the treatment with propylene phenoxetol; for example, rhythmicity persists for as long as 48 h in isolated cloacas used for a student laboratory project. After dissection, the severed hind end left moist with propylene phenoxetol remained as firm to the touch as a normal intact animal on the sea bottom. After 5 days, oozing had only occurred immediately under the integument of such a specimen whereas one moistened with clear sea-water degenerated to ooze in minutes.

Propylene phenoxetol is useful as a preservative only for fixed specimens[4,5] and it is thus surprising that it can also be used to retard deterioration of a living animal.

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Successful Transplantation of a Frog Bladder-fluke from One Host Species to Another

GOODCHILD[1] described experiments in which adult bladder-flukes, *Gorgodera amplicava* and *Gorgoderina attenuata*, were successfully transplanted from one species of *Rana* to another. Healthy transplanted flukes were capable of attaching themselves to the bladder of their new host, and they survived for periods of up to 3 weeks, which was as long as the experiment lasted. Furthermore, Goodchild[2] successfully transplanted individuals of the same two species into the bladders of painted turtles, *Chrysemys picta*, and newts, *Triturus viridescens*; these parasites survived in their new habitats for periods of up to a week. In contrast to these results, Goodchild found that the same adult trematodes were incapable of survival when transplanted into the rectum or into the abdominal coelom of *Rana pipiens*. The flukes in the rectum were unable to grip the mucosa and were soon eliminated with the faeces. Those in the abdominal coelom were encapsulated by host cells and died within 24–72 h.

The experiments described here were carried out using *Gorgoderina vitelliloba* from the common frog, *R. temporaria*.

In the first series of experiments the donor host, which had been fed with infective metacercariae more than a month previously, was pithed and the bladder opened under 65 per cent amphibian Ringer's solution. Careful teasing of the bladder caused the flukes to release their grip and they were then drawn into a smooth-ended Pasteur pipette, the tip of which had been curved slightly. It was found possible to transfer the parasites into a lightly anaesthetized recipient host by sliding the tip of the pipette along the mid-ventral line of the cloaca until it entered the bladder.

When *R. temporaria*, *Bufo bufo* and *B. viridis* were used as recipient hosts, the adult parasites survived and developed normally for periods of up to 8 months, which probably approximates to the normal life-span of the adult fluke[3].

At the time of transplantation, certain of the flukes were small and contained few eggs in the uterus. When such individuals were recovered from the recipient host several weeks later they had increased considerably in size and their uteri had become packed with embryonated eggs.

Within the definitive host, the juvenile form of *G. vitelliloba* spends some time in the kidney before entering the bladder[4]. A second series of experiments was therefore performed in which juvenile flukes teased from the kidneys of a recently infected common frog were used. Such juveniles were transferred to the bladder of the recipient hosts, as described for bladder to bladder transplantations, and their subsequent development was observed. The young flukes were found to leave the bladder and migrate up the ureters to enter the kidneys. They eventually left the kidneys and returned to the bladder at intervals of time corresponding to the normal movements in the donor hosts. Within the bladder of their recipient hosts the parasites completed their normal growth and commenced egg production.

A further series of experiments has been carried out using the European tree frog, *Hyla arborea*, as the recipient host. In this frog the kidney behaves as a physiological barrier to the normal course of experimental infection[5]. Individuals which had been transplanted bladder to bladder succeeded in establishing themselves and remained healthy for at least a week. On the other hand, kidney to bladder transplanted parasites migrated to the kidneys where they were destroyed.

Several attempts have been made to transplant adult specimens of *G. vitelliloba* into the rectum of various amphibians. Although most of the parasites were eliminated from the hosts on defaecation, a few managed to establish themselves in the recta of *R. temporaria*, *R. pipiens* and *Bufo viridis*. They were found to be grasping the rectal mucosa firmly and appeared quite normal at the time when the hosts were killed, 4 days after transplantation. The main problem confronting the parasite seems to have been the initial grasping of the mucosa. Once the parasite has established its grip on the rectal mucosa it seems capable of maintaining its position there successfully.

The final experiment consisted of transplanting juvenile flukes from the kidneys of one specimen of *R. temporaria* into the abdominal coelom of another. This was accomplished by injecting the juvenile flukes through a small incision in the latero-ventral body wall of the recipient frog. When the recipient hosts were examined after 24–84 h no live flukes were recovered. Recognizable remains of dead flukes were found encapsulated in host tissue and firmly adherent to various organs and mesenteries of the body cavity.

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Susceptibility of Pigs to Infection with *Schistosoma haematobium* from Egypt

PIGS have been incriminated as natural hosts for *Schistosoma japonicum*, *S. incognitum* and *S. bovis*[1–3]. Various attempts to infect pigs with *S. mansoni* attained limited success[4–7]. Hill and Onabamiro[8] reported natural infections of two pigs with *S. haematobium* in Nigeria. The present experiment was carried out to investigate the susceptibility of pigs to infection with *S. haematobium* from Egypt.

Two pigs about 8 weeks old obtained from a local breeder in St. Albans were selected for the experiment. Each pig was exposed by tail immersion to about 1,000 cercariae shed by experimentally infected *Bulinus* (*B.*) *truncatus* for about 20 min. One week later, each of the two pigs was re-exposed to about 500 cercariae, this time by applying the cercarial suspension to the shallow groins of the abdomen and the mucous membranes of the buccal cavity. The pigs were re-exposed for the second time 1 week later by the subcutaneous injection of about 500 cercariae per pig. By that time each pig had been exposed to a total number of about 2,000 cercariae. When the pigs were exposed to infection, control albino mice were also exposed to cercariae shed by the same group of infected snails.