conditions unsuitable for the development of the parasites. Similarly, Reid *et al.*[2], studying the effects of *Ascaridia galli* on chicks with infectious bronchitis, recently reported a highly significant reduction of worms due to the virus infection; and common observation suggests that the burden of worms decreases markedly in dogs affected by distemper (Soulsby, E. J. L., personal communication).

After the reduction induced by the virus infection a significant ($P < 0.05$) increase was recorded generally in numbers of ova but not of coccidia. In only a few animals were counts unchanged—these survived, whereas all those showing an increase died, some when complete recovery from myxomatosis had been expected. Post-mortem examination revealed that the level of infestation with *G. strigosum* was very high in some animals; more than 5,000 worms per rabbit were counted in some cases—a degree of infestation not previously recorded in large samples of normal rabbits caught in the field[3]. These worm populations consisted of newly hatched adults and fourth-stage larvæ, in spite of the fact that all rabbits had been protected from re-infestation with endoparasites.

Michel[4], while studying the problem of the resistance of rabbits to infestation with *T. retortaeformis*, found that in hosts already infested the development of superimposed larvæ is inhibited, and they remain dormant in the intestinal mucosa until conditions become more favourable. It seems that a similar mechanism operates in infestation with *G. strigosum*. The expulsion of adult worms during the early stages of infection with the virus, and the lowered resistance of the host due to the prolonged disease, probably create conditions under which dormant larvæ may resume development and so aggravate the severity of myxomatosis.

I reported earlier another form of interference between endoparasites and virus, which was manifested by inhibition of myxomatosis symptoms and premature death in heavily parasitized animals[5].

R. Mykytowycz

Commonwealth Scientific and Industrial Research Organization,
Wildlife Survey Section,
Canberra, A.C.T.
Oct. 31.

[1] Fenner, F., and Marshall, I. D., *J. Hyg.* (*Camb.*), **55**, 149 (1957).
[2] Reid, W. M., Pate, D. D., and Kleckner, A. L., *Avian Dis.*, **2**, 100 (1958).
[3] Mykytowycz, R., *C.S.I.R.O. Wildlife Res.*, **1**, 19 (1956).
[4] Michel, J. F., *Nature*, **169**, 933 (1952).
[5] Mykytowycz, R., *Aust. J. Exp. Biol. Med. Sci.*, **34**, 121 (1956).

Long-term Survival of Irradiated Mice treated with Homologous Tissue Suspensions

Recently, Barnes *et al.*[1] reported the survival for 150 days of *CBA* mice subjected to a dose of 950 r. X-radiation and treated with spleen or liver suspensions from new-born or unborn *C57BL* mice. In an attempt to clarify the secondary phase of the irradiation death syndrome, Uphoff[2] observed the 90-day survival of $(C57BL \times DBA/2)F_1$ hybrids subjected to 800 r. X-radiation following injections of suspensions made from *C57BL* or *DBA/2* tissues. She reported that the use of fœtal hæmatopoietic tissues precluded the secondary phase of the irradiation syndrome for 90 days after irradiation, whereas injection of bone marrow suspensions did not.

Table 1. Effect of *CF* No. 1, *C57BL/6*, or LAF_1 Tissue Suspensions on Survival of 10- to 12-week-old *CF* No. 1 Female Mice exposed to 750 r. Total-body X-Radiation.
Controls consisted of 10 untreated *CF* No. 1 mice, all of which survived 270 days; 9 survived 400 days and 7 survived 500 days; 2 were still alive at 910 days

Donor tissue	No. of mice treated	No. surviving at intervals shown (days) 28	150	270	400	500	Day of last death
CF No. 1 bone marrow (7- to 8-week mice)	36	23	20	17	8	2	515
C57BL/6 bone marrow (7- to 8-week mice)	36	3	0	0	0	0	121
CF No. 1 baby spleen	44	24	16	9	4	1	525
C57BL/6 baby spleen	50	30	9	5	1	0	406
LAF_1 baby spleen	34	18	11	6	2	0	483
CF No. 1 embryo liver	45	34	31	24	16	1	546
C57BL/6 embryo liver	69	27	18	11	2	1	497
Locke's solution	75	5	3	1	0	0	365

In 1956 [3] we observed that no secondary deaths occurred when lethally irradiated rabbits were injected with embryonic or new-born mouse tissues, and that rabbits so treated were alive after 150 days. Many of these rabbits are, in fact, still alive after three and a half years. We had previously reported in 1954 [4] that suspensions made from fœtal *CF* No. 1 mouse liver, or spleen and liver from new-born mice, were more effective, on the basis of cell counts, than suspensions of mature tissue in enhancing the 30-day survival of irradiated (900 r.) mice of the same strain. *CF* No. 1 mice which were treated with hæmatopoietic tissues from young or unborn *CF* No. 1, *C57BL/6*, or LAF_1 mice following 750 r. total-body X-irradiation have now lived out their life-span, and the long-term survival results are shown in Table 1. Irradiated *CF* No. 1 mice survived longer when injected with fœtal liver or spleen suspensions from new-born mice than when treated with an equal number of *C57BL/6* or *CF* No. 1 bone marrow cells.

Although the *CF* No. 1 strain is no longer maintained by strict inbreeding, post-irradiation treatment with *CF* No. 1 fœtal or new-born tissues resulted in longer survival than did similar treatment with *C57BL/6* or LAF_1 tissues.

Eric L. Simmons
Leon O. Jacobson
Edna K. Marks
Evelyn O. Gaston

Argonne Cancer Research Hospital*,
and
Department of Medicine,
University of Chicago,
Illinois. Oct. 6.

* Operated by the University of Chicago for the United States Atomic Energy Commission.

[1] Barnes, D. W. H., Ilbery, P. L. T., and Loutit, J. F., *Nature*, **181**, 488 (1958).
[2] Uphoff, D. E., *J. Nat. Cancer Inst.*, **20**, 625 (1958).
[3] Jacobson, L. O., Marks, E. K., and Gaston, E. O., *Proc. Soc. Exp. Biol. Med.*, **91**, 135 (1956).
[4] Jacobson, L. O., Marks, E. K., and Gaston, E. O., "Radiology Symposium", 122 (Liège, 1954).

Red Muscle as a Possible Character for the Identification of Sharks

In a previous communication, the relative distribution of vitamins between the red muscle and the ordinary muscle in fish was reported[1]. The relation between the proportion of red muscle present and the activity of different species was pointed out, and the possible function of the red muscle as an organ proposed.