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" STATISTICAL AND BIOLOGICAL DATA ABOUT THE SPANISH TRAWL FISHERY ON  
BLUE WHITING (Micromesistius Poutassou Risso ) IN THE NW OF THE SPANISH  
COAST ".

by

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SUMMARY

In the present paper a short description of the fleet from the last  
three years and the yearly catch since 1.960 is given.

The fishery is based mainly individuals belonging to the I<sup>+</sup>, II<sup>+</sup>, and  
III<sup>+</sup> age classes our data show the demersal period starts at the first  
year of life, because we had found individuals between 4 and 13 cms.

With the results of the measurements of size and weight of the samples  
we found a size/weight relation alive defined like:

$$W = 0.0057247 L^{3.04847}$$

The selectivity tests made with polyethylene gears and 40 mm. net in  
the R/V " CORNIDE DE SAAVEDRA " in May - June 1.975 and May-1.976 we  
found a selection factor of 4.3.

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## RESUME

Dans le present travail, on done un brief description de la Flo-  
tille dans les trois derniers anneès et on indique la seriee histori-  
que des captures depuis L.960.

La pêcherie est baseé fondamentalement sur exemplaires des grupes  
d'âge I<sup>+</sup>, II<sup>+</sup>, III<sup>+</sup>, Selon nôtres données la phase demersal commence  
dans le premiere annee de vie, puisque nous avons trouve exemplaires  
entre 4 et 13 cm.

Avec les resultats des échantillonnages des tailles et poids, nous  
avons pu calculer la relation taille-poid vif.

$$3.04847$$

$$W = 0.0057247 L$$

Les preuves de sélectivité, réalisées avec le B/O " Cordine de  
Saavedra " Mai-June 75, Mai 76, avec chaluts de polyéthylène et mailles  
de 40 mm. on donnent un facteur de sélection de 4.3.

### 1.- CHAREACTERISTICS OF THENORTH-WEST SPANISH COAST FISHERIES.

1-1.- Fleet.- The North-Wes of Spanish coast trawl fishing is main-  
ly lead towards hake, and norway lobster. At the some time important  
quantities of mackerel, blue whiting, through some types of fish-vessels  
particularly " parejas " dedicate a great part of the year to fish blue  
whiting.

In thesse last years the number of vessels working in this zone  
was about 230 trawl ships divided among La Coruña, Marin, Riveira and  
Muros ports.

About 196 vessels (85% of the whole) are "bakas" we mean, convetic-  
nal trawl ships 386 HP average size working in more or less clean waters



and which employ a gear that goes very close to the bottom appropriate above all for norway lobster flat fish monkfish, small hake.

About 7 vessels are "bous", it means trawl ships of a bigger size and power 975 HP average, that can fish in a more uneven bottoms, they usually sail edges and work without ascratching the bottom so much, catching cod, sea-bream and mackerel mainly.

Finally there are about a docen "parejas", 476 CV mean. and of them at Coruña port and which are dedicated fundamentally to the blue whiting cold and mackerel that come with it.

All " bous " ond part of the " bakas " fish in VIIIc west zone as well as in IX while many " bakas " and all " parejas ". fish only in VIIIc west zone, the depths in which they work vary from 100 and 200-250 fathoms and they generally use and net of 40 mm. in the codend.

1-2.- CATCHES.- In table 1. you can't see the evolution of blue whiting catches in thousand of tons from 1.960 and which presents its maximum in 1.968.

La Coruña fleet, with more than 100 vessels, fished usually between the 75% and 90% of the total amount caught.

| TABLE 1. | YEARS | MT.10 <sup>3</sup> | YEARS | MT.10 <sup>3</sup> |
|----------|-------|--------------------|-------|--------------------|
|          | 1.960 | 5,2                | 1.969 | 12,9               |
|          | 1.961 | 5,3                | 1.970 | 10,0               |
|          | 1.962 | 4,9                | 1.971 | 8,9                |
|          | 1.963 | 9,5                | 1.972 | 15,5               |
|          | 1.964 | 9,2                | 1.973 | 12,7               |
|          | 1.965 | 12,7               | 1.974 | 10,9               |
|          | 1.966 | 15,2               | 1.975 | 14,8               |
|          | 1.967 | 15,6               | 1.976 | 13,9               |
|          | 1.968 | 16,4               | 1.977 | 15,0               |

1-3.- PERIODS OF FISHING.- The strongest periods of catches are in Spring-Autumn, with the maximum in April and May and October-November.

In Figure 1 we present the monthly catches disembarked in Marin port.

## 2. BIOLOGICAL FEATURES

From the surveys realized with the R/V "Cornide de Saavedra" in August 1974, May-June 1975, May 1976 and September 1977 along the coast of Galicia (NW of Spanish coast), we got the distribution of sizes that Figure 2 shows, trawl gears were employed of the type "baka" and "bou" and we did a great part of the catches with 20 mm. (double codend) for selectivity studies; that is the reason why we could get small size individuals (4 to 13 cms.).

From the analysis of Figure 2, we can notice the nearly lack of individuals of age class I<sup>+</sup> (according to bibliography table 2). We can also observe almost the lack of 19 cm. individuals. The important presence of individuals from 6 to 12 cm. in catches during the May-June 1975 and May 1976 surveys (5.4% and 12.3% of the total amount fished) let us think that demersal phase begins in this species already from the first year of life.

On the other hand, and as it is already clear that from July, the individuals that form the biggest part of commercial catches are between 15 and 17 cms. as sampled in Marin port.

It seems that we can reach the conclusion that the 7 cm. mode that appeared in May 1976 the age class 0, with a quick growth in pelagic phase and a much more slow growth in the demersal phase that can make it reach 10-12 cm. at the end of its first year of life.

## 3. SIZE-WEIGHT RELATION ALIVE

From sampling of individuals with size and entrails, following relation was got:

$$W = 0.0057247 L^{3.04847}$$

## 4. SELECTIVITY

We have dates taken during two surveys on the R/V "Cornide de Saavedra" (Stern trawler vessel, 58 meters length, 990 GRT and two engines of 625 HP each), in August 1974.



The double codend net method was used and the net studied was made of polyethylene of 40 mm., measured with ICES's gage to 4 kgrs.pressure.

From the whole of trawls made, three were chosen for their homogeneity, adjusting the results to a logistic curve. The selection curve can be seen in Figure 3 and the first catch size is 171.6 mm. for a 40.57 mm. net and a selection factor of 4.23.

### CONCLUSIONS

The fishery is made (according to the existent bibliography, table 3) on young age classes, mainly I, II, III. Smaller than 12 cm. individuals catches with bottom trawl gears, during the surveys in May-June 1975 and May 1976, indicate that the demersal phase of these species begins in the first months of life and not once they are one-year, as it was thought until now (Bailey 1970).

On the other hand, the presence in May of 7 cm. mode individuals seem to represent clearly age-class 0, and would have a quick growth during the pelagic phase and a much slower growth in the immediate demersal phase that allows them to reach 10-12 cm. at the end of their first year of life.

These dates would agree with Bailey's thesis (1970) of the existence of a winter ring in the otoliths not very easily appreciated in all cases, and that would add a year more to the results obtained till then by the different authors.

In the bibliography we've only found four works on selectivity of this specie, two of them referred to the North West Spanish coast, other to the Bay of Bisvay, and another to the Spanish Mediterranean (table 3). The values of 4.71, found by Larrañeta et alia in the Mediterranean and 3.90 found by Fuertes et alia contrast a little in the same North West Spanish coasts as with the same materials. The difference in the first case could be caused due to the minor pressure of the gage (1.5 Kgr. against 4 Kgr. in our case ) and in the second, a part from the bigger pressure of the gage employed by them (5Kgr.).

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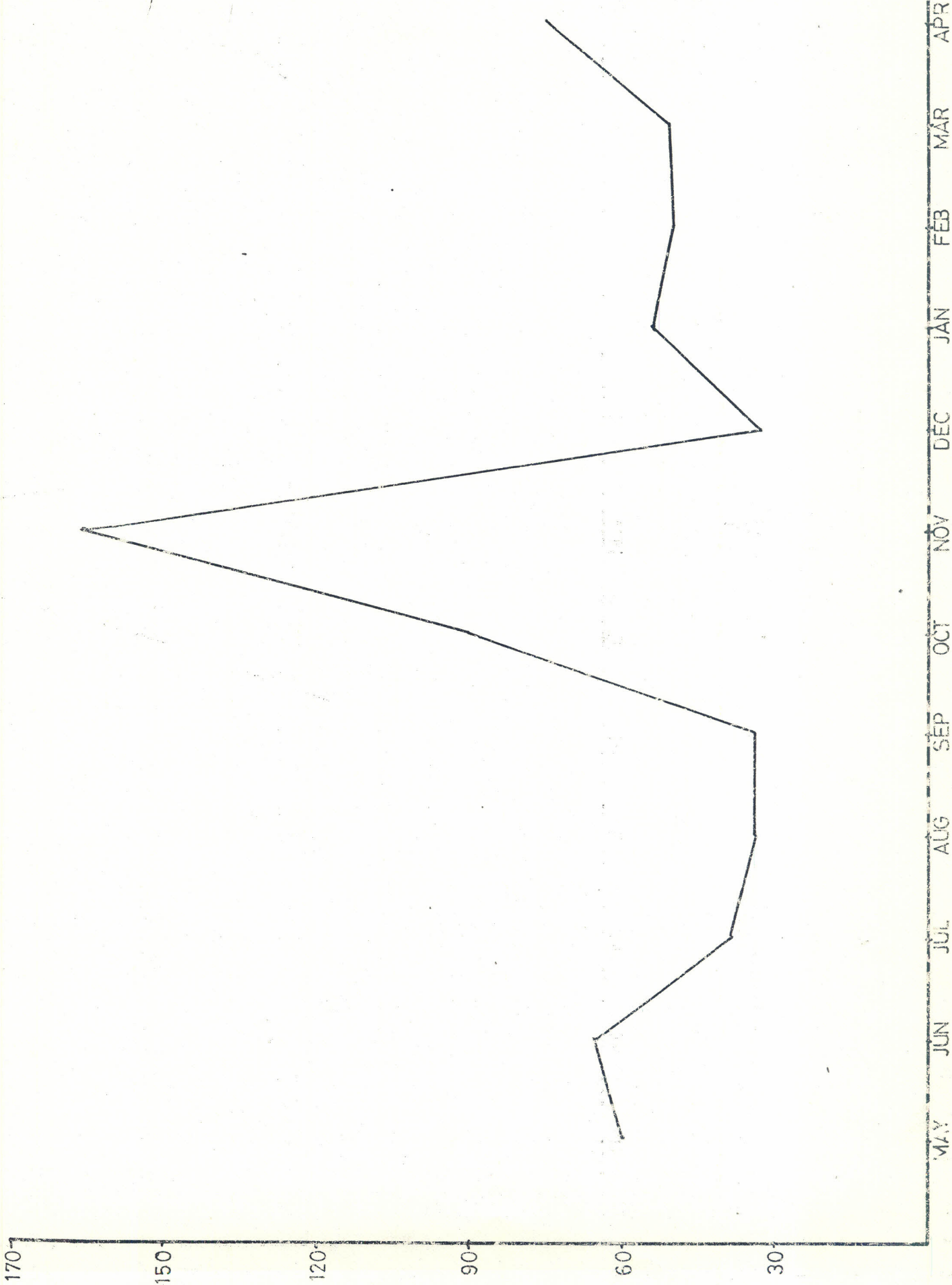


TABLE (3) -Summary of selectivity data for blue whiting.

| Author                      | Area                           | Experimental method | Gange Press(Kg) | Cod end             |                       | 50% retention length(mm) | Selection Factor |
|-----------------------------|--------------------------------|---------------------|-----------------|---------------------|-----------------------|--------------------------|------------------|
|                             |                                |                     |                 | Material            | Average mesh open(mm) |                          |                  |
| Rodriguez et alia<br>(1962) | Galice                         | Full cover          | ?               | Single manila       | 40                    | 167                      | 4,2              |
| "                           | "                              | "                   | ?               | "                   | 60                    | 266                      | 4,4              |
| Rodriguez et alia<br>(1963) | Bay of Biscay                  | Alternate hauls     | ?               | "                   | 50                    | 199                      | 4,0              |
| Larrañeta et alia<br>(1969) | Mediterranean coast<br>(Spain) | Full cover          | 1,5             | "                   | 38                    | 179                      | 4,71             |
| Fuertes et alia<br>(1977)   | Galice                         | "                   | 5               | Single polyethelene | 67                    | 261                      | 3,90             |
| "                           | "                              | "                   | "               | Single polyethelene | 48                    | 211                      | 4,40             |
| Present paper               | Galice                         | "                   | 4               | Single polyethelene | 40,6                  | 171,6                    | 4,23             |

No. of individuals  $\times 10^3$

FIG. 1





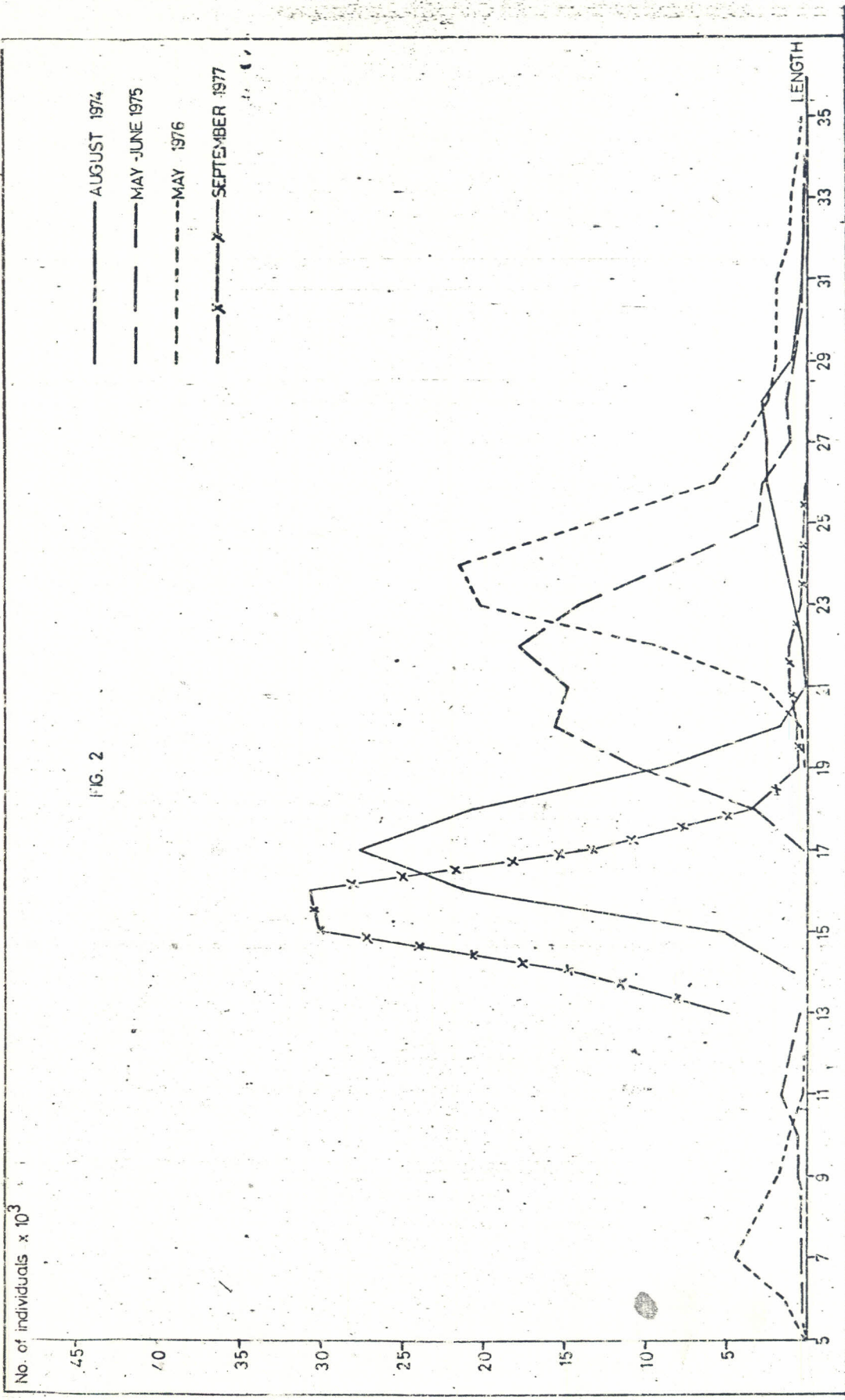
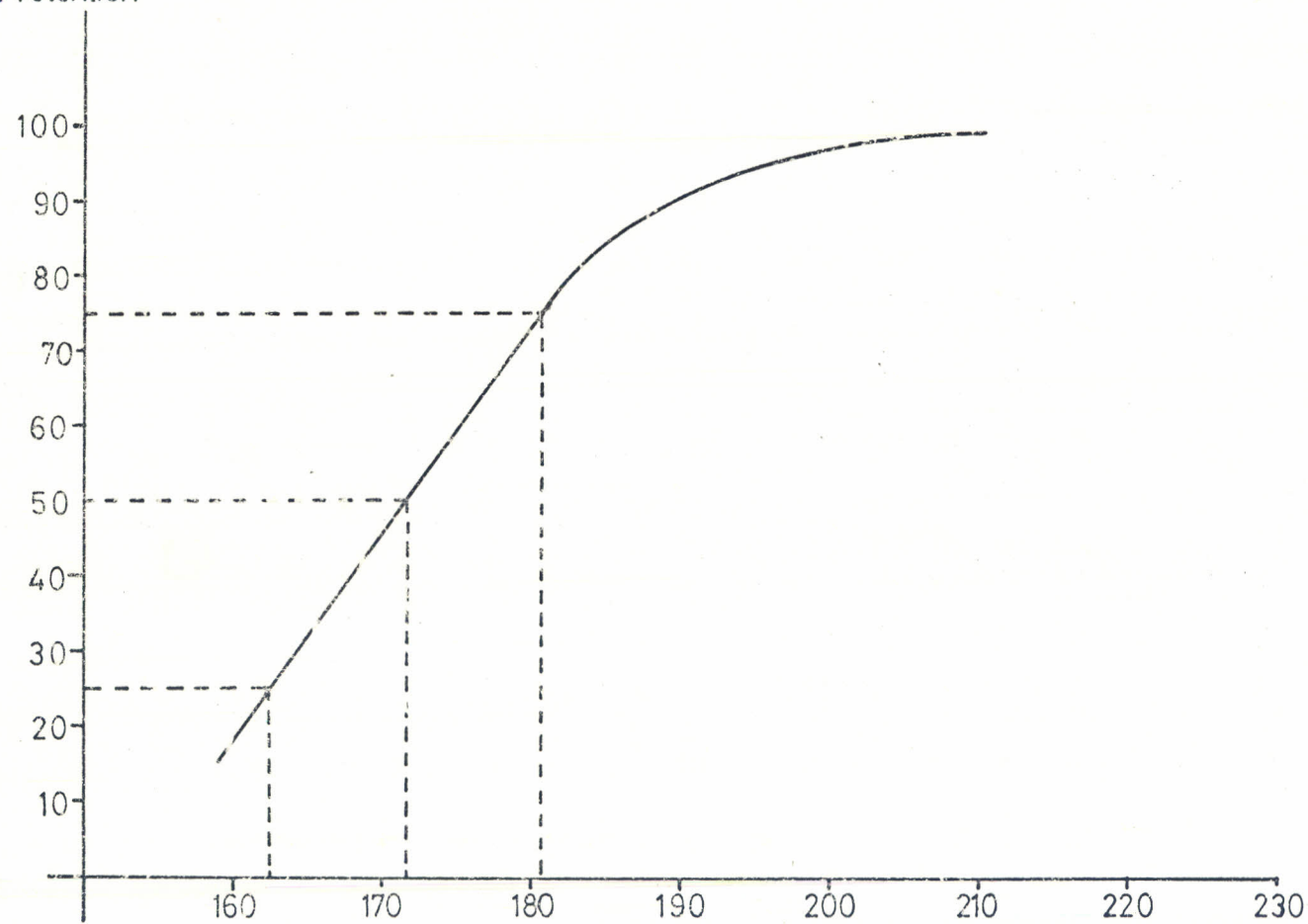


FIG. 3

SELECTION CURVE

(BLUE WHITING) AUGUST 1974

% retention



Adjusted to logistic curve

$$1-p = \frac{1}{1+e^{-(21,4-1,247e)}}$$

$$l_c = 171,6 \text{ mms.}$$

$$S_F = 4,23$$