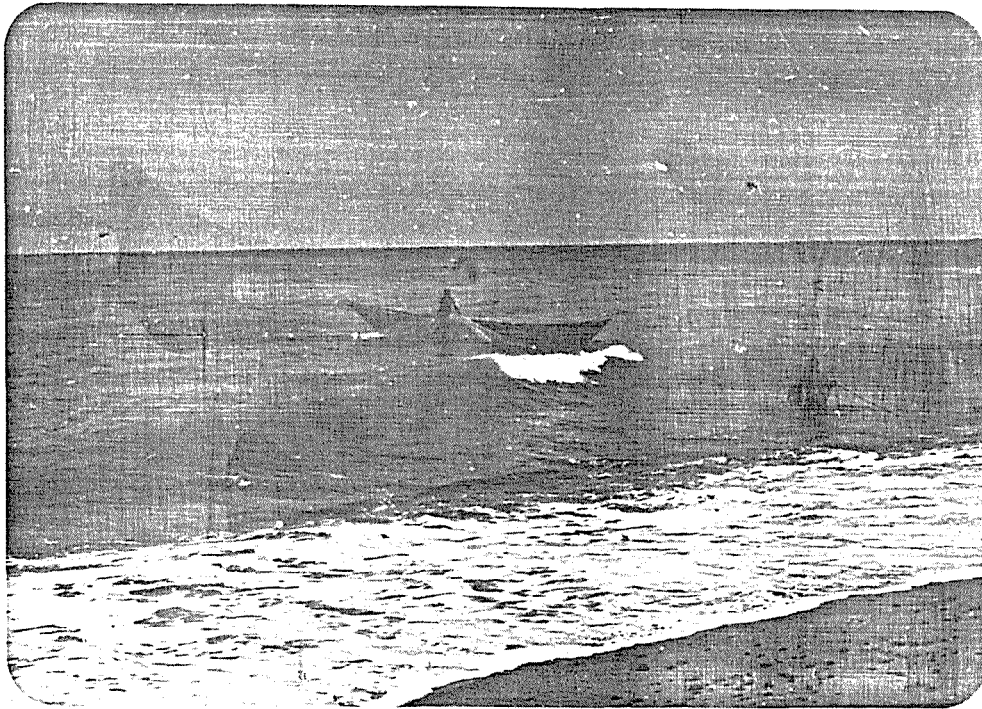
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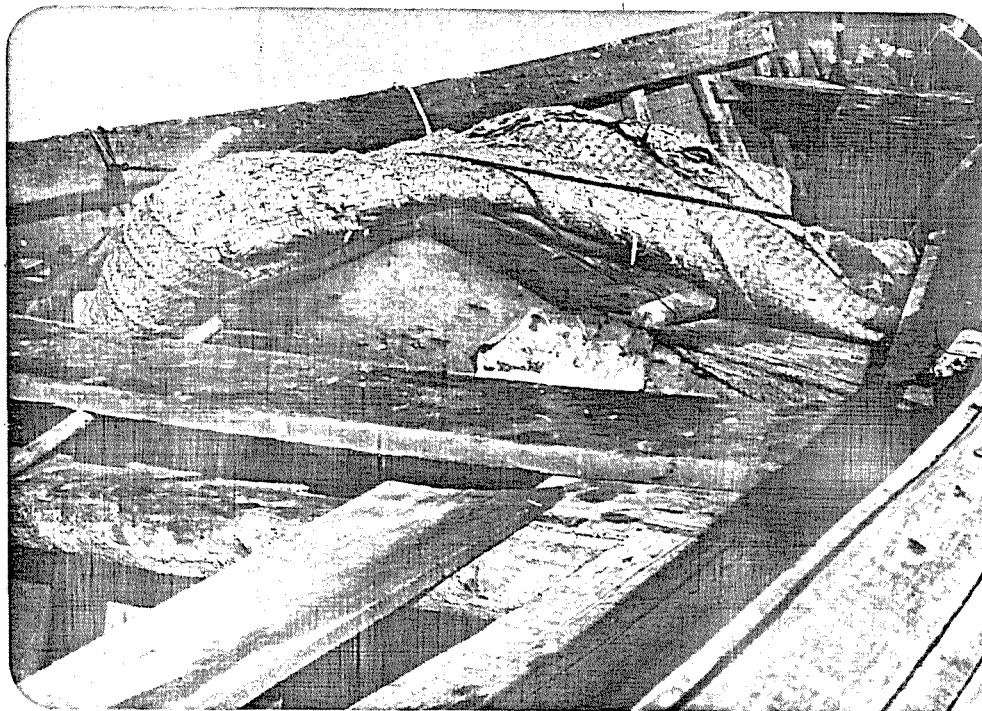
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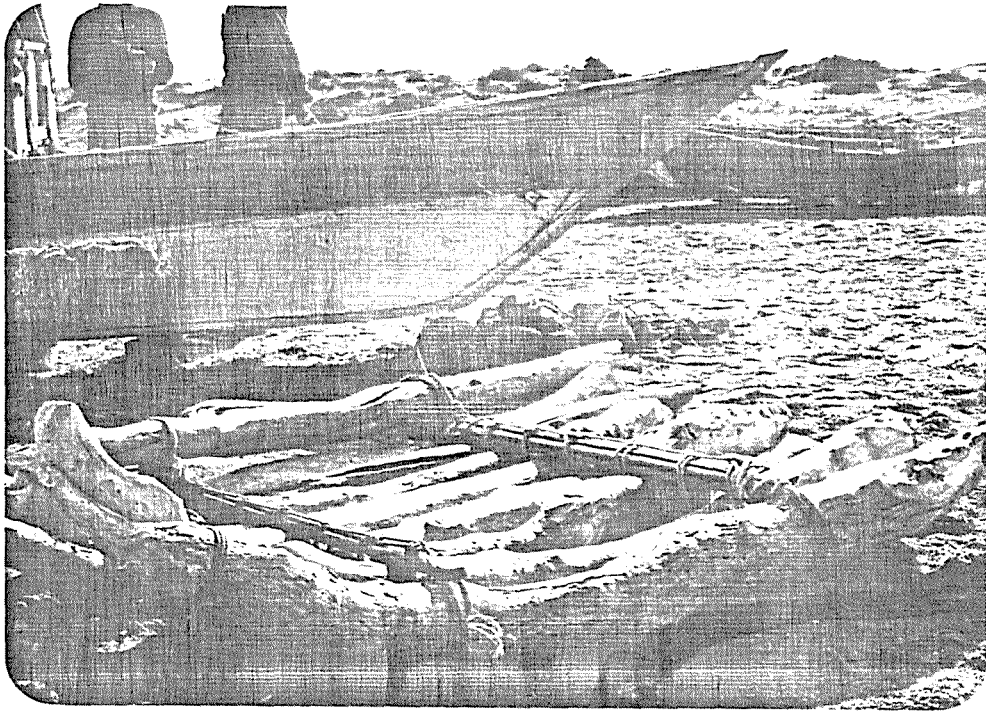
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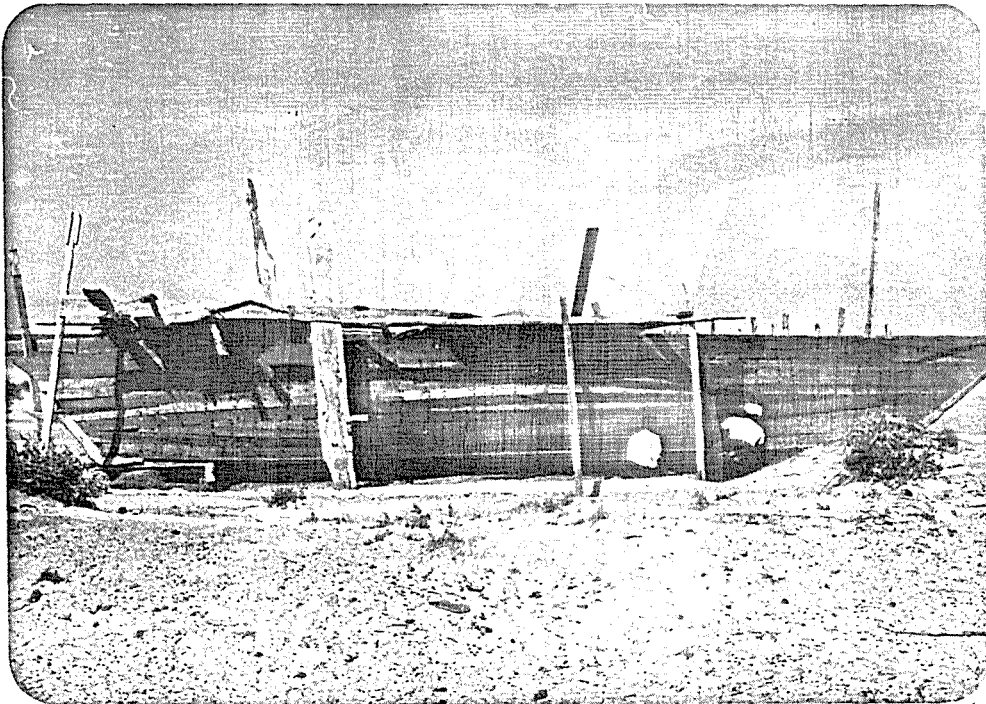
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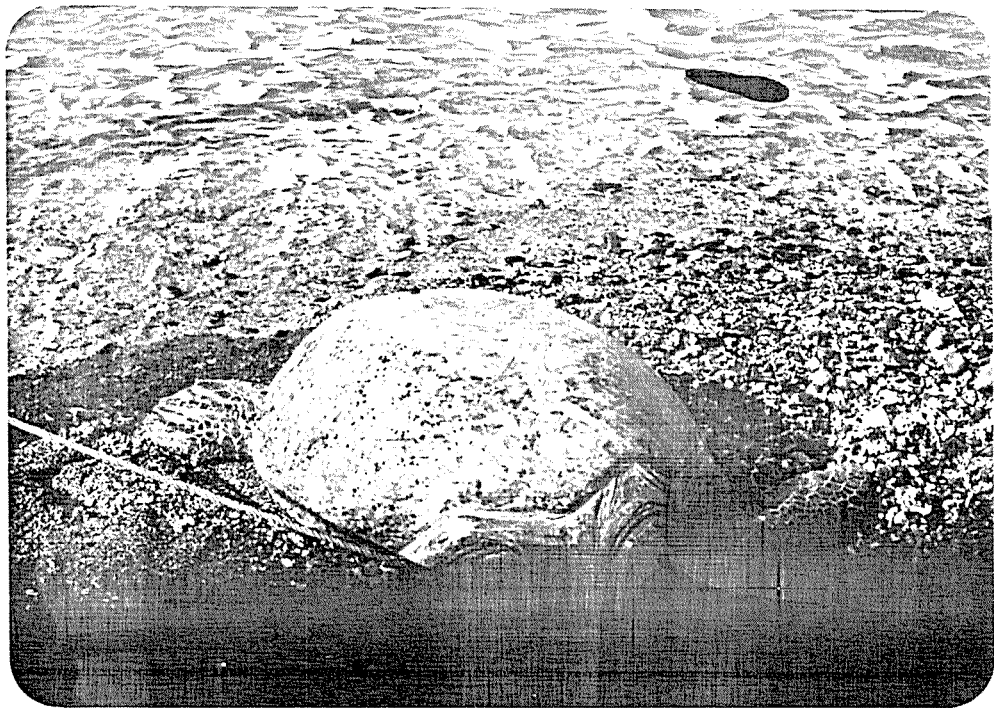
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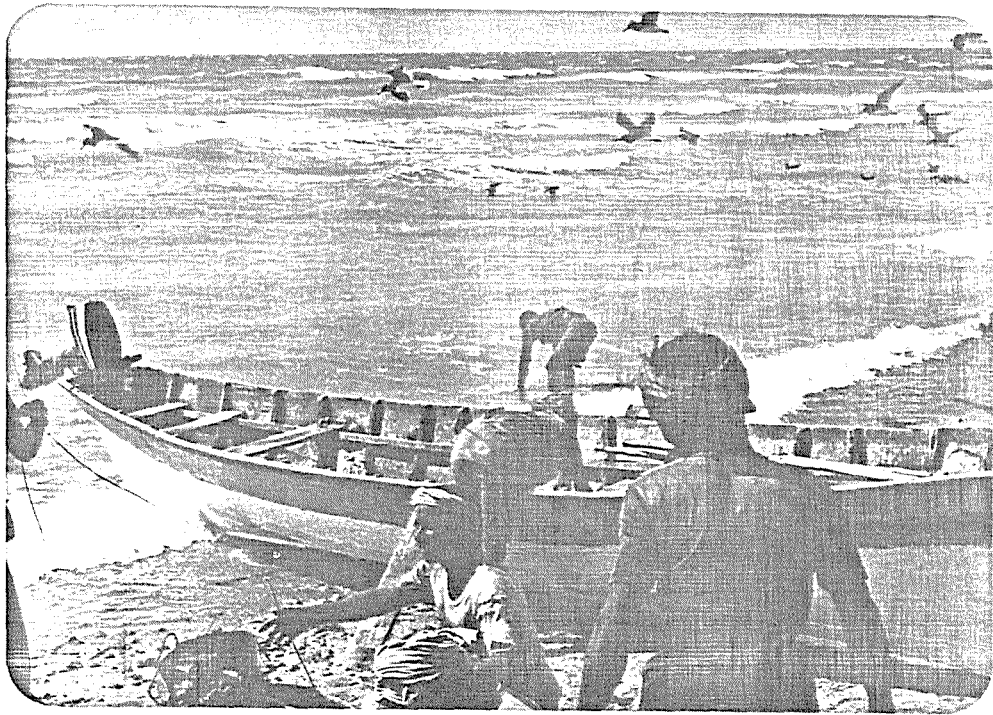


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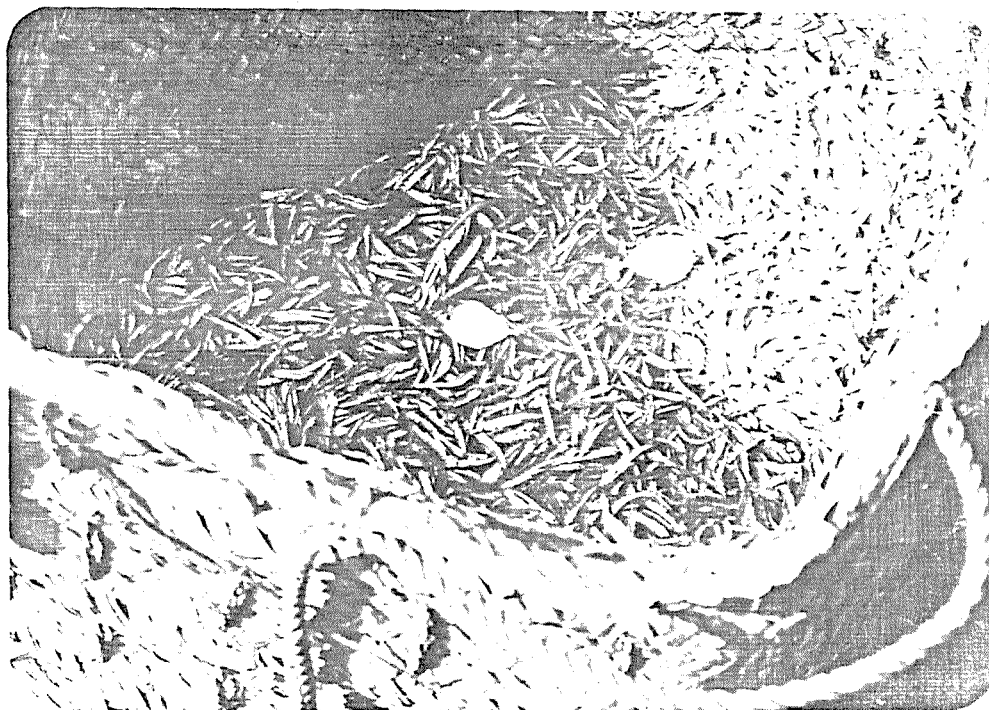
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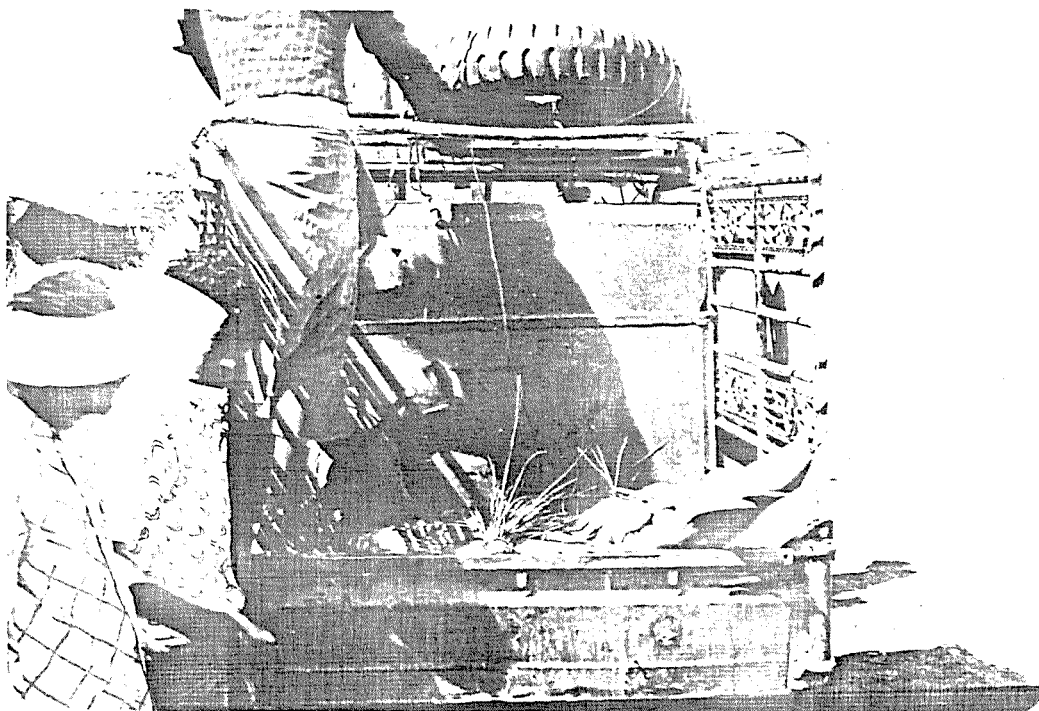
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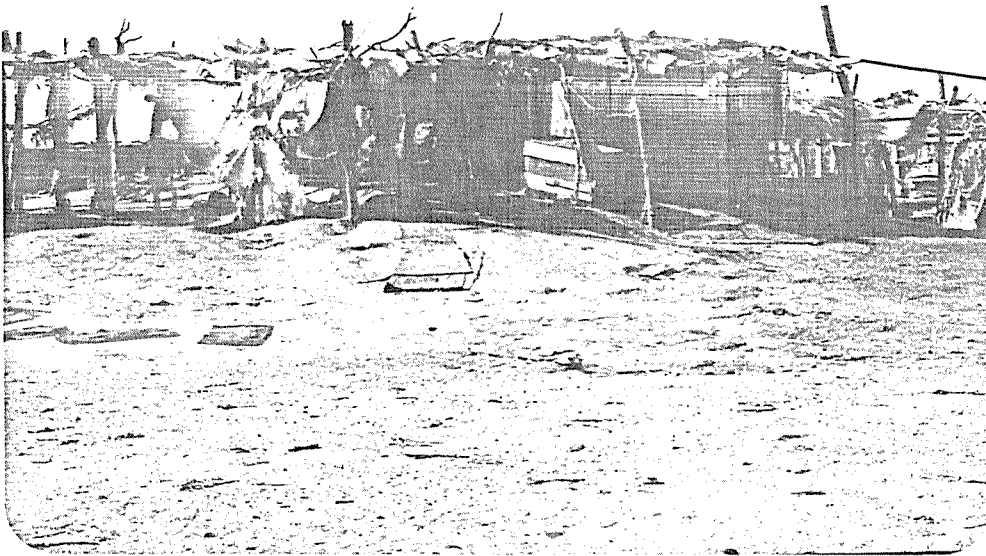
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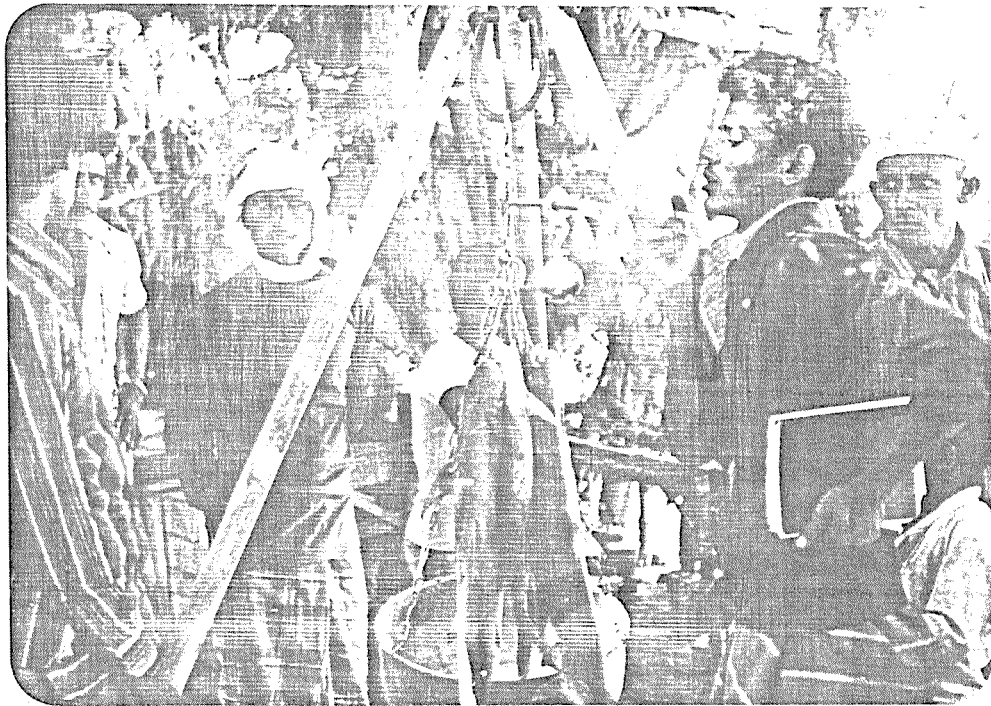
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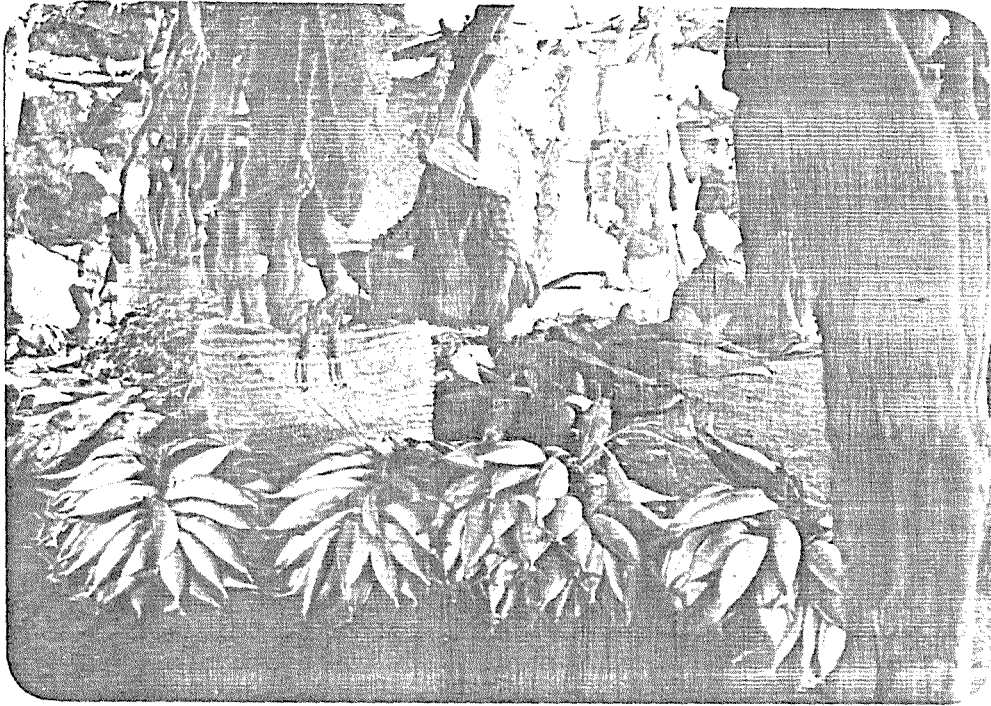
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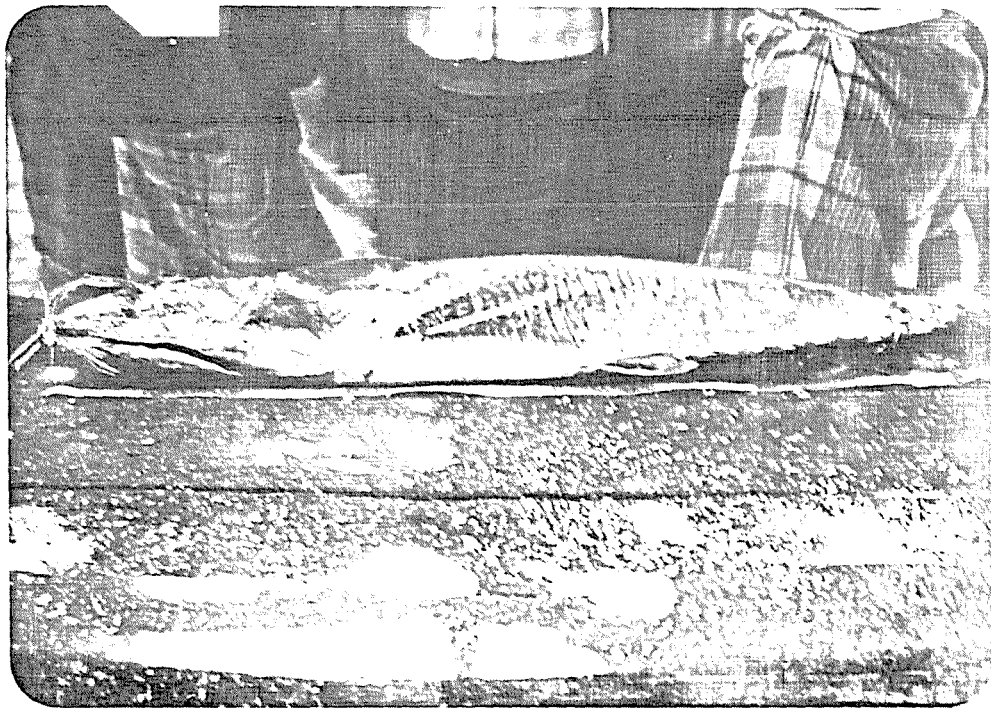
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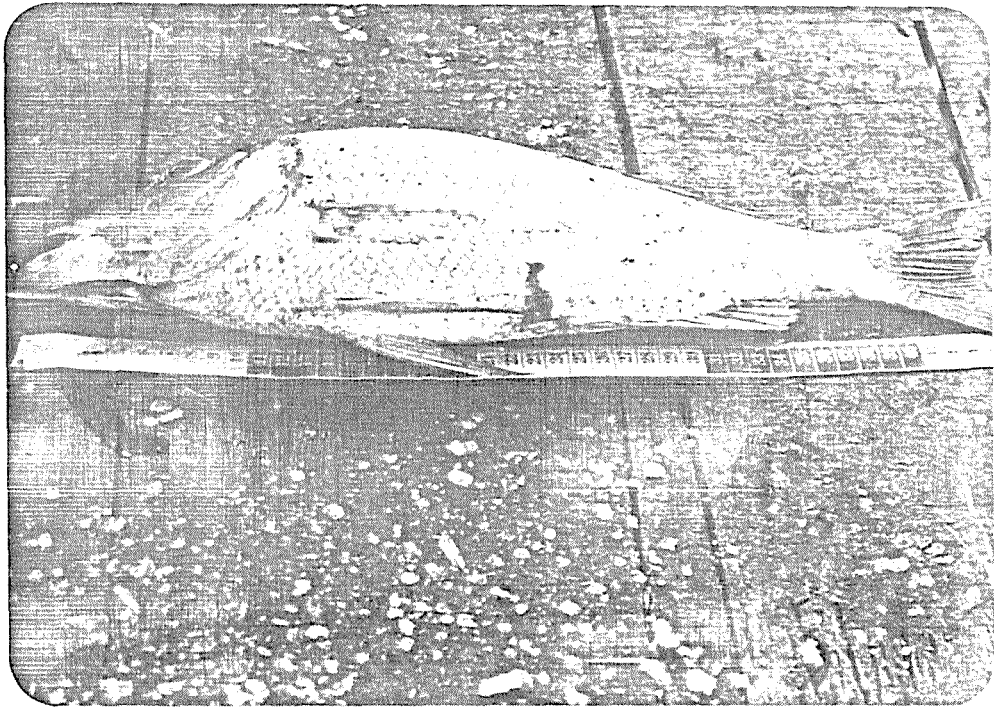
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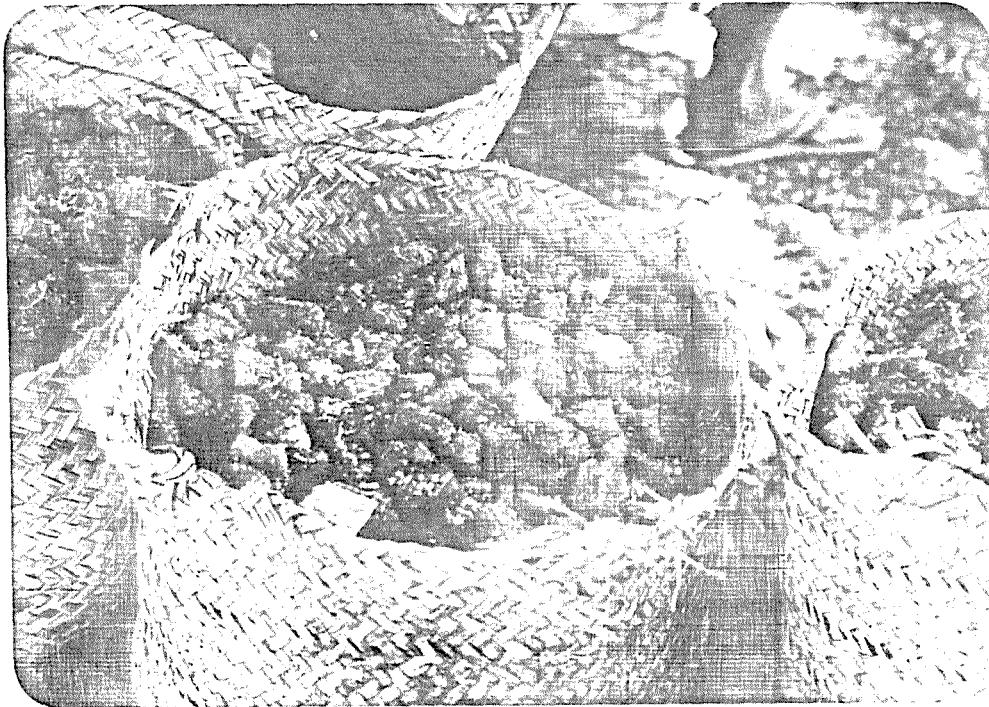
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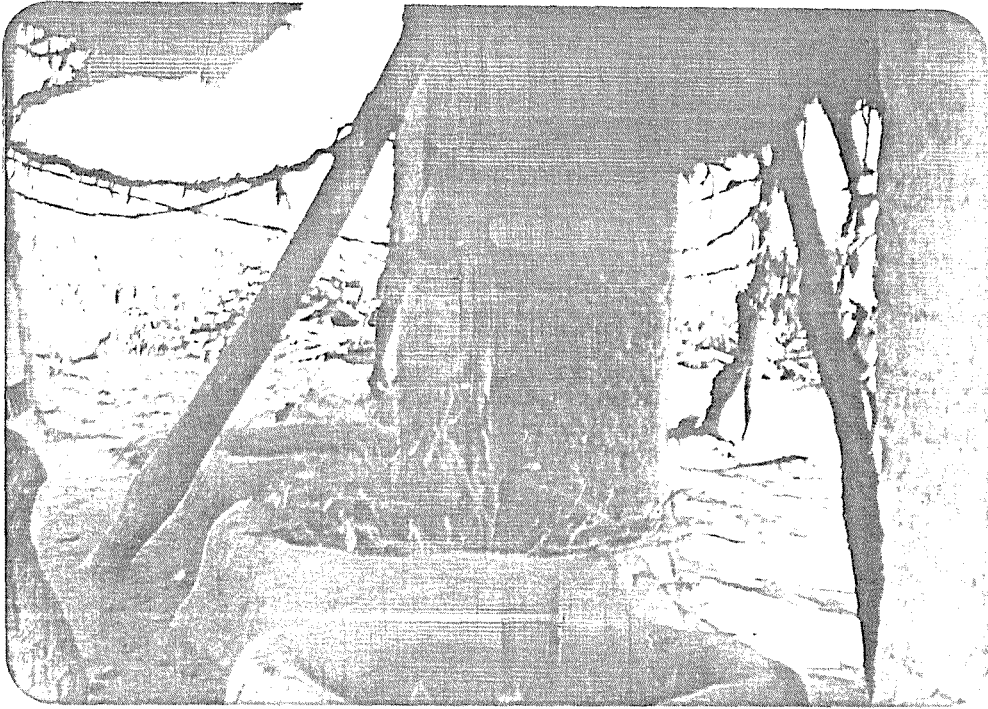
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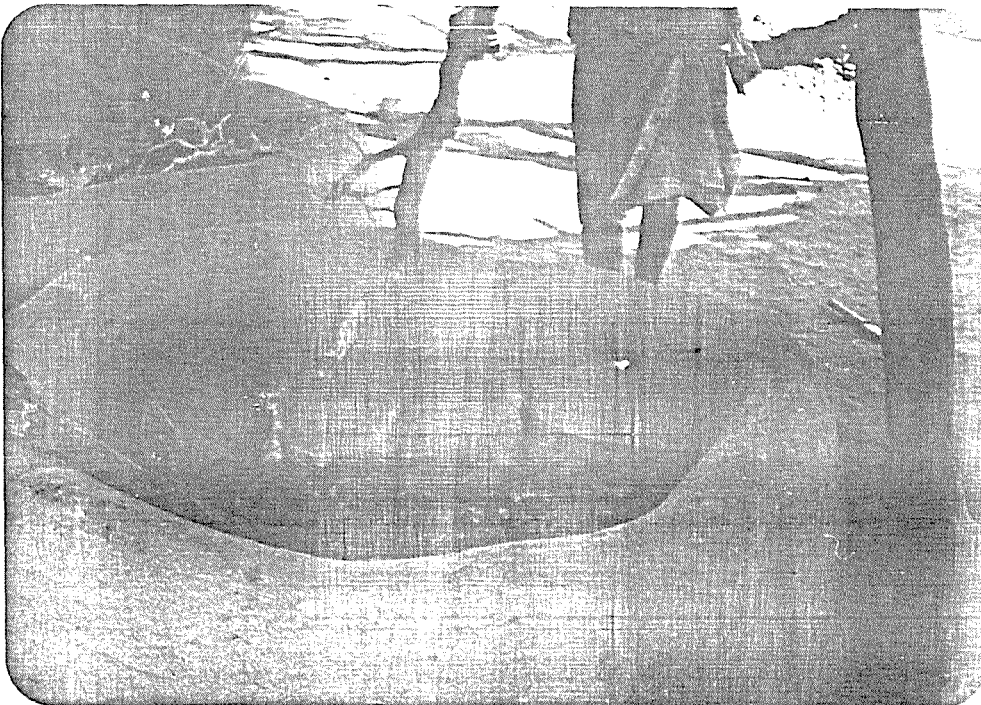
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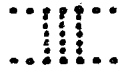


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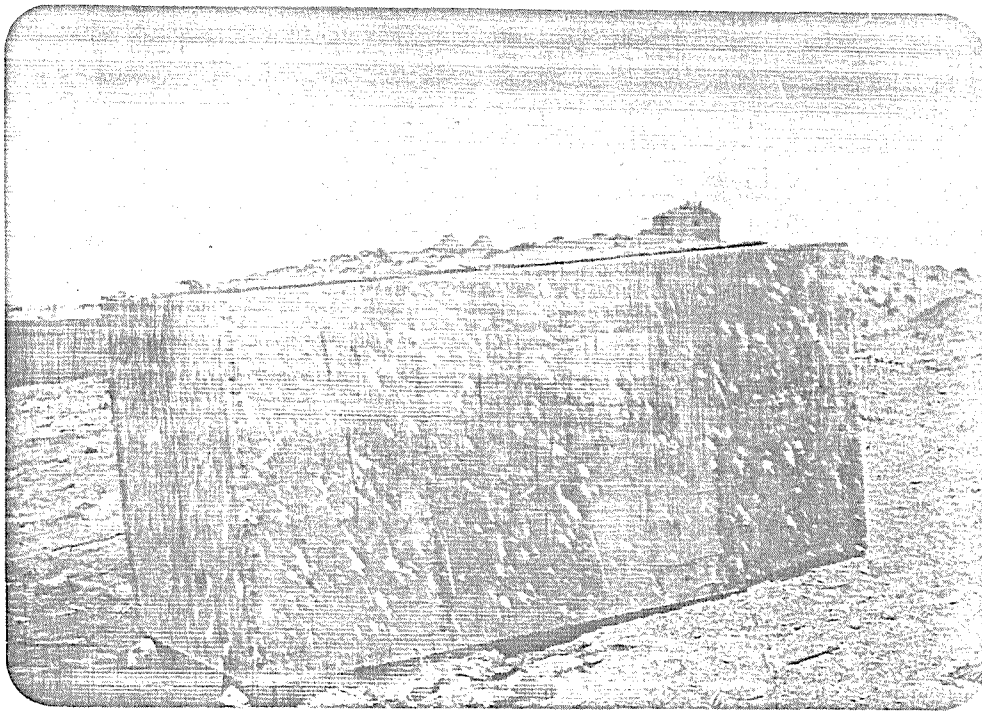
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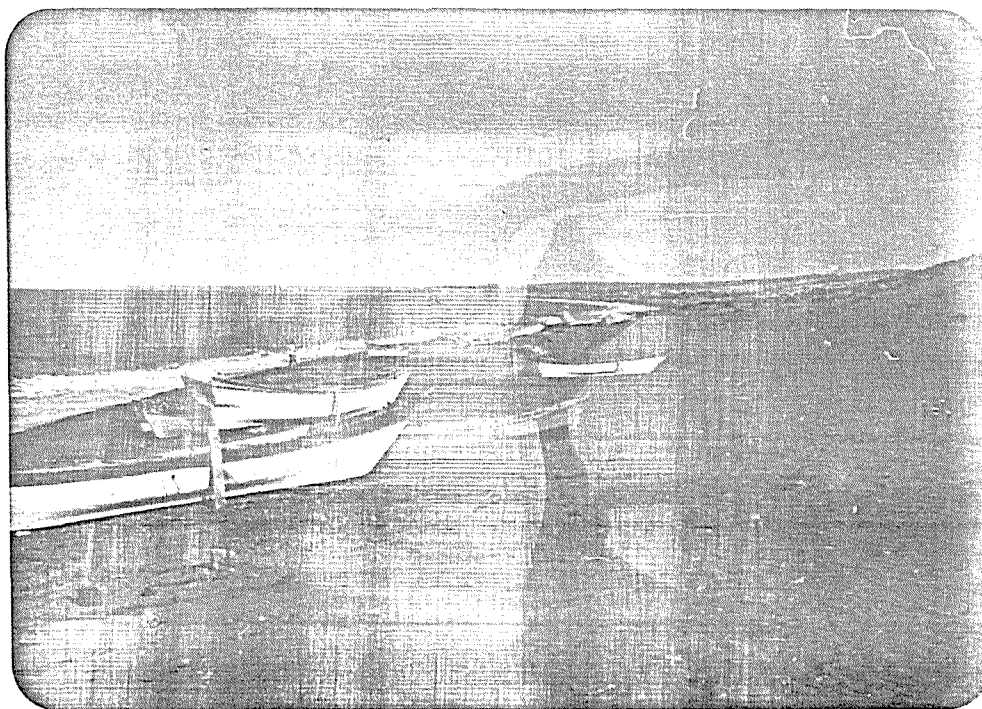
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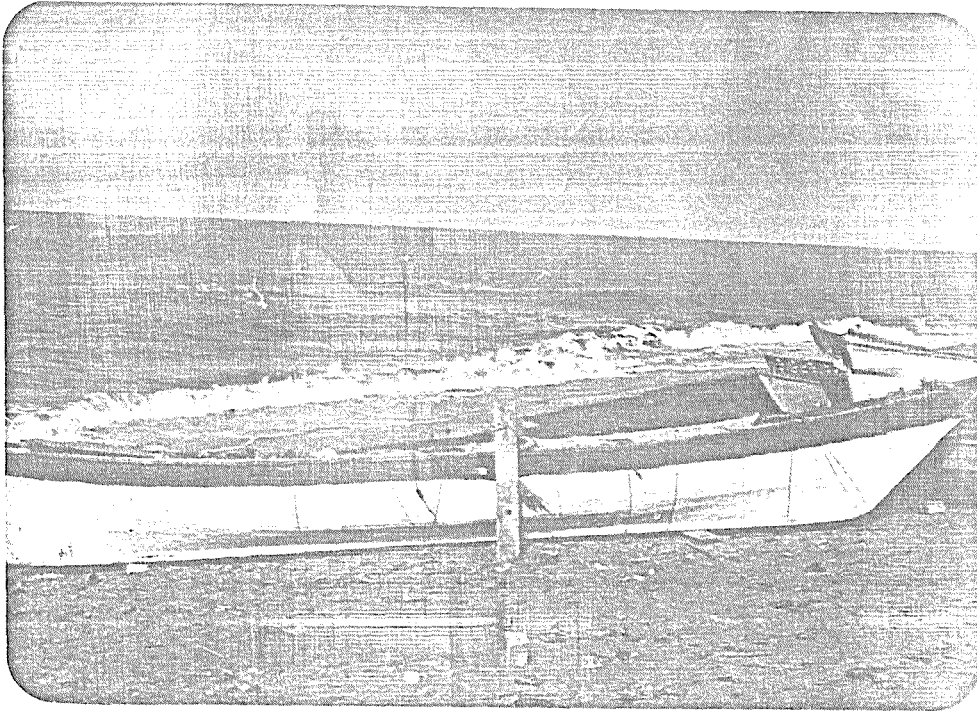
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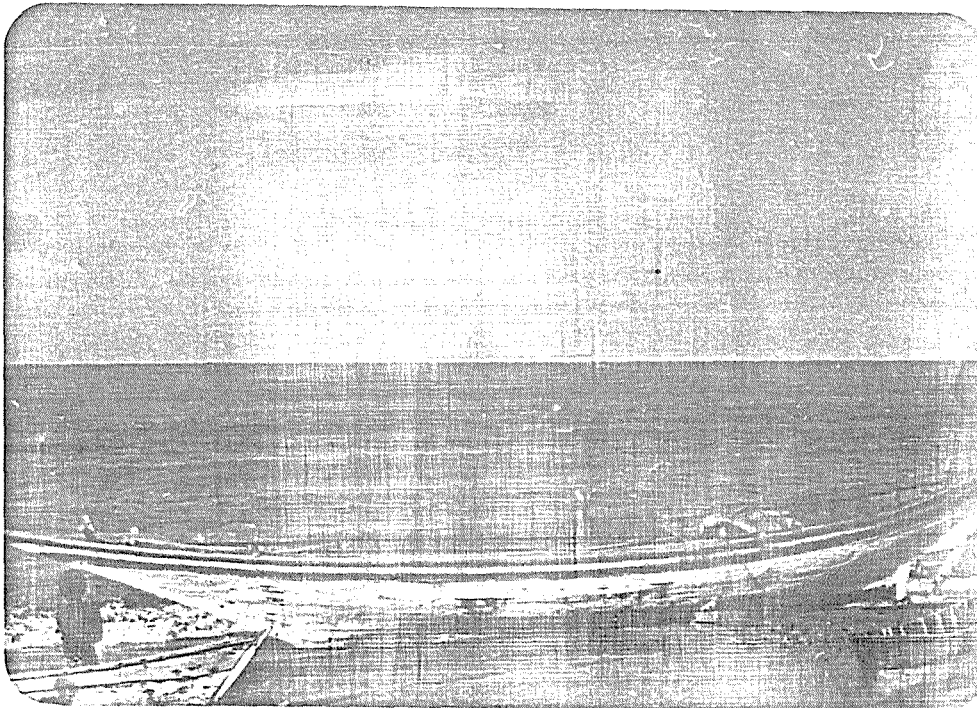
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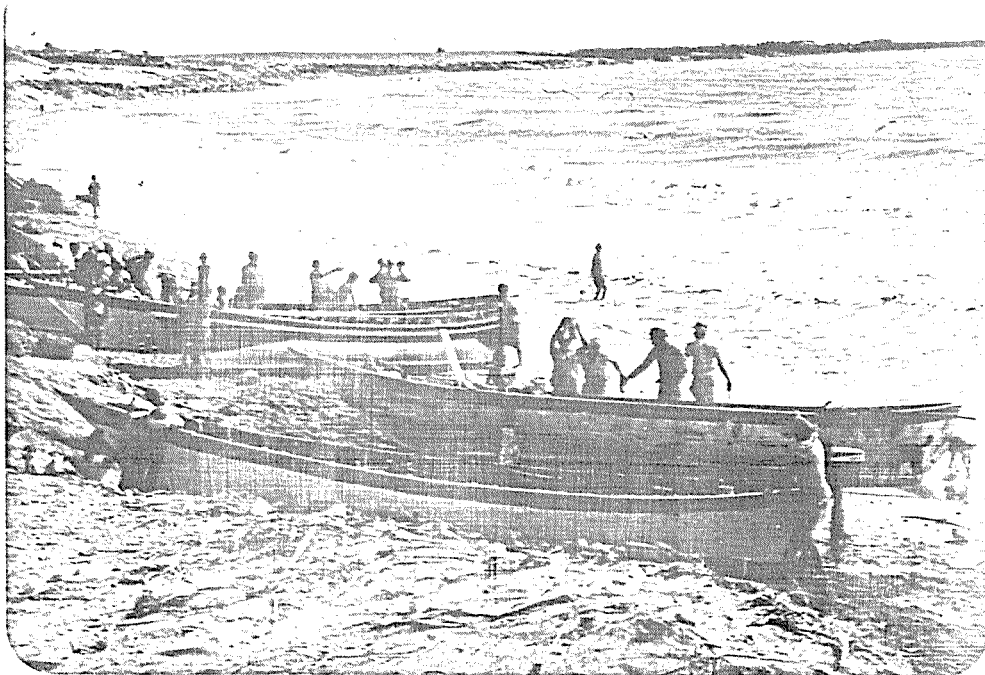
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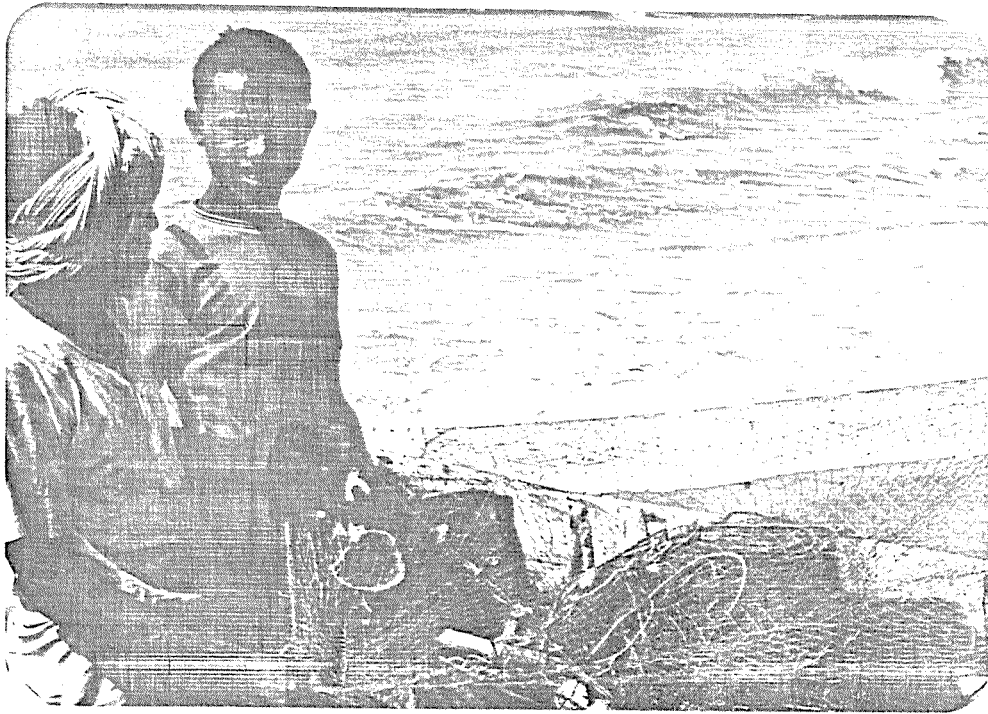
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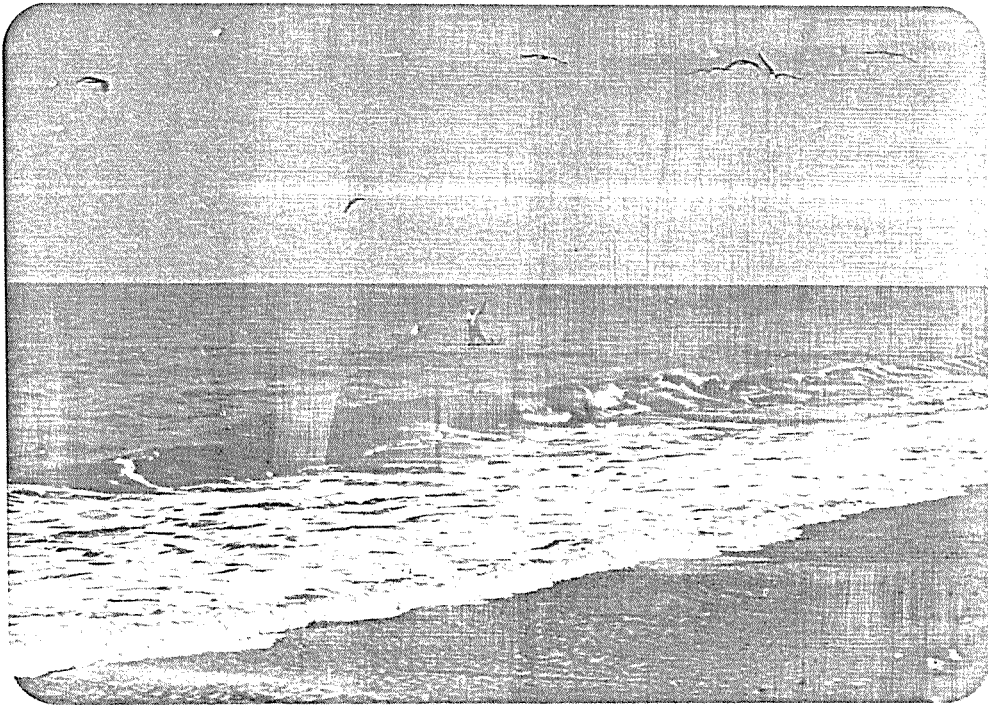
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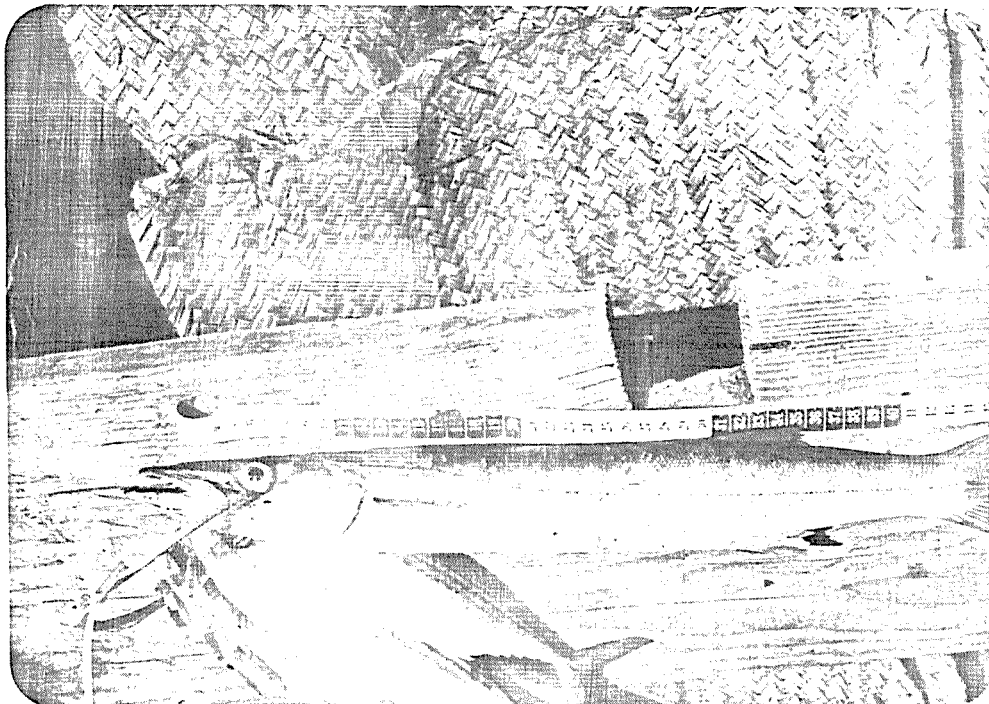
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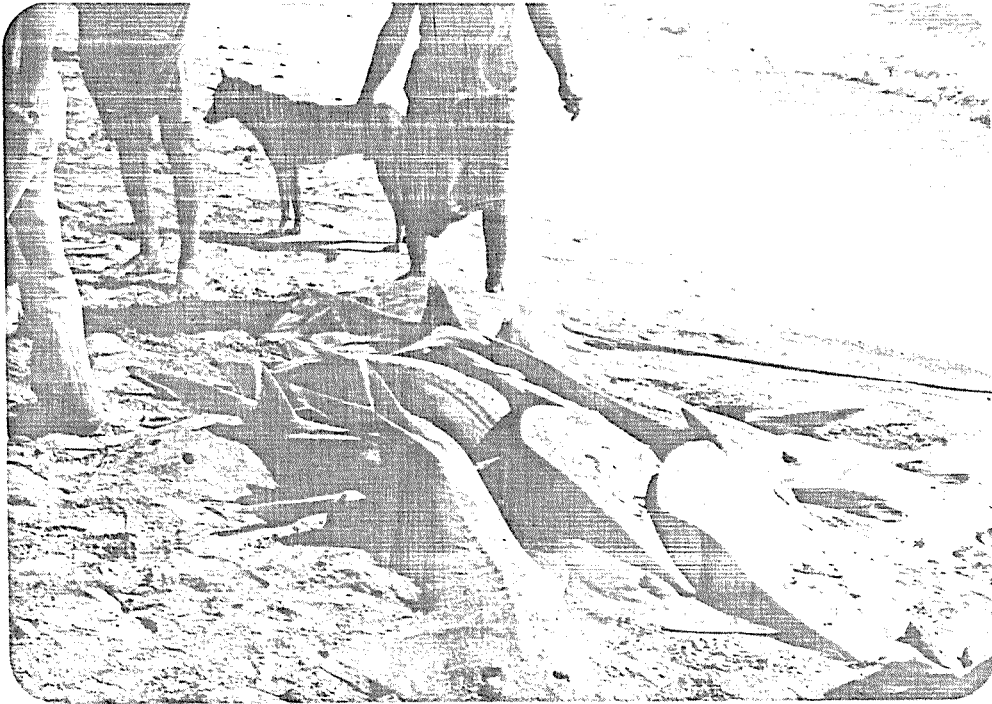
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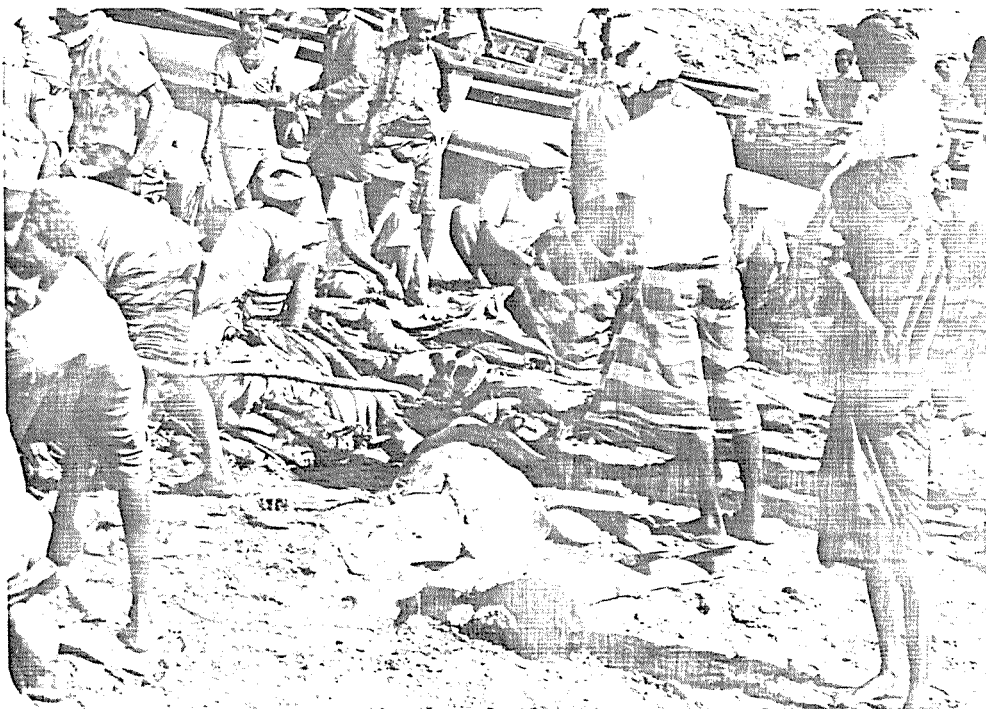
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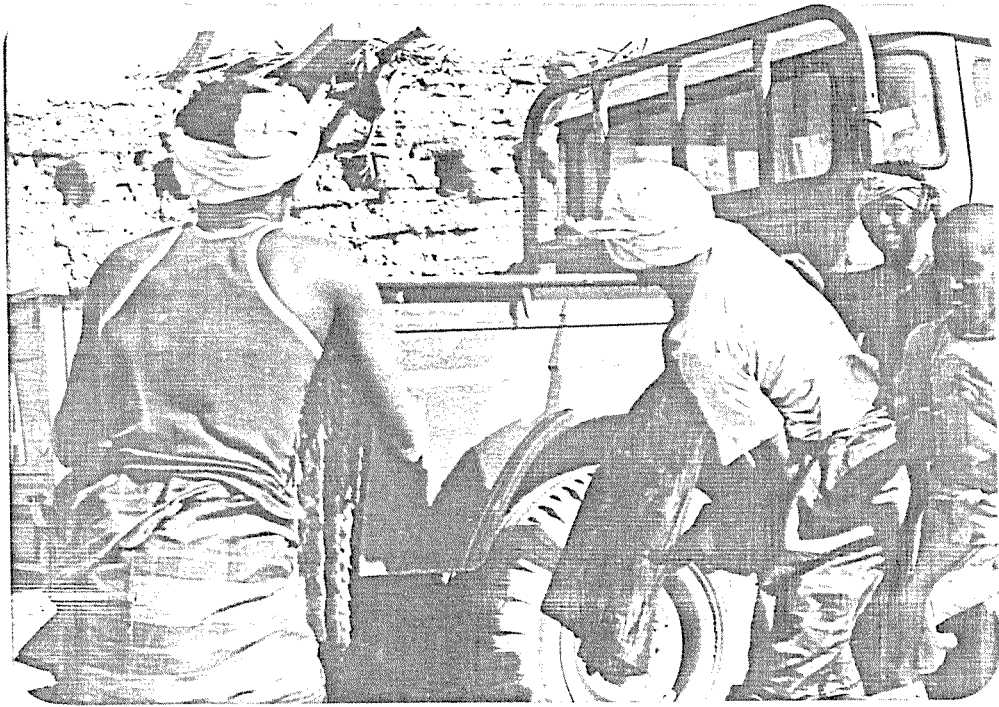
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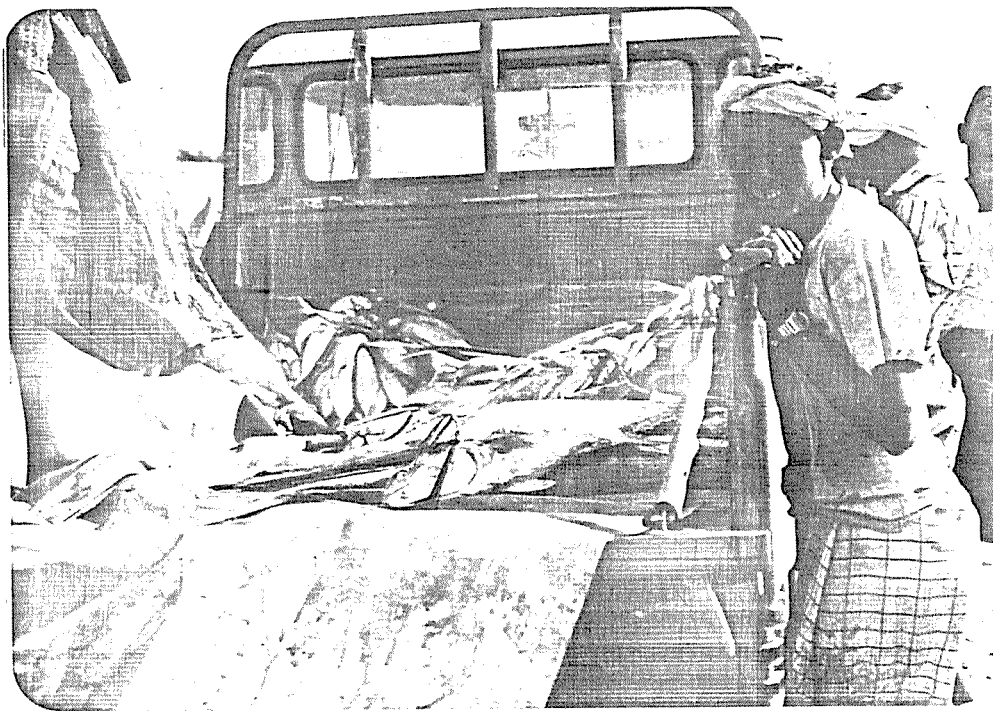
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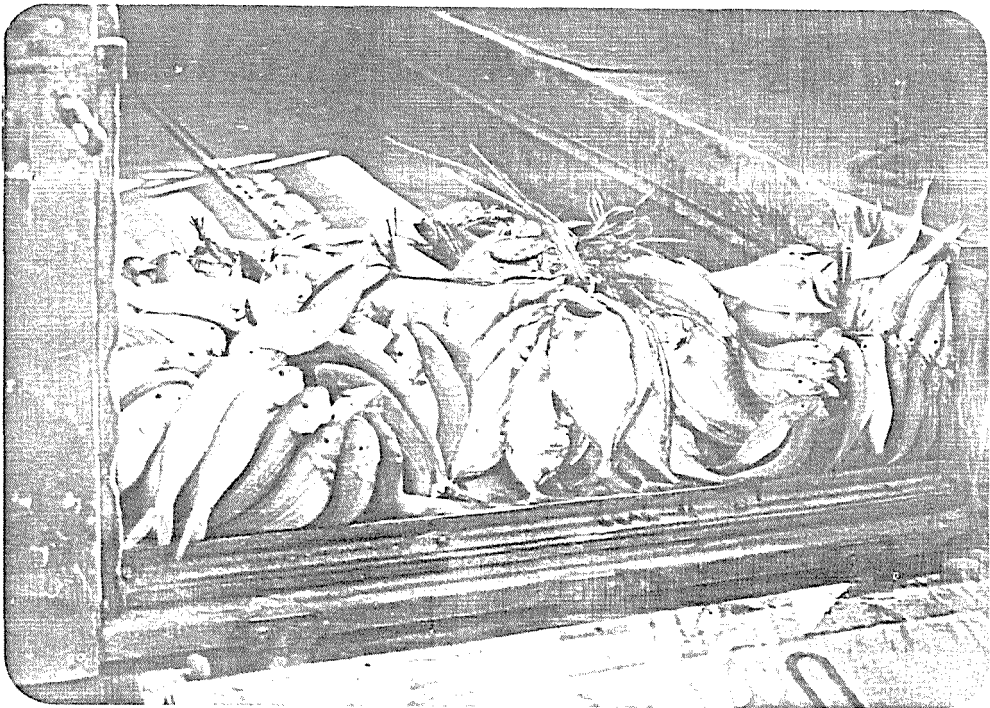
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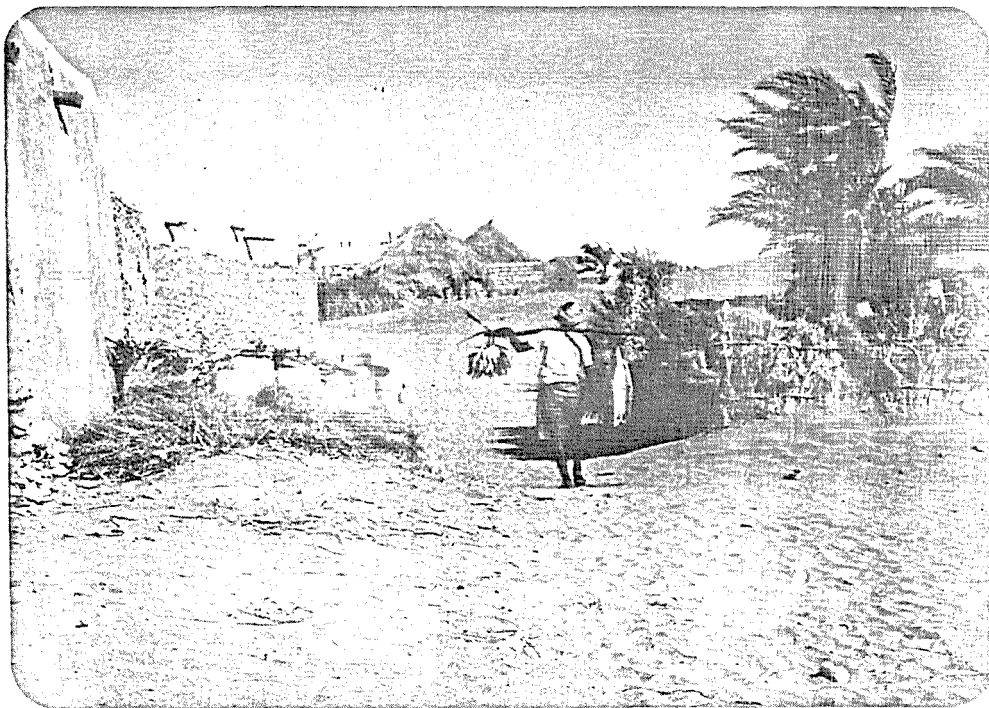
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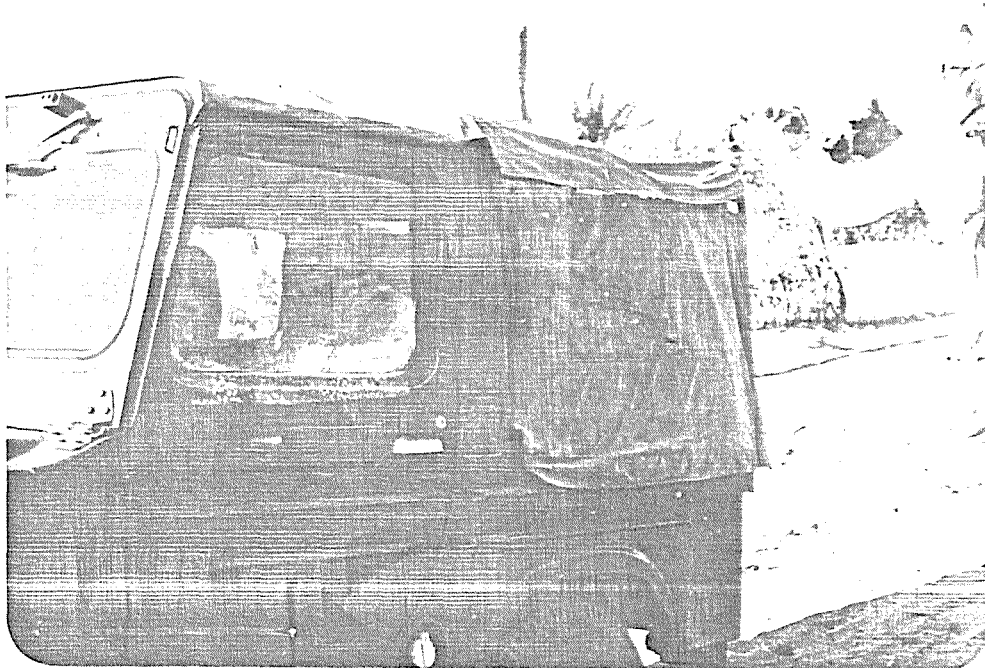
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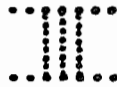
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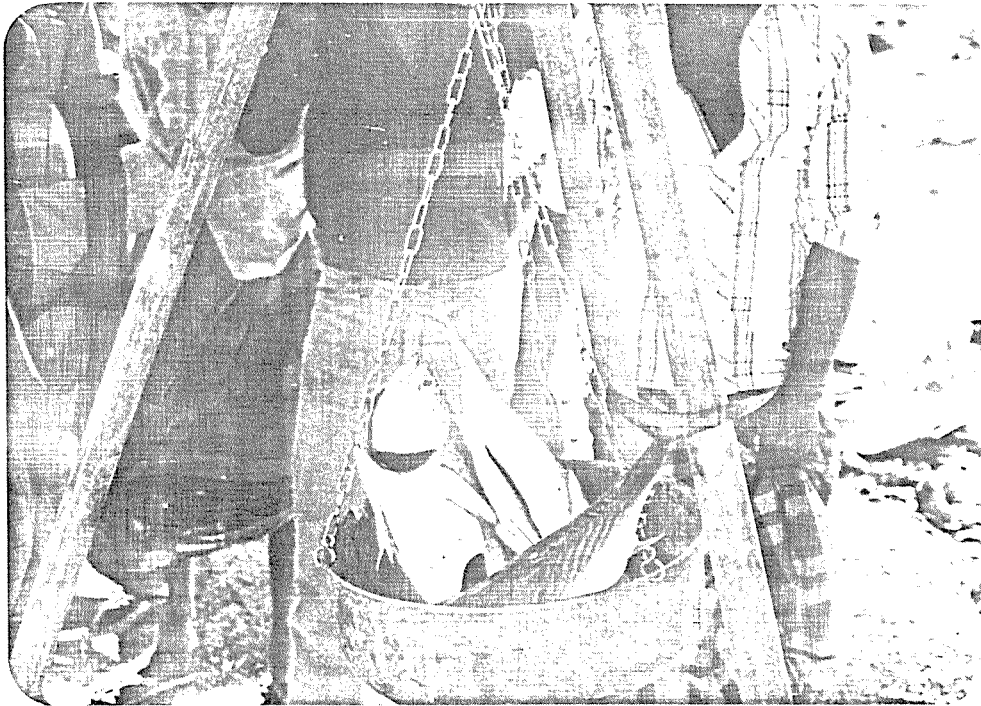
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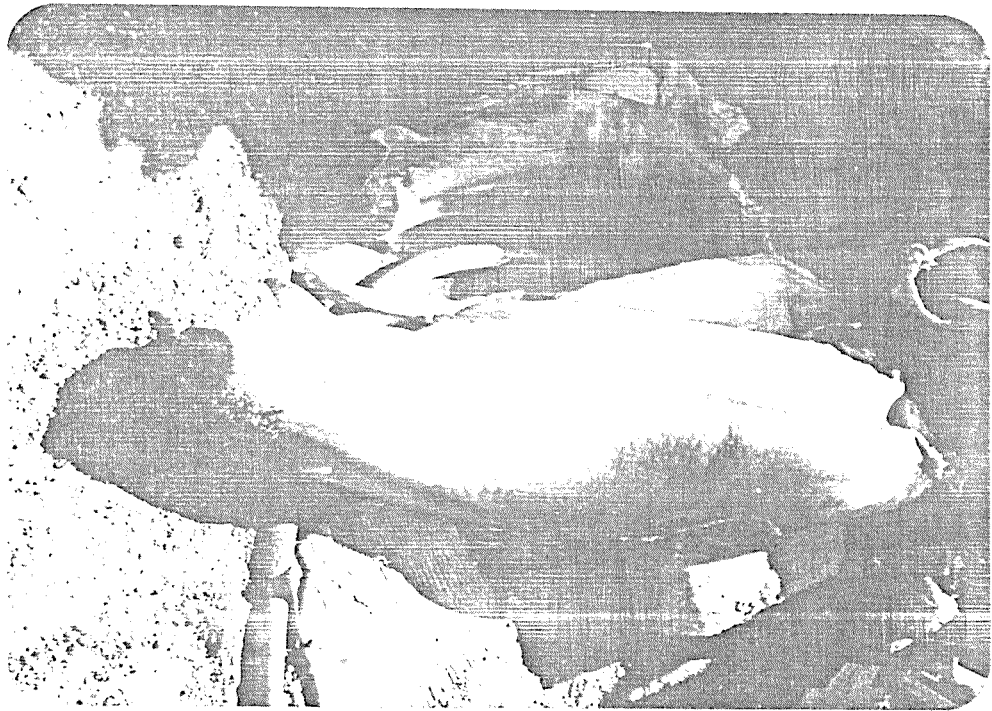
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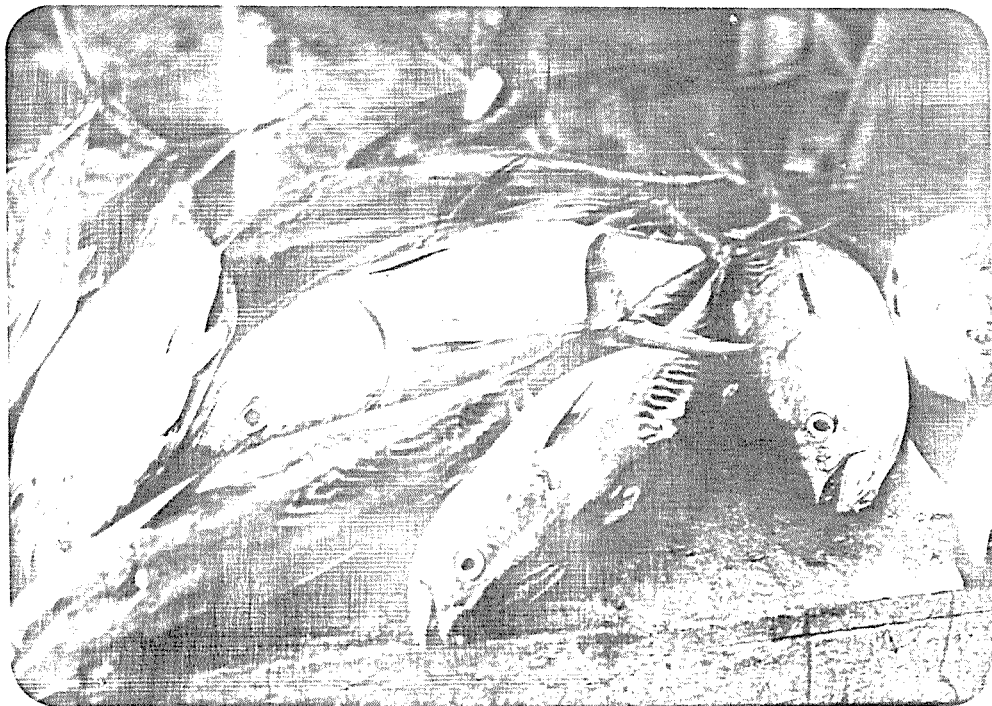
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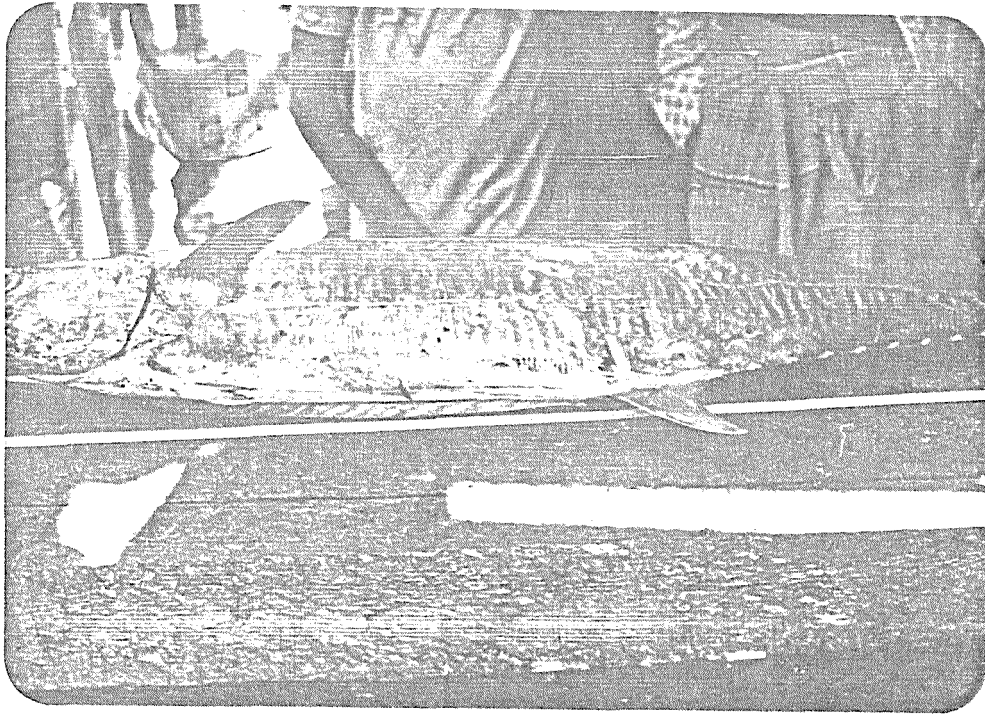
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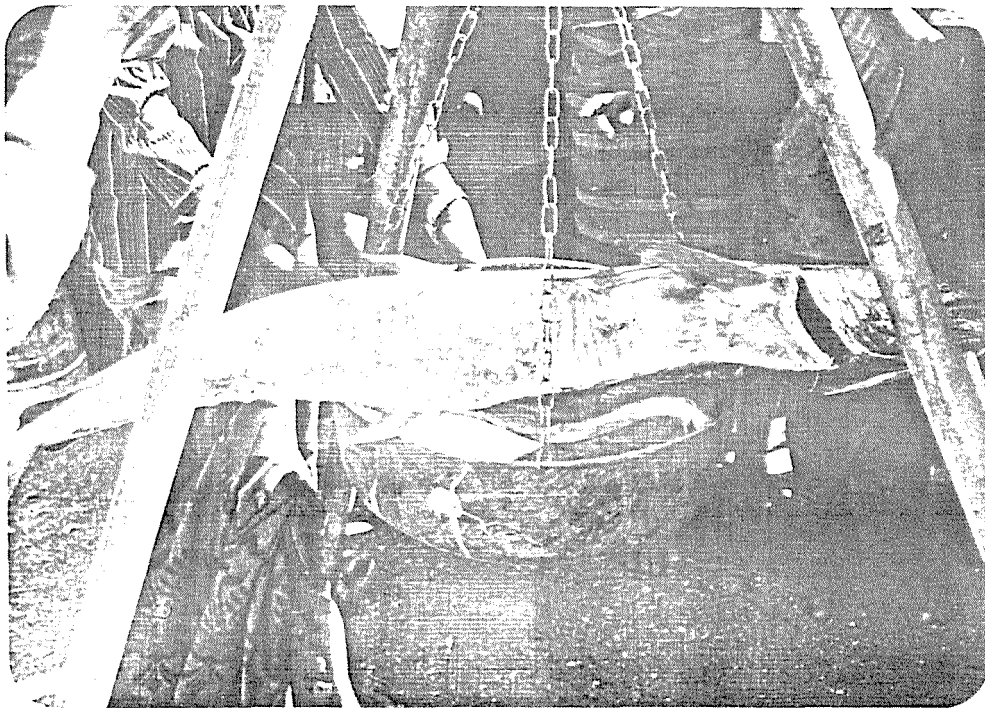
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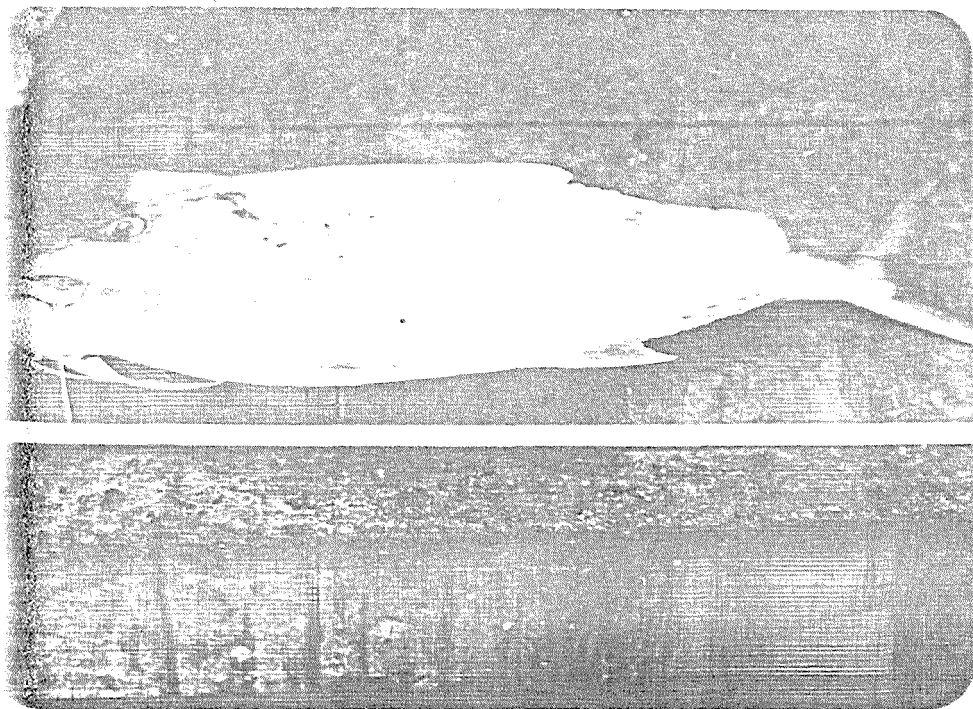
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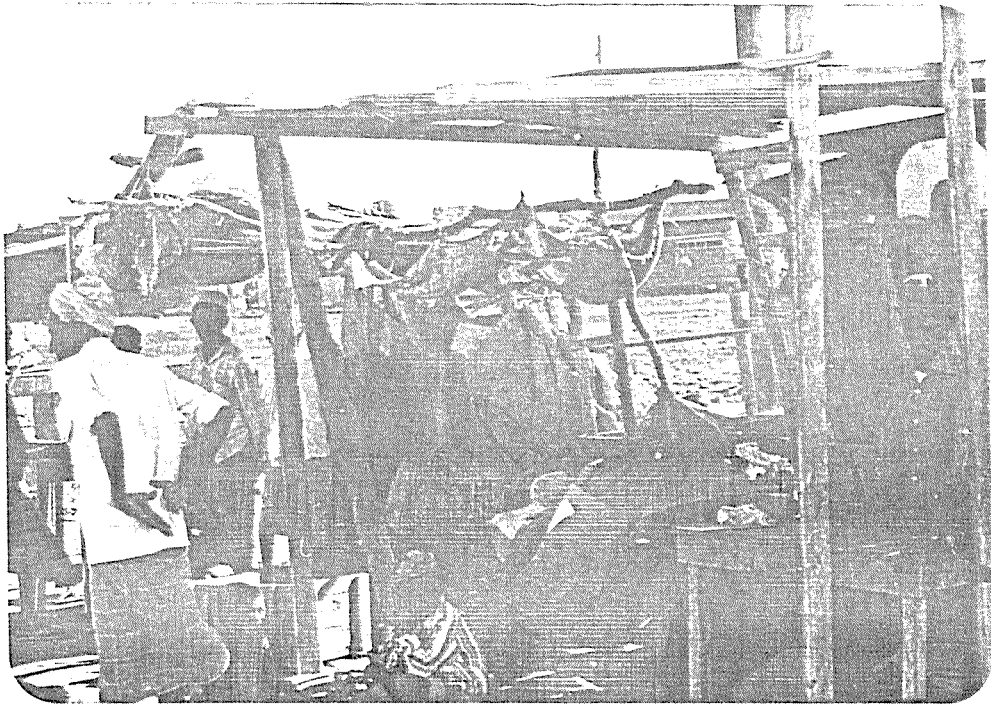
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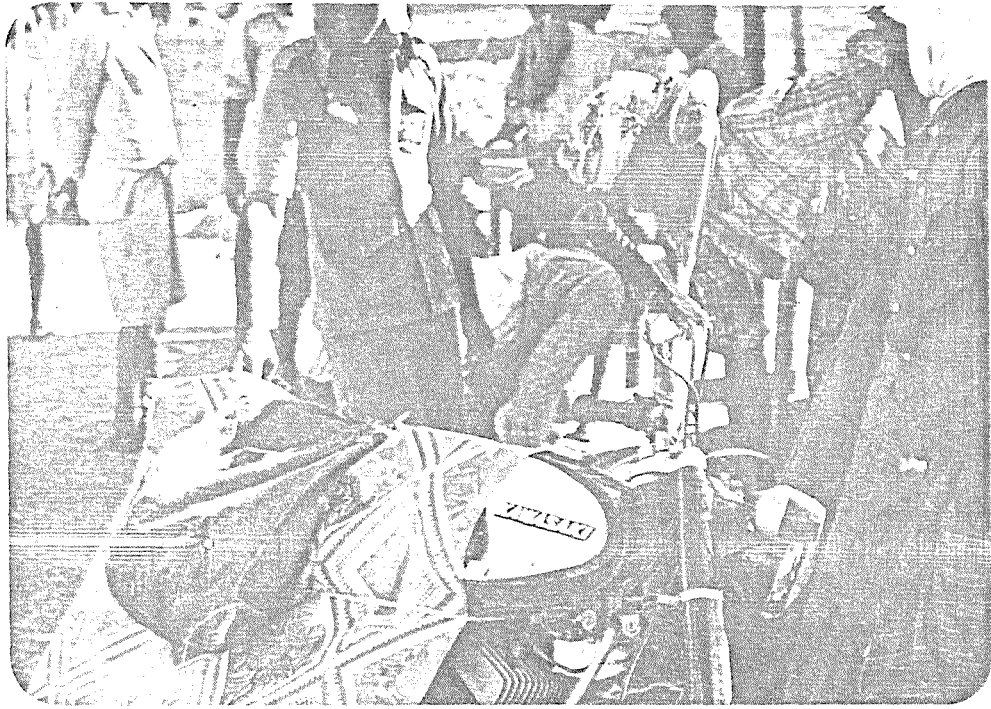
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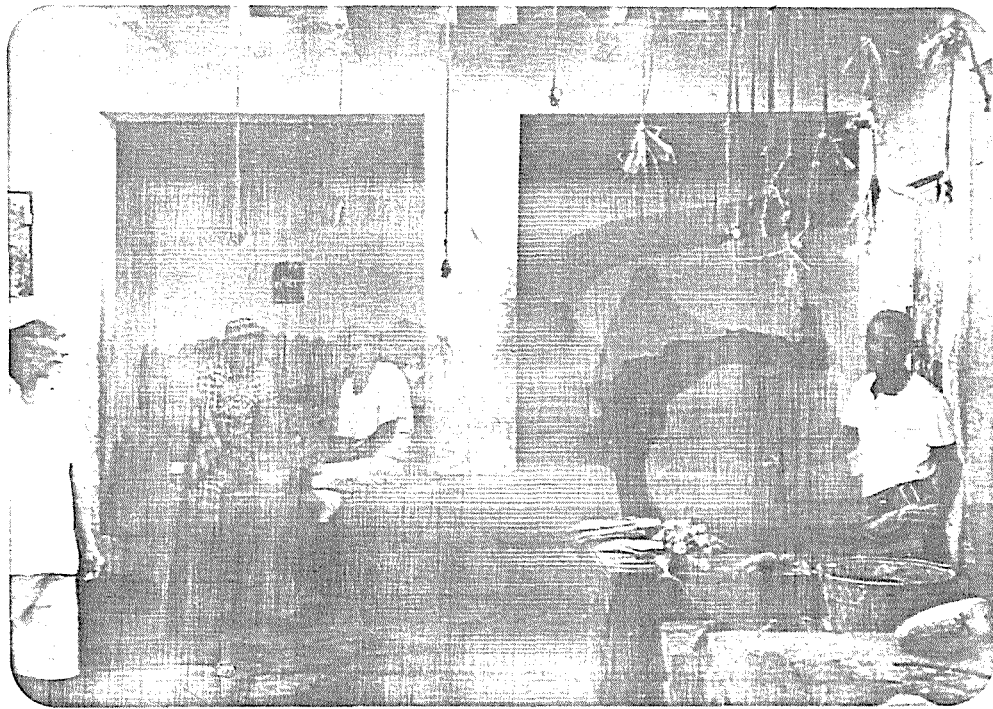
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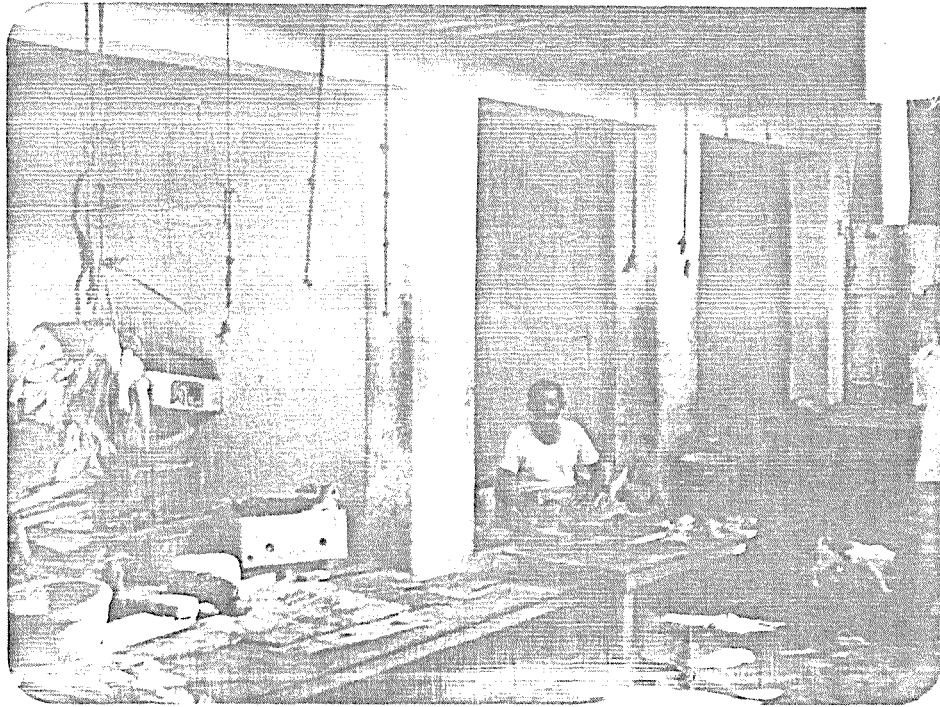
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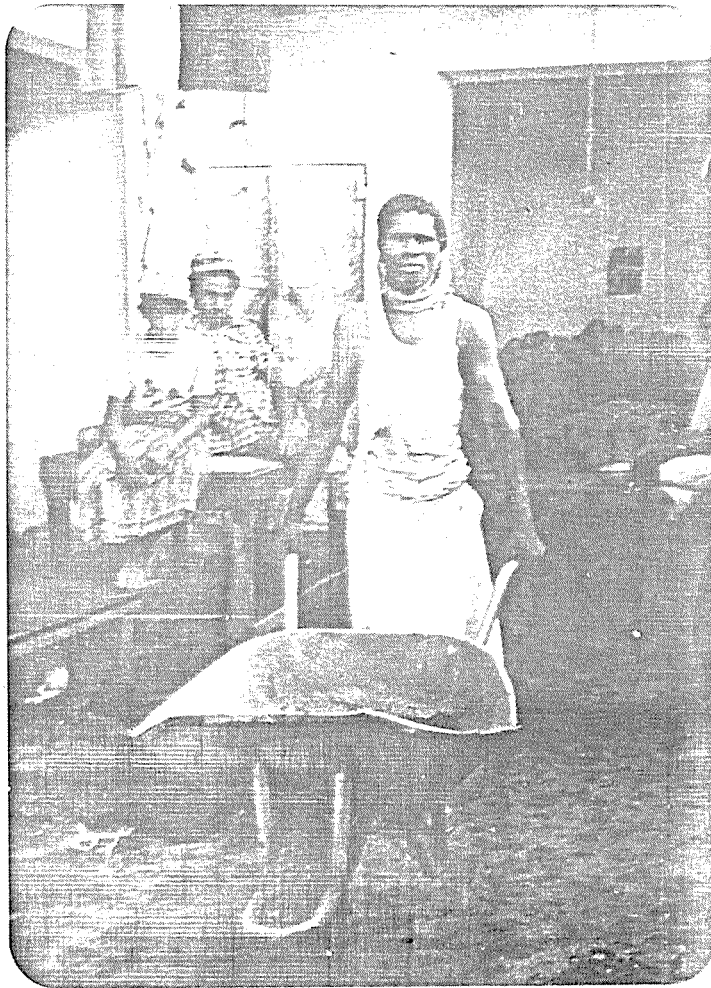
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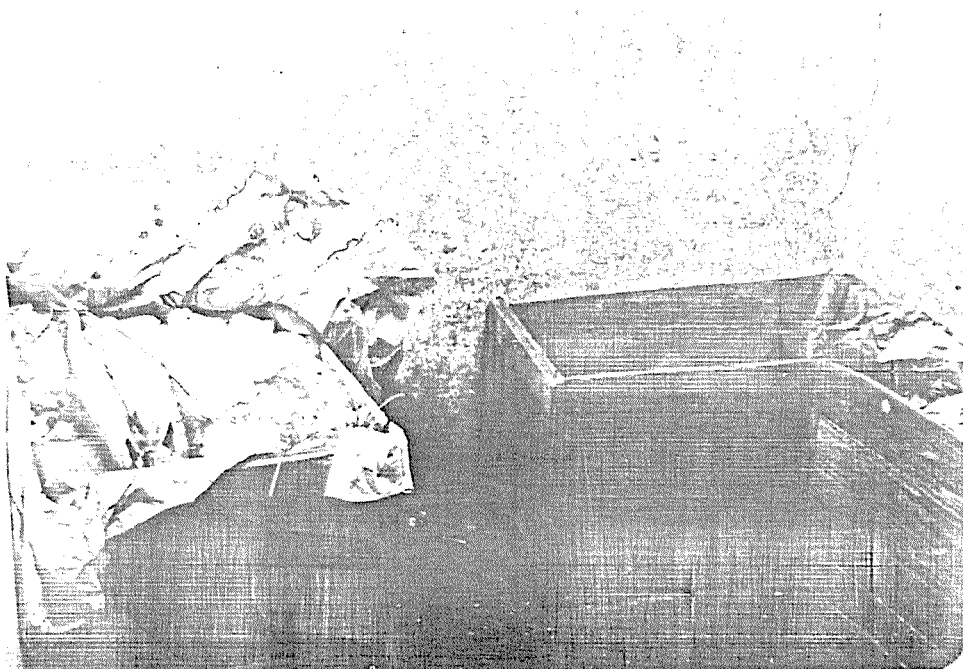
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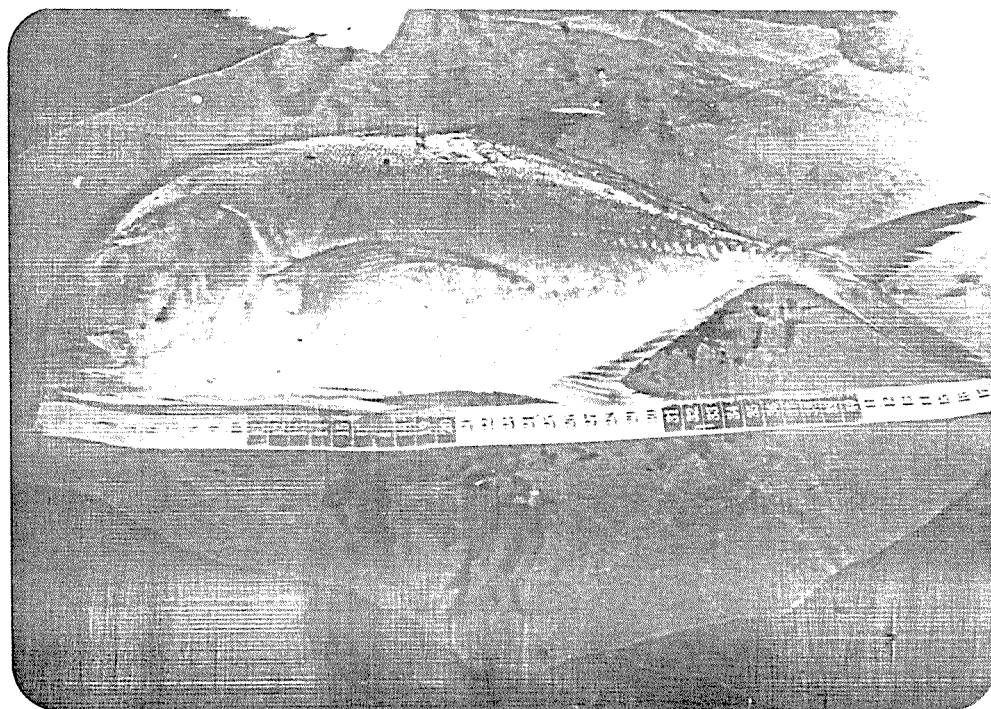
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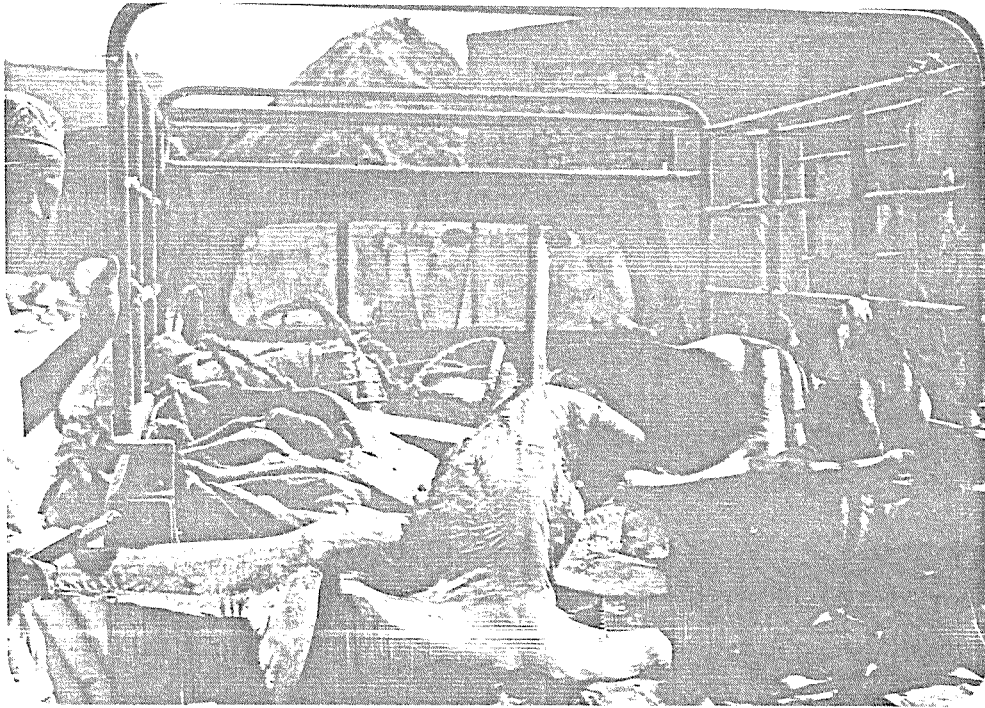
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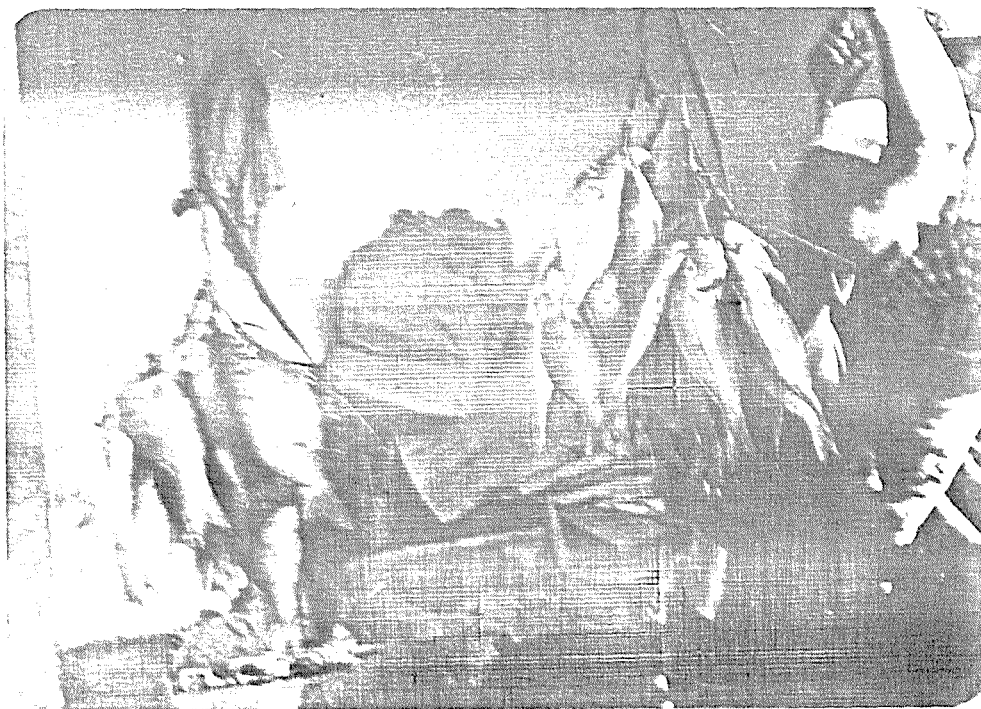
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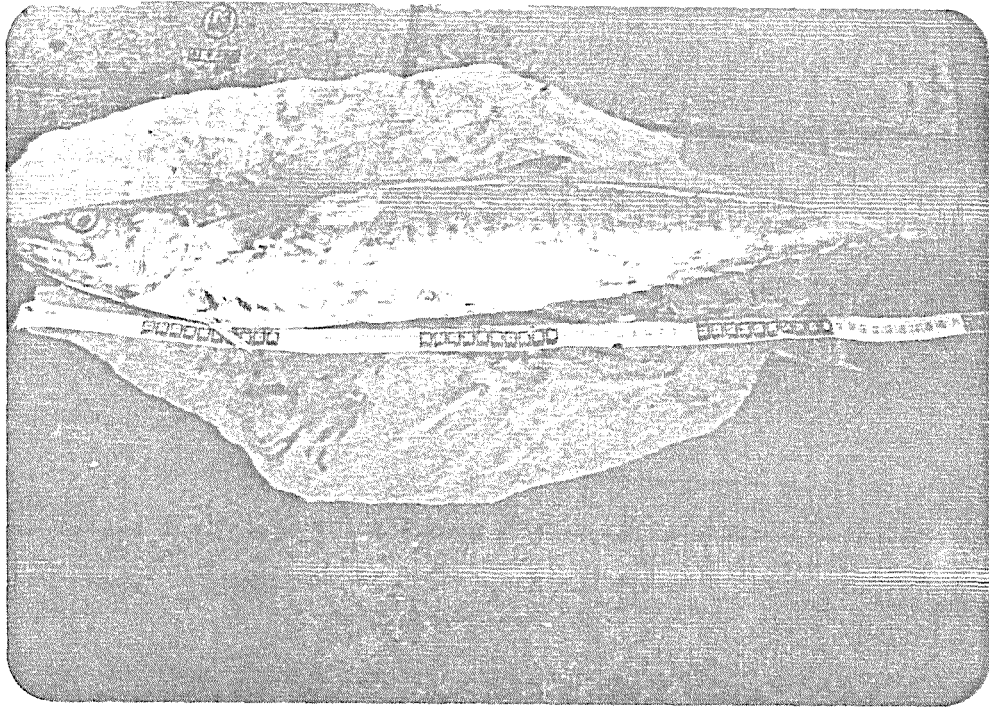
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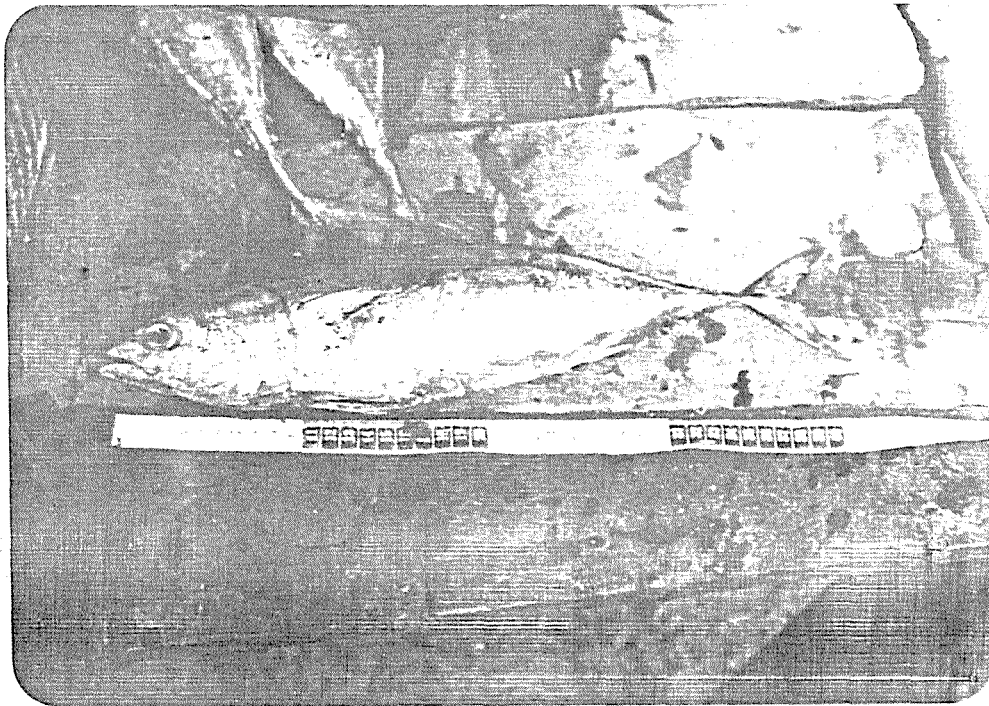
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