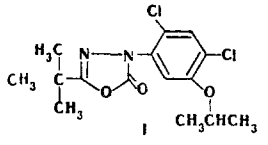
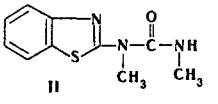
THIRD INTERNATIONAL CONGRESS ON THE CHEMISTRY OF PESTICIDES

The 3rd International Congress on the Chemistry of Pesticides, at which the papers of Soviet scientists were quite extensively represented, was held in Helsinki July 3-9, 1974. The main trend of the congress was to present results and explain the modern state of the system for the monitoring of the side effects of pesticides (the toxicity with respect to animals and, in general, the pollution of the biosphere), and a large number of papers were therefore ecological in character. A considerable number of the communications were devoted to the creation and study of methods for the qualitative and quantitative determination of pesticides in the soil, plants, and animals, to the discovery of methods for the natural degradation of pesticides by the action of water, solar radiation, and microorganisms, and to the establishment of the metabolic sequence in the organisms of warm-blooded animals. This pertains above all to the most important insecticides of the DDT or lindane type, herbicides, and fungicides that are used on a large scale.

A considerable number of the communications were associated with the chemistry of heterocyclic compounds. Thus the action and residual effects of carbamates of the benzimidazole (benomil and its analogs), 4-hydroxypyrimidine (diazinone), sym-triazine, and dipyridyl (diquat and paraquat) series in series of herbicides and furgicides were systematically investigated. In addition to known models, the synthesis of a large series of new and, in some cases, promising pesticides in the triazine and oxadiazolinone series [for example, the herbicide oxadiazone (I)] was reported, and various 1,3-dimethyl-1-hetarylureas, for example, metabenzothiazurone (II) or sulfodiazole (III), were systematically investigated. A number of interesting fungicides were found by scientists of various countries in the 2-hetarylbenzimidazole series (for example, see IV). Hamprecht (Federal Republic of Germany) reported that he had found effective herbicides of selective action in the 3-alkyl-2,1,3-benzothiadiazin-4-one,2,2-dioxide series. Several communications were related to the study of analogs of maleic acid hydrazide, substituted maleinimides, and phenothiazine derivatives (2-chlorophenothiazone and other derivatives with electron-donor substituents are of interest as contact poisons for house flies).



I



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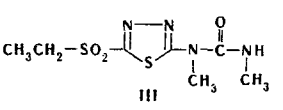

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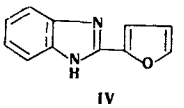
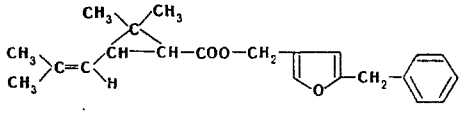


IV



V

The discovery of new natural analogs of pyrethronic acid esters, above all furamethrine (V), which has a chrysanthemic acid ester structure in which a 5-benzyl-3-furylcarbinol fragment acts as the alcohol residue, has generated a large series of communications regarding the synthesis, study of the dehydration, the effect of synergists, and the biosynthesis of such models. According to a communication by N. Ono (Japan), various esters of this carbinol are toxic for insects, and, consequently, there is no need to have a cyclopropane ring in the acid residue in order to obtain an effective preparation. In particular, some phenylacetates of this carbinol have pyrethrinelike activity.

Among the communications devoted to the synthesis and study of the action of phosphoric acid esters and amides, the paper presented by Academician M. I. Kabachnik and co-workers on the fundamentals of

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the mechanism of the action of cholinesterase inhibitors was of great interest. The symposium within the framework of this congress, which included ~80 communications, was organized around the topic of insect sex attractants, juvenile hormones, and chemical sterilizers. Communications that correlated the modern experiments for the establishment of the structure of natural substances when only exceedingly small amounts of samples are available were of greatest interest. The problems of acaricides and antivirus agents were barely touched upon at the congress.