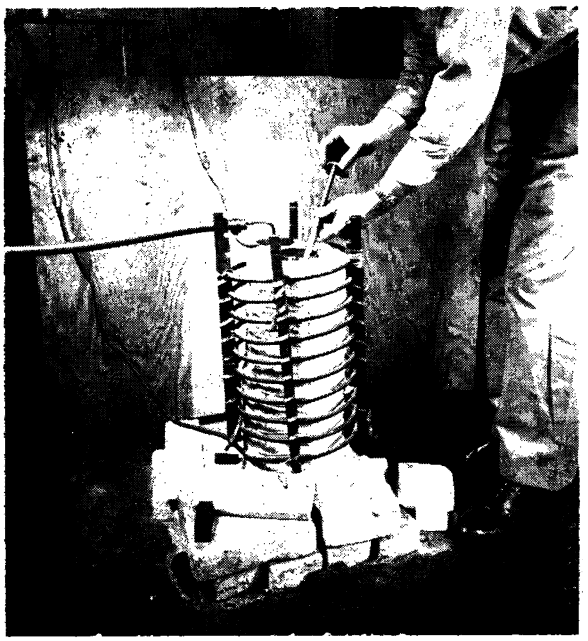

FIG. 1. Pipetting molten lithium.

Lithium chloride and barium metal—the latter in quantity about 80 percent of the stoichiometric requirement—are placed in a container that is enclosed in a heavy-walled stainless steel system. As a precautionary safety measure to prevent any atmospheric oxidation, the system is placed under 5 to 10 lb positive argon pressure by alternately evacuating it and charging it with argon. The system is then heated by induction heating, using a 20-kw, 220-kc Megatherm (*9*) unit, to a temperature of about 850° C, where it is held for 20 min. The reactor is cooled slowly to about 300° C, the cover is removed, and the molten lithium metal, which is resting on top of a solid $BaCl_2$-LiCl salt mixture, is poured into mineral oil.

The metal produced in this manner contains 5 to 8 percent impurities, mostly barium. The barium content may be reduced to a much lower value by reheating the metal with an excess of fresh lithium chloride to about 650° C, and holding this temperature for 15 min before cooling again to 300° C and pouring into oil.

In cases where small quantities of metal are involved, the metal may be pipetted from the surface of the salt after the "cleanup" step by remelting the salt and then using a stainless steel pipet which can be operated either by a plunger or by suction through a plastic tube (Fig. 1). By appropriate choice of the amount of cleanup salt, the barium content may be reduced to about 0.1 percent and the total impurities to about 0.5 percent. Table 2 shows the effects of various treatments upon the final purity of the metal.

Yields of lithium metal amounting to 85 percent, based on barium, are common for metal of 92 to 95 percent purity. Where the purity is 98 to 99 percent, the yield decreases to about 60 percent in the larger batches and to less in smaller batches; much of the loss is attributable to the difficulty in removing metal that is physically entrapped in the solid salt. (This latter yield may be improved significantly by remelting the salt, stirring to coalesce the metal, and then removing with a pipet whatever metal floats to the top.)

TABLE 2. Effects of various treatments.

Treatment	Impurities (%)
Reduction of LiCl with stoichiometric amount of barium	~ 12
Reduction of LiCl with 80% of stoichiometric amount of barium	~ 8
Cleanup, 1.5 g fresh LiCl per gram of 92% metal	~ 4
Cleanup, 4 g fresh LiCl per gram of 92% metal	1.5
Cleanup, 50 g fresh LiCl per gram of 92% metal	0.5

Once the metal has been poured into mineral oil, it may be remelted by heating the oil to about 190° C, and then it may be cast into any desired shapes or sizes without particular difficulty. Under oil in tightly closed containers, the lithium metal retains a mirror-like appearance for years.

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Quaternary Ammonium Compounds as Molluscacides

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In a screening study of the killing power of chemicals on fish *Poecilia vivipara* and *Lebistes reticulatus,* we observed that some quaternary ammonium compounds which kill them within 1 hr at a concentration of 5 ppm or less also kill *Australorbis* sp. snails at the same concentration within 24 hr, and that the limit of active concentration is almost the same for both fish and molluscs, especially when the fish used are no larger than 3.0 cm. These facts were observed with cetylpyridinium chloride, cetyltrimethylammonium bromide, cetyldimethylammonium bromide, dimethyl-

benzylammonium chloride, diisobutylcresoxyethoxyethyldimethyl-benzylammonium chloride, and with other molluscacides, including copper sulfate and sodium pentachlorophenate.

In comparison with other molluscacides known, the quaternary ammonium compounds are of lower toxicity for humans and domestic animals, hence a screening test was designed to detect those of highest killing power against *Australorbis* sp. snails.

Snails were collected in the city of Santos, where schistosomiasis is endemic in some suburban areas and where *A. immunis* (Lutz, 1918) is the prevalent species (*1*).

To compare the molluscacide activity of quaternary ammonium compounds, concentrations from 30 to 1 ppm, made in 500 ml of tap water, were left standing in 1 l wide-mouthed flasks. Fifty carefully selected, mature, active, medium-sized snails were used for each solution. Parallel tests were made with a technical grade sodium pentachlorophenate. Table 1

TABLE 1. Percentage dead rate of *Australorbis* sp. snails after 48 hr of contact time in different concentrations of aqueous solutions of quarternary ammonium compounds.

Chemicals	Parts per million						Trade mark, manufacturers, or suppliers
	30	20	10	5	2.5	1	
Sodium pentachlorophenate	100	100	100	100	100	94	Santobrite Lot U. 469 Tec. Grade Monsanto
Cetylpyridinium Cl	100	100	100	100	92	1	Chemo Puro Mfg. Corp.
Cetyldimethylammonium Br	100	100	100	100	64	4	Ethyl Cetab. Lot No. 09-C-009 Rhodes Chemical Corp.
Cetyltrimethylammonium Br	100	100	100	100	92	26	Bromat Fine Organics Inc.
Cetyldimethylethylammonium Br	100	100	100	100	100	80	Ammonix Dme Onyx Oil & Chemical Co.
Cetyltrimethylethylammonium Br	100	100	100	100	100	80	Ammonix Trm Onyx Oil & Chemical Co.
Cetyldimethylbenzylammonium Cl	100	100	100	96	54	0	Ammonix G Onyx Oil & Chemical Co.
Alkyldimethylbenzylammonium Cl	100	100	32	0	0	0	B T C Onyx Oil & Chemical Co.
Alkyldimethylbenzyldimethylammonium Cl	100	100	100	84	62	0	B T C 927 Onyx Oil & Chemical Co.
Alkylethylbenzyldimethylammonium Cl	100	100	100	100	18	0	B T C 471 Onyx Oil & Chemical Co.
Dimethylbenzylammonium Cl	100	100	100	80	10	0	Roccal Winthrop Stearns
Alkyldimethyl-3,4-dichlorobenzylammonium Cl	100	100	94	70	16	0	Tetrosan 3,4 D Onyx Oil & Chemical Co.
Octadecenyldimethylethylammonium Br	100	100	100	100	90	4	Onyxide Onyx Oil & Chemical Co.
Diisobutylphenoxyethoxyethyldimethyl-benzylammonium Cl	100	100	100	64	20	2	Hyamine 1622 Rohm & Haas
Diisobutylcresoxyethoxyethyldimethyl-benzylammonium Cl	100	100	100	100	24	0	Hyamine 10X Rohm & Haas
Lauryldimethylbenzylammonium Cl	100	100	64	46	8	0	Triton K 60 Rohm & Haas
Octadecyldimethylethylammonium Br 85 parts Octadecenyldimethylethylammonium Br 15 parts Alkyldimethyl-3,4-dichlorobenzylammonium Cl 5 parts Alkenyldimethylethylammonium Br 1 part Linolyldimethylethylammonium Br 45 parts Oleyldimethylethylammonium Br 35 parts Stearyldimethylethylammonium Br 10 parts Cetyldimethylethylammonium Br 10 parts	100	100	100	100	100	28	Octimet Fairfield Lab.
	100	100	100	74	34	0	Tetrosan 60% Onyx Oil & Chemical Co.
	100	100	100	100	98	40	Ethyl Decab Fairfield Lab.

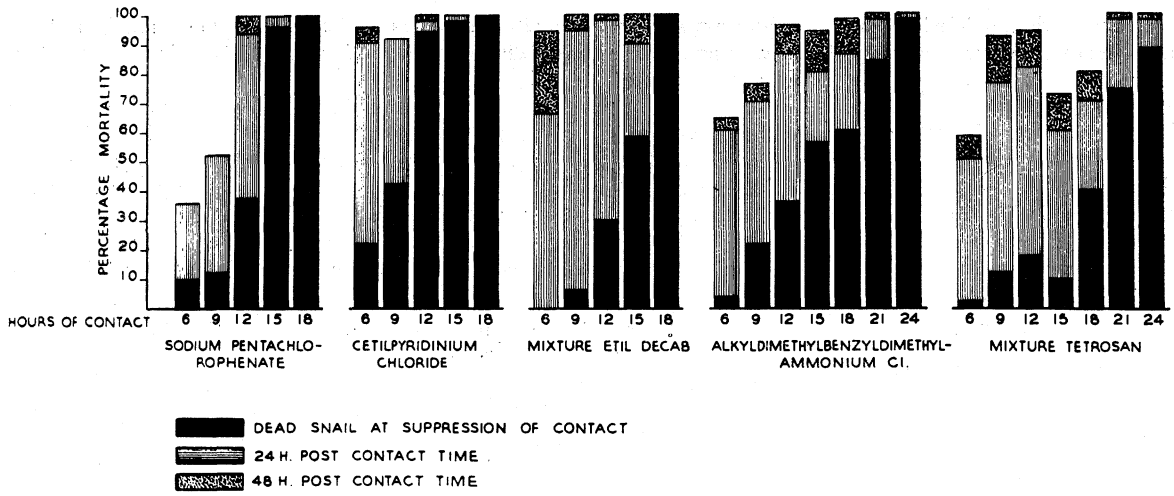

FIG. 1. Rapidity of action and retarded effect of 10^{-5} concentration upon *Australorbis* sp. snails 24 and 48 hr after suppression of effecitve contact time.

represents the percentage of dead snails checked after 48 hr of contact, discarding the live ones after removal from the test solution and extending the control of snails supposed dead over a period of 72 hr before recording.

With every chemical presented in Table 1 we analyzed the rapidity of action and the retarded effect of 10 ppm concentration of the active drug in tap water, and placed 50 snails simultaneously into each test flask. The snails remained in contact with the solutions for 6, 9, 12, 15, 18, 21, and 24 hr, respectively. After withdrawal from contact, the live ones were washed in soft running water, separated from the dead specimens, and placed in fresh tap water in separate flasks. The live snails were examined 24 hr later in order to separate and to count those that had died during this period. The same procedure was repeated after 48 hr.

Figure 1 shows results obtained with the more and the less active simple and mixed drugs. These results show that some quaternary ammonium compounds have the same or greater rapidity of action than sodium pentachlorophenate, and that with the majority of these compounds the retarded effect is great, with less time of effective contact with the active solutions. These preliminary results emphasize the potential importance of quaternary ammonium compounds in the destruction of the intermediate host of *Schistosoma* and suggest that drugs of higher activity can be found by more extensive research in compounds of that type.

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The Living Out of "Future" Experiences Under Hypnosis[1]

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In hypnotic regression, the subject seems to relive experiences and memories of earlier times. If a hypnotized subject is told he is 5 yr of age, or that it is the afternoon of October 16, 1940, he will behave in a way appropriate to that age or time as if it were the present. This technique has been modified in a number of ways for therapeutic purposes, especially in the treatment of combat neuroses. It has theoretical implications of major concern to the psychologist and psychiatrist.

Psychologists have attempted to validate the phenomenon by the administration of projective and intelligence tests to hypnotically regressed subjects. For example, Bergmann *et al.* (*1*) regressed a soldier to alternate ages from 3 to 20. At each level, they gave him the Rorschach and reported that the test findings were representative of that age, showed the dynamics of that period, and did not reflect any experience subsequent to the suggested age level. Orne (*2*), however, in a study of ten university students to whom the Rorschach was administered during hypnotic regression to age 6, found no consistent changes in the test results and concluded that there was no evidence of true or complete regression, the personality actually remained adult.

Those who have studied hypnotic regression and noted the dramatic way in which the subjects relive their past experiences have offered this as a proof of its validity. It has remained a proof against which no contrary evidence has been offered.

One of us, as an undergraduate, discovered to his

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