With the numerator at 4 degrees of freedom and the denominator at 56 degrees of freedom, at the 99 per cent confidence-level, $F \simeq 3\cdot7$. Therefore, variance due to treatment is significantly greater than the individual variance within each group.

In order to demonstrate which groups are responsible for the observed group variance, values of Student's t comparing the mean infection-level of each group with that of the untreated group were computed and are presented in Table 3.

Table 3

Group No.	Student's t	Confidence limits (%)
A	—	—
B	0·24	(10–20)
C	2·68	(98–99)
D	2·29	(95–98)
E	3·18	(99·0–99·9)

From the foregoing analysis of variance and computation of Student's t the following inferences can be drawn : (1) treatment with 'Fungizone' effectively lowers the level of infection of treated animals below the infection-level of untreated animals; (2) 1·5–2·5 mg/kg administered in a daily series of 40 injections represents an effective range of therapy ; (3) no significant effect was observed using 1·0 mg/kg a day for 40 days.

The reduction of the mean number of worms per mouse (mean infection-level) in mice treated with 1·5–2·5 mg/kg 'Fungizone' a day undoubtedly explains the earlier observations by Gordon, St. John and Olsen that treatment with 'Fungizone' significantly prolongs the life of infected animals.

The two types of observations suggest to us that amphotericin B is an effective agent in the chemotherapy of experimental *Schistosomiasis mansoni* in the Swiss mouse.

Since the agent has been pharmacologically characterized in man in the treatment of disseminated mycoses, we suggest its use in clinical trials to determine its effectiveness in the treatment of human schistosomiasis.

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Action of Puffer Fish Poison

PUFFER fish (Tetraodontoidea) is an important cause of food poisoning in China and Japan[1,2]. Murtha et al.[2] claimed that the poison acts centrally and peripherally to produce respiratory and neuromuscular paralyses. They offered as proof of its central action the more rapid onset of respiratory depression when the toxic extract was injected into the carotid artery than when it was injected intravenously. This is disputable because the carotid artery normally supplies blood to the cerebrum while the brain stem is supplied by the basilar artery[3]. Secondly, the peripheral neuromuscular paralysis as described by Murtha et al.[2] appears to be a late effect because the transmission in the phrenic nerve diaphragm preparation in their experiment was not blocked until 20–30 min after artificial respiration was resorted to for the respiratory arrest.

In the present investigation the crude extract of liver and gonads of puffer fish, prepared as described by Hashimoto and Migita[4], was separated chromatographic-

ally into three fractions. The fraction with the highest R_F was found to increase the contractility of isolated rabbit gut preparation, and the fraction with the lowest R_F inhibited this action. The middle fraction with R_F about 0·26 was proved to be the toxic fraction when injected into animals. In mice, the intraperitoneal MLD of the toxic fraction was $3\cdot08 \pm 0\cdot06$ µg/100 g body-weight, as computed from the probit-log dose relationship.

A progressive arterial hypotension is a constant feature in rats given the toxic fraction irrespective of the dosage. This was also found in dogs and cats after administration of extract of puffer fish[2]. In the rat administration of a small sub-lethal dose produced hypotension only, without respiratory or other apparent changes ; therefore, it seems that this is an independent action. Preliminary investigation showed that cardiac output as measured with a cardiometer was unaffected, which suggests that hypotension is attributable to direct action of the puffer fish toxin on peripheral blood vessels. Further lowering of diastolic pressure when the toxic fraction was given after injection of a ganglion blocking agent (tetraethylammonium bromide) supports the foregoing hypothesis. The administration of antihistamine (diphenhydromine) before injection of a sub-lethal dose of toxic fraction prevented the fall in blood pressure, therefore, the hypotension may probably be due to the histaminic action of the puffer fish toxin. The hypotension is unlikely to be due to autonomic effect because the pressure response to carotid occlusion or adrenaline was not affected by administration of the toxic fraction, and atropine did not influence the hypotensive effect. Infusion of noradrenaline following injection of toxic fraction maintained the arterial blood pressure at normal level for about 1 h.

Large sub-lethal or lethal dose of toxic fraction caused respiratory depression in addition to hypotension. When the lethal dose was large, the respiration stopped when the fall in blood pressure was still slight. The respiratory arrest occurred more rapidly when the toxic fraction was injected into the subclavian artery (retrogradely via the carotid artery) than when the same dose was injected into the carotid artery or a vein. When Evans blue was injected into the subclavian artery of a rat the dye stained the brain stem only, while injection of the dye into the carotid artery stained the cerebrum only. Therefore, the rat brain stem was supplied, as in other animals[3], with blood from the basilar artery. Thus, the cause of death following a lethal dose of the toxic fraction appears to be respiratory arrest from central action of the toxin on the brain stem respiratory centres. The view is supported by the finding that intracisternal injection of the toxic fraction, in a dose which was non-lethal when given intraperitoneally, caused immediate cessation of respiration.

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HÆMATOLOGY

A Hæmagglutination Phenomenon between Tanned Erythrocytes and Sera of Guinea Pigs

IN the course of experiments designed to examine the effect of serum on the streptolysin-S susceptibility of tanned erythrocytes[1], guinea pig erythrocytes treated with tannic acid in the cold were suspended in 1 : 100 dilution of fresh serum from tuberculous guinea pig. A heavy hæmagglutination appeared a few minutes after mixing. No such heavy agglutination was observed either with