Although it is premature to attempt to correlate the abnormalities observed in the fine structure of myasthenic neuromuscular junctions with the physiological abnormality in these patients, our investigations indicate that definite morphological alterations occur which may be related to the functional disability.

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BIOLOGY

Variation in the Secondary Sex-Ratio of the Grey Seal *Halichoerus grypus* (Fab.) during the Breeding Season

HEWER[1] has suggested that the secondary sex-ratio (that is, the sex-ratio at birth) of the grey seal is probably close to equality. Since this publication, considerably more data have been collected on the grey seal colony on the Farne Islands, Northumberland, by members of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne. Of 1,433 calves which were tagged, sexed and aged between 1952 and 1959 inclusive, 731 were males and the remaining 702 females ; a result which does not differ significantly from a 1 : 1 sex-ratio and which confirms Hewer's findings.

Despite the very nearly equal sex-ratio obtained, distinct differences were found when the sex-ratio was examined in relation to the time of the breeding season. Coulson and Hickling[2] have shown that there is little annual variation in the breeding season of the Farne Island colony of grey seals, and it is therefore reasonable to group data collected over a number of years into the same fortnightly periods. As is shown in Table 1, there is a distinct tendency for the sex-ratio to change from a preponderance of males at the beginning of the breeding season (in late October) to a markedly higher proportion of females at the end of the breeding season ($\chi^2 = 8{\cdot}56$, 3 d.f., $P < 0{\cdot}05 > 0{\cdot}01$). This result could be produced by the male calves being born, on average, earlier than the female calves. This, in fact, does occur but the difference is small, the average difference being less than 3 days.

Table 1. SEX-RATIO OF GREY SEAL CALVES ON THE FARNE ISLANDS ACCORDING TO THEIR DATE OF BIRTH

Year	Date of birth							
	Oct. 14–27		Oct. 28–Nov. 10		Nov. 11–24		After Nov. 24	
	♂	♀	♂	♀	♂	♀	♂	♀
1952	8	4	16	18	12	8	8	8
1953	12	8	11	16	5	10	3	8
1955	5	8	43	42	20	25	9	14
1956	7	6	43	47	47	47	24	32
1957	36	22	114	96	67	60	13	18
1958	1	1	57	38	45	38	11	10
1959	2	2	69	61	34	41	9	14
Total	71	51	353	318	230	229	77	104
Sex-ratio	100 : 71·8		100 : 90·1		100 : 99·6		100 : 135·1	

While seasonal differences in the sex-ratio of domestic and laboratory mammals have been recorded by Parkes[3], this type of difference in the sex-ratio has not been recorded before in the Phocidae.

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Dissociation of Isohæmagglutinin Formation and Tolerance of Skin Grafts in Chicks

THE administration of homologous whole blood into the embryo or new-born animal can produce either tolerance of skin grafts[1] or lead to the suppression of the isohæmagglutinin formation[2]. The causal relationship between these two types of immunological areactivity, however, remains obscure. It could be due to the fact that an identical antigenic stimulus is needed for agglutinin formation and transplantation immunity. There is evidence that red blood cells and some other tissue cells have some antigens in common. After the transplantation of tumours in mice and rats[3] and after the transplantation of skin in mice, rabbits and chicks[4], agglutinin formation was revealed even in those instances where the participation of red blood cells transferred in the graft could be ruled out. On the other hand, at least in mammals, red blood cells alone were not able to produce immunity against skin grafts[5].

In the present experiment, we investigated the formation of isohæmagglutinins in 13 chicks tolerating skin grafts after previous immunization with blood of the donor of the graft. Tolerance was produced in six individuals by mutual application of the skin graft immediately after hatching, in seven individuals by a similar skin transplantation with simultaneous administration of 0·5 ml. of heparinized blood of the donor. At the age of 6–12 weeks the tolerant chicks with the feathered graft, which had taken, were immunized with six 1-ml. doses of fresh citrated blood of the donor, administered intravenously. Plasma specimens for estimating the agglutinin titres were withdrawn in three-day intervals for two weeks after immunization was started.

In 10 from a total of 13 chicks tolerating the skin graft on the sixth to tenth day after the beginning of immunization, the formation of isohæmagglutinins against red blood cells of the donor of the graft and blood was detected (Table 1). The antibody response was relatively uniform, the maximum titres being 1/8–1/16. The grafts remained even after immunization in most chicks tolerating the graft for at least six weeks without any signs of destruction. Only in two animals they disintegrated between the fourth and sixth week after immunization. The immune response following the immunization by blood of the donor thus did not influence the fate of the tolerated homografts. Agglutinins developed in all animals where the tolerance was produced by the graft alone,