tion and genetic measures will form an important means of consolidating such eradication and keeping at bay the incipient resurgence of the suppressed rodent population.

Chemosterilisation is a term broadly used to include direct effects (either permanent or temporary) on the fertility of either or both sexes, and indirect effects (through behavioural or physiological mechanisms) on the reproductive capacity of the population or on the fecundity of the offspring.

A number of compounds—chemicals that can be administered directly to the natural pest population in baits and tracking dusts—have been evaluated for use as potential chemosterilants. The practicability of using hormonal compounds in this manner to inhibit the development of embryos is reduced because such compounds have to be made available throughout the breeding season. Alkylating agents are currently showing greater potential for use as chemosterilants. These compounds possess a wider range of biological activity than hormones because they affect the fertility of both sexes at adult or progenitive stages. One of the most promising agents is 3-chloro-1,2-propanediol, a compound which creates permanent sterility in certain rodent species and causes temporary sterility in a rather wider variety of mammals. The specificity of such anti-fertility agents would minimise any risk to humans and domestic animals.

Means of effecting chemosterilisation indirectly are suggested by Marsh and Howard. These include inhibiting the production of sexual pheromones so upsetting normal reproductive behaviour, and increasing the fertility of rodent pests so overloading the population and causing it to crash (as occurs naturally in some species).

The genetic approach to rodent control is at present theoretical, and though feasible is, practically, far from simple. Genetical factors are required that will make the population inherently more susceptible to diseases, to predation, to intraspecific stresses, to imbalances in physiological and behavioural processes and to its own lethal genes. Such genetical traits, introduced into the natural population by the release of new breeding stock (reared in captivity), will be diluted out of the population unless they possess a selective advantage also. The frequency with which fresh breeding stock would need to be introduced into the natural populations remains to be determined. Genetical changes could be induced directly in the natural pest populations by exposure to suitable mutagenic compounds. These, however, would be shorter-acting and less specific than genetical control by inheritance.

Rodent control measures, when designed in accordance with these proposals, will provide a benign means of attacking the problem of rodent pests as compared with the current use of poisons. One great advantage is that control will be highly selective, particularly in the case of genetic control where procedures can be aimed directly and specifically at a particular pest population. And in the case of the genetical approach the control measures may also be self-perpetuating.

NEUROCHEMISTRY

Strychnine Binding

from a Correspondent

STRYCHNINE is not perhaps the most subtle of drugs. Sensible persons would do better to inquire among the more obscure members of the South American Crotalidae or Elapidae for poisons acting with rather less striking manifestations.

Nevertheless strychnine, in spite of its shortcomings, has had a most distinguished scientific career in modern times as in old. Elucidation of its structure—one of the great classics of structural organic chemistry—was engineered 30 years ago by Robert Robinson. R. B. Woodward, in one of those thoroughbred total syntheses that appear from time to time out of Harvard, put together what Robinson called "for its size the most complex substance known"—he was biased but probably correct. The establishment of the absolute configuration by X-ray crystallography came in the mid nineteen fifties. Everything about strychnine seemed solved therefore, except precisely how it acts in the nervous system. But this seems to be a mystery no longer.

In the latest issue of the *Proceedings of the National Academy of Sciences* (**70**, 2832; 1973) Young and Snyder describe their use of tritiated strychnine to measure the binding of the poison to synaptic membranes. It has been known for many years that strychnine antagonises synaptic inhibition, especially in the spinal cord. Young and Snyder now report that one reasonable prerequisite for the effect can be demonstrated; that is to say, they have found a specific interaction of strychnine with synaptic membranes of rat spinal cord. Specific binding was about eight times greater in purified synaptosomal fractions or synaptic membranes than in the starting homogenate and was found to be saturable with half-maximal binding occurring at about 3×10^{-8} M. The rate of interaction of tritiated strychnine with purified synaptic membranes is remarkably fast: binding is maximal within a minute at 25° C and even at 4° C half maximal binding takes just 36 s. The rate of dissociation of the complex by excess cold strychnine is unmeasurable at 25° C: at 4° C the half life is estimated as about 30 s. The dissociation constant from these measures gives a high value of about 4×10^{9} M for a single species of strychnine receptor.

Synaptic inhibition in spinal cord and brain stem (but not in cerebral cortex) is brought about by glycine, the simplest of amino acids. Glycine is a major inhibitory neurotransmitter in the cen-

Endonuclease Recognition Site Sequenced

IT seems certain that the process of bacterial restriction is mediated by endonucleases which recognise particular sequences in 'foreign' DNA. The sequences recognised by endonuclease R from *Haemophilus influenzae* and by endonuclease RI from *Escherichia coli* have been determined, and in *Nature New Biology* next Wednesday (December 5) Sugisaka and Takanami report the analysis of the sequence recognised by *Haemophilus aphirophilus* endonuclease (endo AP).

To demonstrate the specificity of the enzyme it was necessary to show that it degrades different DNAs in the same way. In these experiments T3 DNA and fd RFI (doubly closed replicative form) DNA were degraded with endo AP and sequence analysis of the 5′ and 3′ ends of the fragments gave identical results for both DNAs.

After degradation of the DNAs with endo AP the 5′ ends were labelled with ^{32}P using polynucleotide kinase (after alkaline phosphatase treatment). The sequence at all these 5′ ends was shown to be pCpGpGpN (N=A, G, C or T). To determine the 3′ end of the fragments both DNAs were uniformly labelled with ^{32}P *in vivo* then digested with endo AP. Following hydrolysis with micrococcal nuclease the NpN fraction from the 3′ ends was analysed. The 3′ ends of these dinucleotides all had the sequence—pNpC.

Using the information on both the 3′ and 5′ terminal nucleotide sequences, the authors conclude that the sequence recognised by endo AP must be:

5′ . . . pNpC↓pCpGpGpN . . . 3′
3′ . . . NpGpGpCp↑CpNp . . . 5′

The arrows indicate the point of cleavage.

Endo AP cleaves the fd RFI DNA at thirteen sites yielding fragments of about 500 base pairs. If the base sequence is random the sequence CCGG would be expected to occur once in every 625 nucleotide pairs. It therefore seems likely that the sequence of tetranucleotide pairs contains enough information to account for the observed degree of specificity.