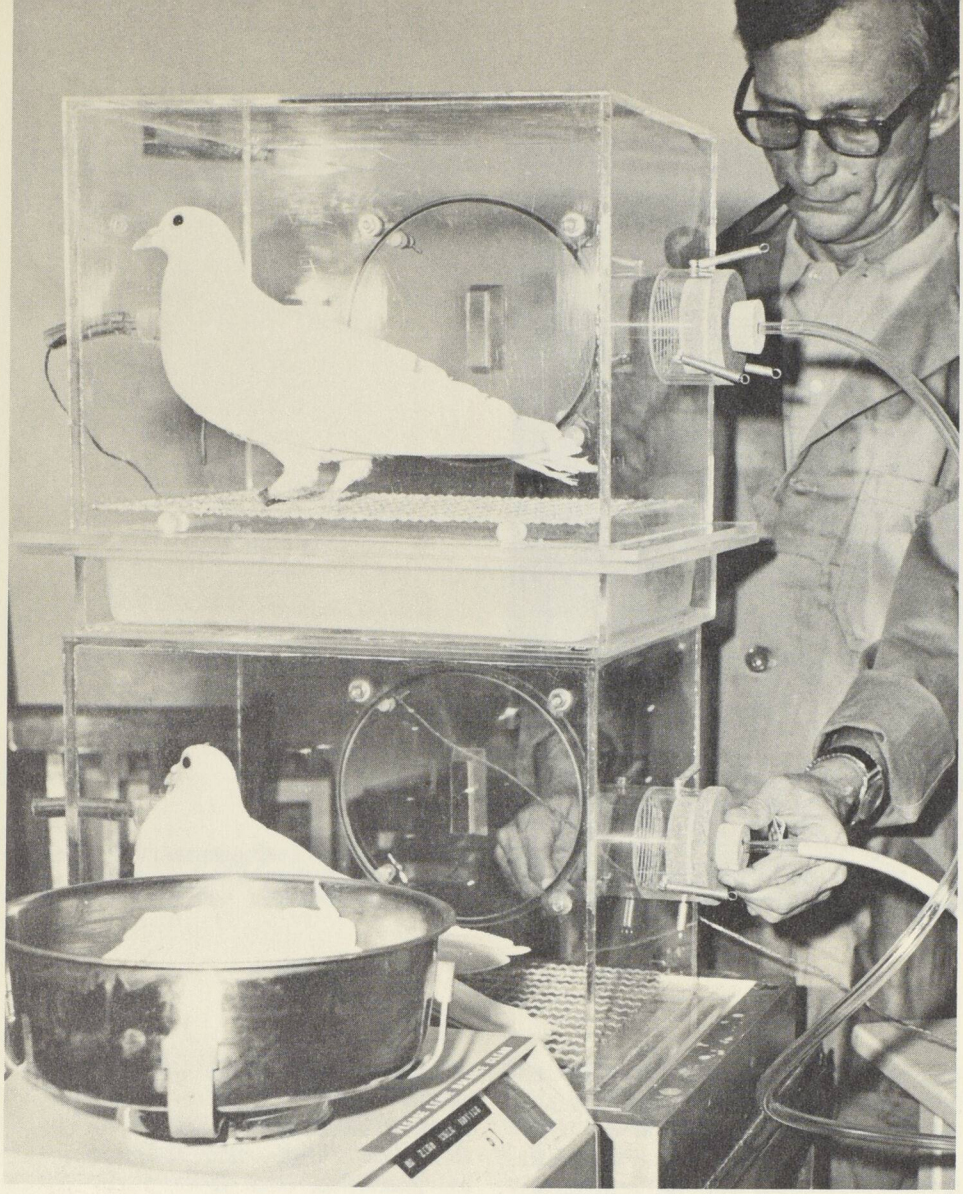

Dr. A. S. W. deFreitas with plexiglass "open flow" metabolism chambers used to house birds for extended periods of time under controlled environmental conditions.

Le Dr A. S. W. deFreitas et les chambres en plexiglas à "écoulement ouvert" servant à garder les oiseaux pendant de longues durées en ambiance contrôlée.

Stress can trigger Pesticide's deadly migration

Species occupying "terminal" positions in a predator-prey food chain may be endangered by biological magnification of sublethal levels of persistent pollutants including DDT and other similar chemicals of non-pesticide origin such as the polychlorinated biphenyls or PCB's.

These chlorinated hydrocarbon compounds tend to accumulate in fatty tissue, remaining relatively stationary and inactive until the animal is exposed to stress conditions which cause increased energy expenditure. Activities such as migration, cold exposure or starvation that accelerate conversion of fat into energy also trigger an increased release of pesticide into the circulatory system.

While there have been many indications in the literature that DDT is located in fat tissue, the first systematic attempt to relate mobilization of DDT from its storage sites in fatty tissues to the flux of energy yielding substrates has been performed by Dr. A. S. W. deFreitas, Dr. G. M. Findlay and Dr. J. S. Hart, biologists with the National Research Council of Canada's Division of Biology.

Their two-year study involved pigeons, ring-billed gulls, and rats. Accumulation of ingested DDT varied greatly from species to species. Pigeons retained in their tissue essentially all (75 to 90 per cent) of the DDT fed to them while ring-billed gulls retained only about 30 percent and rats only 10 percent. Chronic cold exposure of rats resulted in an even lower retention of ingested DDT. The lower retention of DDT in gulls compared with pigeons most probably resulted from the lower fat content of the gulls used in their study. However, the even lower retention of DDT in the rat suggests that in this mammalian species there is a much greater inducible capacity to metabolize and excrete DDT than in avian species.

DDT was excreted very slowly in fully fed birds under normal conditions. The time required to excrete one half of the body burden of DDT varied from 300 to 500 days, birds with a high fat content taking longer than "thin" birds. The amount of DDT excreted per day increased linearly with increased energy expenditure and/or reduced fat content. For instance, dur-