je zuvor. Hier wie auf einigen Stationen vor der deutschen und dänischen Küste erwies sich der Jahrgang 1922 als sehr reich, der von 1923 als sehr arm. Der Jahrgang 1924 war an der holländischen Küste reich, nördlich von Helgoland dagegen spärlich vertreten. Auf die grosse Uebereinstimmung dieser Beobachtungen mit den deutschen Befunden hat Verf. bereits in einer früheren Arbeit in dieser Zeitschrift hingewiesen. Man kann ihr nur zustimmen, wenn sie in der Erforschung der Fluktuationen eine sehr wichtige Aufgabe für die Zukunft sieht.

Sehr interessant sind auch die Ergebnisse über die Wachstumsgeschwindigkeit der Schollen. Diese ist in den untersuchten Gebieten noch immer viel geringer als vor dem Kriege. Verf. hat noch kaum eine Besserung seit den ersten Nachkriegsjahren feststellen können. Auch Ref. hat in der deutschen Bucht bis 1927 nur eine verhältnissmässig geringe Besserung des Wachstums feststellen können. — Verf. hat weiter versucht, durch Vergleich der mittleren Länge der Altersgruppen auf gleichen Stationen im Juni und November den Zuwachs in der Sommerperiode 1926 zu ermitteln. Für die nördlicheren Gebiete ist jedoch nach Ansicht des Ref. der November ein zu später Termin für solche Untersuchungen. Bereits im Laufe des Oktober pflegen hier die kleineren Schollen, wahrscheinlich zur Winterruhe, aus den Fängen zu verschwinden, und die dann errechnete mittlere Länge der Altersgruppen ist notwendigerweise zu hoch. Wahrscheinlich leiden die von THURSBY-PELHAM angegebenen Werte an diesem Fehler. In der inneren Deutschen Bucht fand Ref. das Wachstum einer Periode nicht wesentlich grösser als Verf. an der holländischen Küste. Hier ergaben sich für sie Schwierigkeiten aus den jahreszeitlichen Wanderungen der Schollen. Die deutschen Untersuchungen berücksichtigen alle Stationen eines Schnittes, sodass dieser Einfluss nach Möglichkeit ausgeschaltet ist. — Uebrigens ist das Jahreswachstum natürlich grösser als hier angegeben, da das Wachstum der ersten Frühjahrsmonate nicht eingerechnet ist.

Sehr wertvolles Material von Altersbestimmungen von Marktproben hat Verf. gleichfalls beschafft. Aus solchen Untersuchungen wird man Vieles über den Einfluss der Fluktuationen auf den Ertrag der Fischerei entnehmen können. Es ist sehr erfreulich, dass diese Arbeiten ebenso wie die Marktmessungen so energisch von englischer Seite inangriff genommen werden. BCKM.

AAGE J. C. JENSEN. An Investigation on the Stock of Plaice in the Southern Horns Reef Area in the Years 1925 and 1927. Meddelelser fra Kommissionen for Havundersøgelser. Ser. Fiskeri. Bd. VIII, No. 6. 1928.

This report has been written and illustrated with the admirable lucidity which characterises the reports of the Danish Commission and is a useful addition to our knowledge of the condition of the plaice stock in the Horns Reef Area. One part of the plaice nursery grounds may differ so widely from another at the same season that a full understanding of the general North Sea stock can be obtained only by continuous examinations of each section.

The results of three fishing experiments are compared one with another

and with those carried out in previous years, notably in certain pre-war years and in September 1922. The first experiment took place in April 1925 when 10 stations were trawled; the total length of time actually spent in trawling was some six to seven hours, but three hauls are not considered since they only yielded one plaice; some 3,470 plaice were measured and 1,535 were otolithed. The second experiment in October 1925 was on a larger scale, since 18 stations were worked and the number of hours hauling was twelve and a half all the 5,459 plaice caught were measured and otolithed. The third, in March 1927, was very short since only two hours trawling took place; six stations were visited of which two only provided one plaice each; 1,697 plaice were measured of which 670 were otolithed.

The material for October 1925 was therefore, by far the most adequate on which to base conclusions. Its examination shows that the age distribution differed widely from that obtaining in the Autumn of 1922 in that there were a far greater number of the 0-I groups in 1922 than in 1925, while in 1925 the older than II groups were the more numerous. The plaice caught, moreover, in 1925 were slightly larger for their age than in 1922. The relative frequency of the various age groups accords very closely with that found by English and German investigators in 1926 and 1927 in that there was an abundance of the 1922 year class and a sparsity of the 1923 and 1924 year classes followed by an improvement in the 1925 class, which however, was not nearly so abundant as that of 1922. The reviewer is inclined to differ from Mr. JENSEN when he ascribes the greater growth rate of the II groups (1923 class) compared with that of the III group (1922 class), as due to the sparsity of the former and abundance of the latter. The English investigations carried out in the summer and autumn of 1926 showed an equal or almost equal rapidity of growth of these two year classes in the Horns Reef and Graadyb area as the III and IV group. The whole question of variations in growth is so complex and bound up with factors other than the sparsity or plentifulness of a particular year group that a variation cannot be ascribed to any one factor, particularly when, as in this case, samples from hauls at so many different areas are grouped together. The same criticism applies to the comparison of the rate of growth between the plaice caught in the Springs of 1925 and 1927. Moreover the material used for the estimation of growth and population for March 1927 was obtained from only one hour's trawling, between 10 and 19 metres, which hardly can be considered adequate for the purpose. The investigators working on the plaice, however, owe a debt of gratitude to Mr. JENSEN for publishing the full particulars of each haul which are valuable for comparison with their own work and with samples taken in the future.

The section on the "Yield by weight of the fishing compared with the size composition of the stock" pp. 36—37 is of particular interest and the catch per 100 hours fishing of English Steam Trawlers corroborates Mr. JENSEN's conclusions. The English figures are as follows:—

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[1]) THURSBY-PELHAM, D. E. Report on English Plaice Investigations 1924 and 1925. Fishery Invest. Ser. II. Vol. X. No. 3. 1928.

Year	1922	1923	1924	1925	1926	1927
Catch per 100 hours (cwts.)	14	12	14	15	16	16

Mr. JENSEN shows that the yield of commercial vessels, with a size limit of 22.5 cms., was poor in 1922 and improved greatly in 1925 and 1926, when the marketable stock was augmented, partly owing to the greater abundance than in earlier years of the year classes of 1920 to 1922, and partly owing to an increased growth rate. He presumes that the marketable stock for 1927 (figures not being available as yet) would be less than that of 1926. The English catch being based on the open North Sea would reflect the conditions found in inshore waters a year later, so the figures are in complete accordance with his conclusions. Taking the results of the work of the English, German and Danish investigators together it is extremely probable that Mr. JENSEN's prophecy that there will be fewer marketable plaice in 1929, will be fulfilled.

It is to be hoped that the Danish Commission will be able to continue this work from year to year on the same scale as in October 1925. It should then be possible, in conjunction with the material obtained by other marine researches, to forecast the probable catch and the effect of fishing on the stock. D. E. T.-P.

MOLANDER, A. R. Undersökningar över Rödspotta (*Pleuronectes platessa* L.), Flundra (*Pleuronectes flesus* L.), och Sandskädda (*Pleuronectes limanda* L.) i södra Östersjön (with an English summary). — Svenska Hydrografisk-Biologiska Kommissionens Skrifter. Ny serie: Biologi. Bd. I, No. 1, 1925. 38 pages, 1 chart, 17 tables, 4 figures in text.

MOLANDER, A. R. Recent Swedish researches into the fish population of the southern Baltic. — Svenska Hydrografisk-Biologiska Kommissionens Skrifter. Ny serie: Biologi. Bd. I, No. 2, 1926. 11 pages, 1 chart, 7 tables, 4 figures in text.

The plaice fishery in the Baltic proper which before the war was of practically no importance has developed enormously during the last ten years; a very large number of Swedish, German, and Danish fishermen are now engaged in it and an annual yield is obtained which equals if it does not exceed the yield from the Kattegat and Belt Sea.

It is therefore extremely interesting to study the influence which this new and very intensive fishery has had upon the plaice stock of the Baltic, and fortunately we possess good comparable material which has been furnished by previous investigators. Comprehensive investigations bearing on this question have in fact been carried out by Swedish, German, and Danish biologists; the works by Dr. MOLANDER cited above deal with the results obtained from the Swedish investigations carried out in 1913—25.

The first of these works treats of plaice, flounders, and dabs and discusses in particular the reason for the seasonal migrations of these fish. The material is derived from about 200 trawlings from S.S. "Skagerak", during the periods 1913—16, 1918—19, and 1921—22, partly in the Arcona Basin and partly in the waters around Bornholm.