

The information in Wood's book is organized from the view of pathology and follows a familiar pattern: description of entry and penetration of pathogens, enzymes of cell wall penetration and degradation, toxins in pathogenesis, growth distortions, mechanisms of wilting, and, finally, consideration of factors involved in resistance. In a sense, the title *Physiological Plant Pathology* is misleading, for most of the book deals with fungal diseases, and the large subdivision of plant pathology dealing with viral diseases is ignored entirely. This is at least partially understandable, in view of the specialized techniques and terminology of virology; yet comparative examination of lesion formation, growth distortion, or resistance and susceptibility in viral, bacterial, and fungal diseases might have served to illuminate one of the basic questions of plant pathology, the nature of host responses to infection. Study of viral disease offers the advantage of avoiding the complication of a second organism contributing to the observed physiological and metabolic responses as disease progresses.

Within its framework, the book does provide a balanced account of some fundamental problems. It will be of value to the pathologist not directly working with host-parasite physiology and to senior and graduate students, the audience to whom the work is addressed. In controversial areas, the author conscientiously details the conclusions of the relevant papers and gives recognition to many of earlier contributions which established the behavioral basis for subsequent physiological studies.

The physiologist, biochemist, or pathologist actively engaged in the field may be less comfortable with this approach. Accustomed to examining a variety of biological events according to groups of common reaction mechanisms, these readers may find it inconvenient, for example, that some important physiological properties of toxins are discussed much later than in the chapter on toxins. Similarly, the role of hormones in plant disease is treated under several headings, although in appropriate contexts. One result of such treatment is that historical perspective on physiologic advances is absent. In the discussion of wilting mechanisms, the two key experimental papers which are responsible for many of the current views on wilting are not introduced until after most of the supporting research to which they gave rise has been de-

scribed. The organization of the book obscures a prime goal of physiologic and biochemical research; that is, to discover general mechanisms that will explain a number of apparently unrelated observations. In a traditional presentation such as that in this volume the significance of original research important for a number of diseases is underplayed and hindsight appears to be rewarded. The elegant work of Japanese groups on metabolic alteration in diseased sweet potato is treated cursorily while later work on other diseases, far less satisfactory in approach and execution, is explored more fully. Yet the Japanese work provides a highly desirable experimental model for all diseases.

Although the extended presentation of opposing views serves a function, on occasion it obscures the real problems and gives a misleading view of the current status of research. Five pages of text are devoted to various definitions of *vivotoxins*, a term many workers now feel has little operational value, although as a cautionary concept it may have some limited use. Even so, it is difficult to decide at the end of the five pages which of the concepts is accepted for purposes of exposition, and one finds in subsequent pages that no specific concept has really been exploited. Similar comments can be made about the treatment of other topics, such as uncoupling toxins, phytoalexins, and oxidative enzymes.

By choosing to provide a comprehensive survey of existing opinion, Wood has advertently or inadvertently highlighted the lack of agreement by research workers on many crucial questions. The discussion of resistance mechanisms surveys the well-known ways, both morphological and biochemical, in which resistance can be operative. Philosophically, it is not difficult to adopt the concepts; the difficulty lies in obtaining the experimental facts to support a precise mechanism in a specific disease. It is disheartening to note the qualifications that are attached to many of the claims in the literature.

The dearth of agreement on fundamental mechanisms is due in part to the diversity of biological material which has come under investigation. Any endeavor to formulate valid general physiological principles is handicapped by the fact that many of the data available in the literature represent single-shot, isolated pieces of individual research, often only incidental and not independently verified products of investigation

of a single host-parasite combination of economic importance. The knowledgeable reader of Wood's book will understand, sympathetically, that an equivocal stance on certain topics results as much from the state of the science as from the philosophy of the author. It is disappointing, however, that a large portion of the résumé of conflicting opinions appears to be based on the published conclusions of individual workers, rather than on critical evaluation of the original papers. Much of the uncertainty in the field has its roots in methodology through obvious differences in the handling of biological materials and in the application of the physical and chemical procedures. Progress will occur only when critical evaluation of procedures is endemic and key concepts are tested by more rigorous experiments than have been reported to date. Wood has provided us with a useful point of departure for research efforts, since he has indicated where current knowledge is less than satisfactory and has provided a sound description of a wide variety of the biological events that must be explored further.

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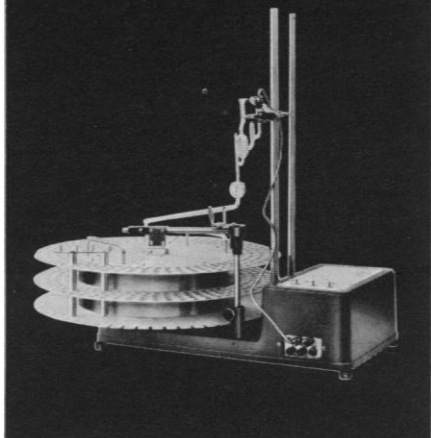
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(Continued on page 160)

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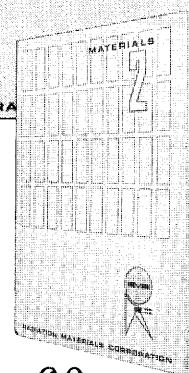
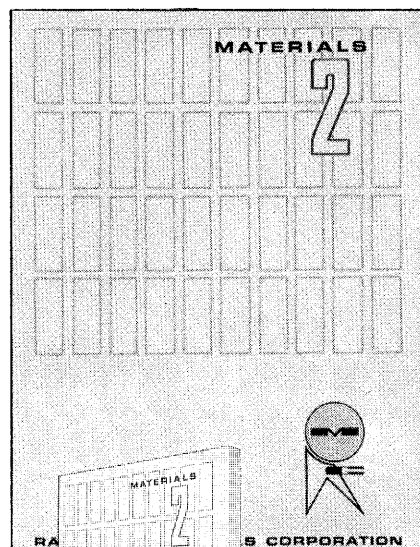
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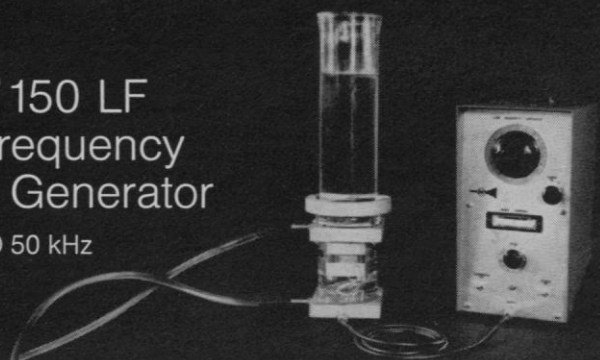
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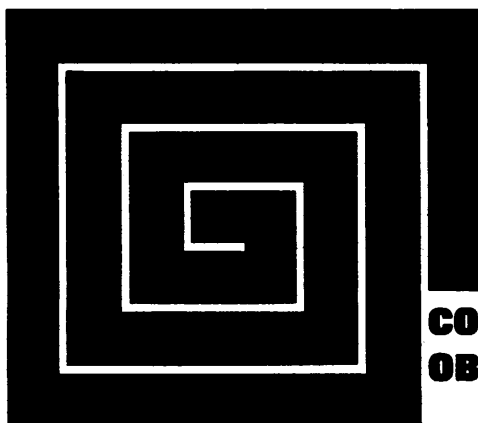
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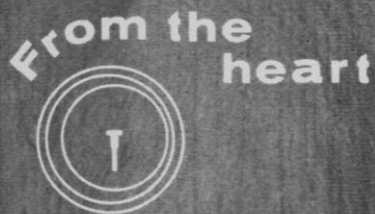
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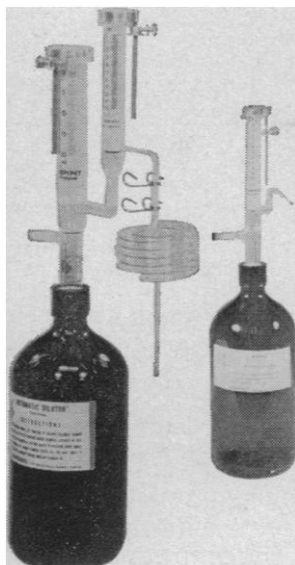


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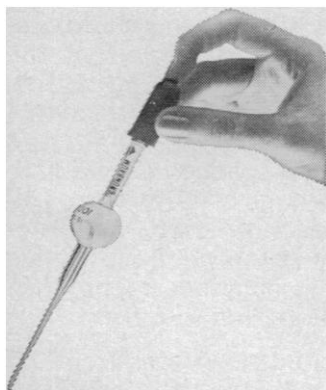


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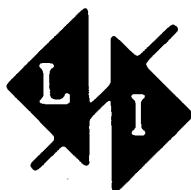
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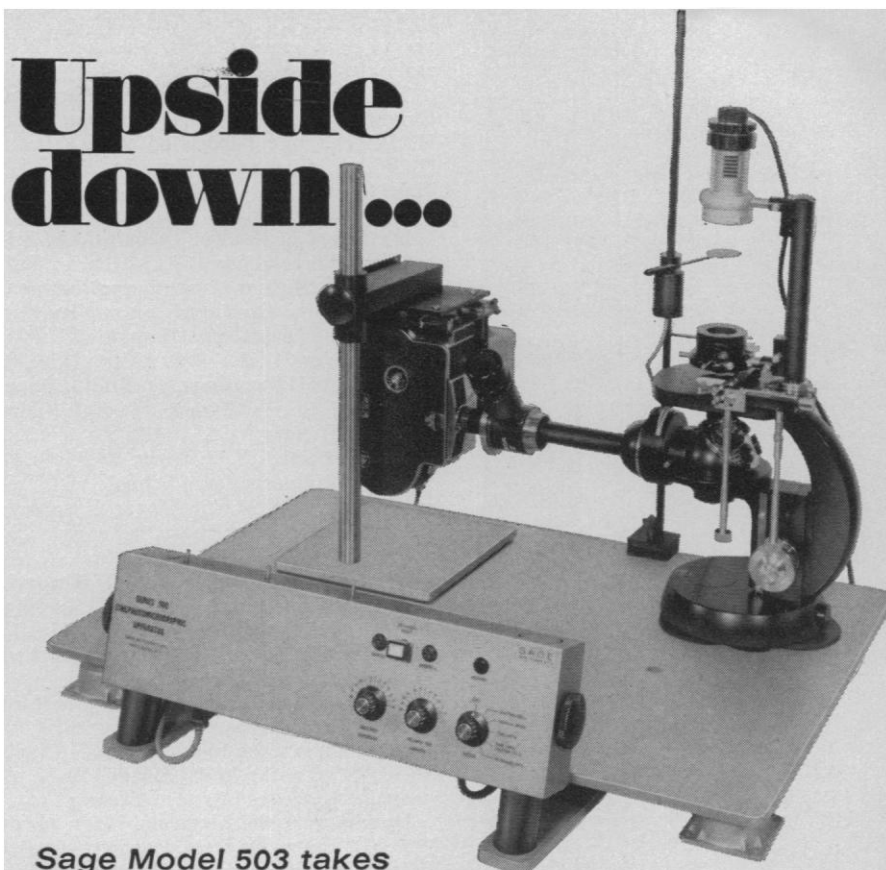
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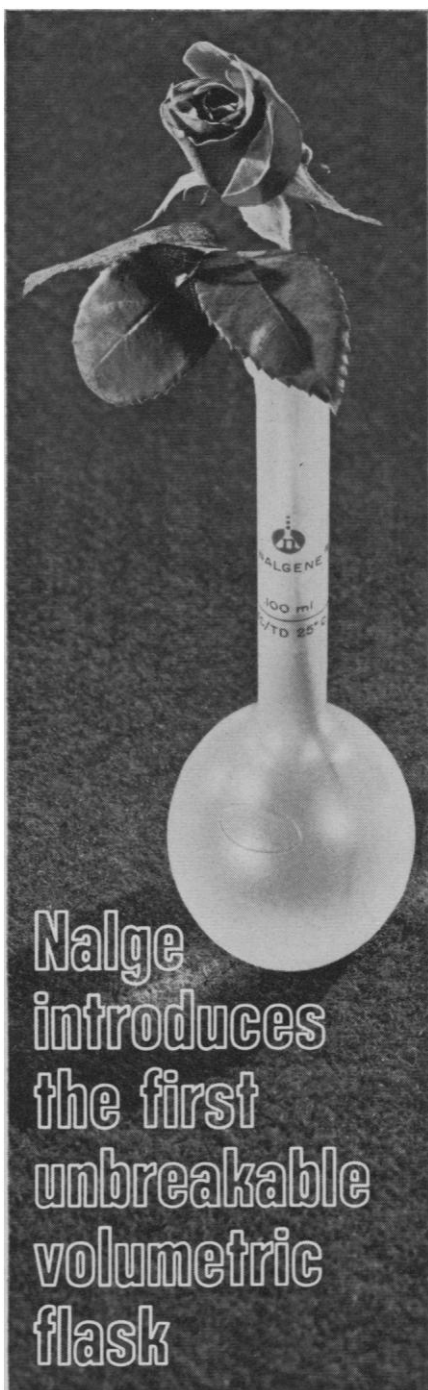
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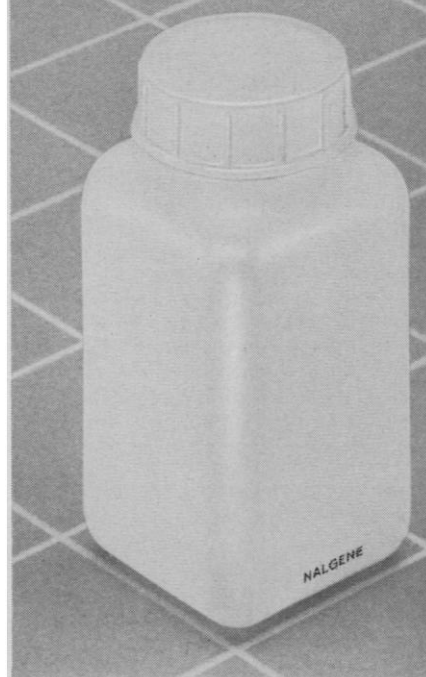
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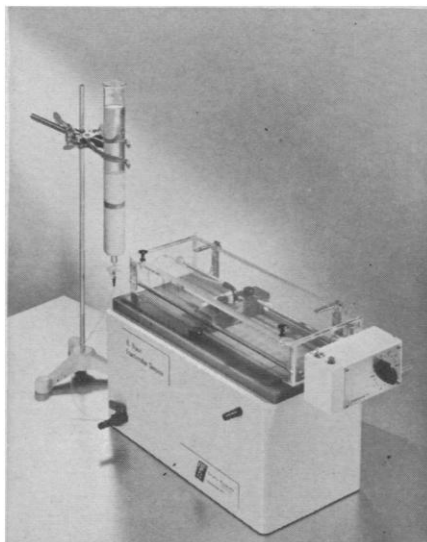
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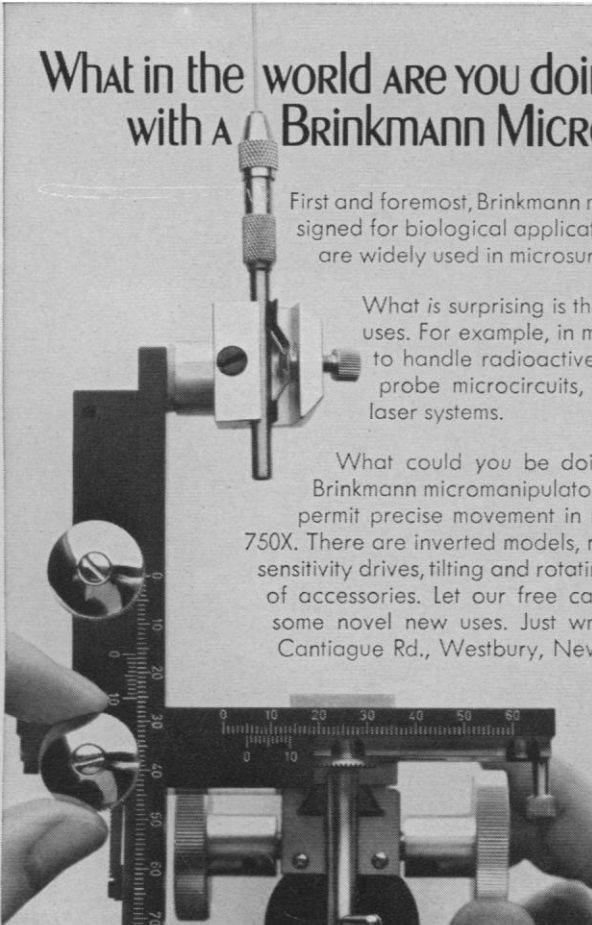


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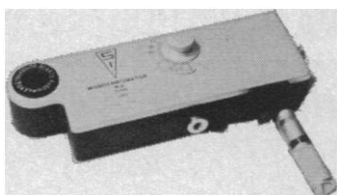
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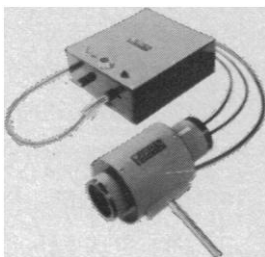
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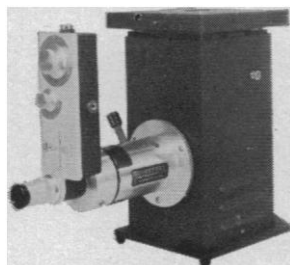
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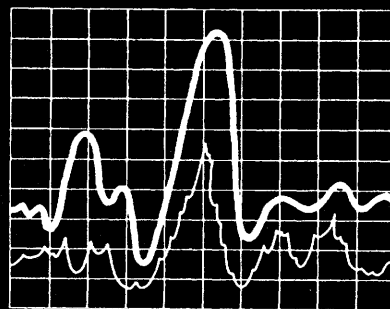
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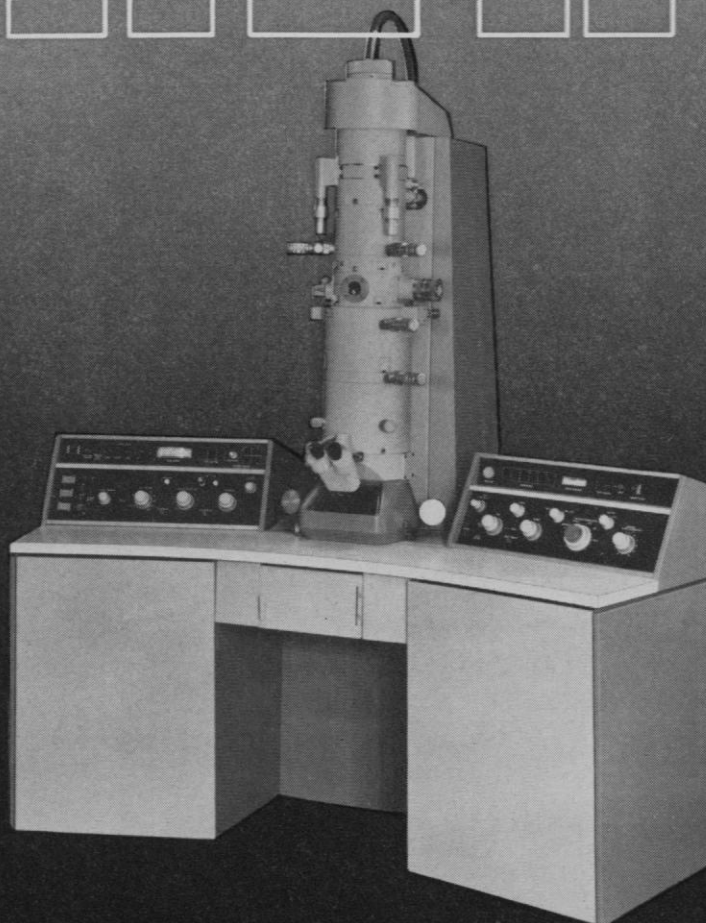
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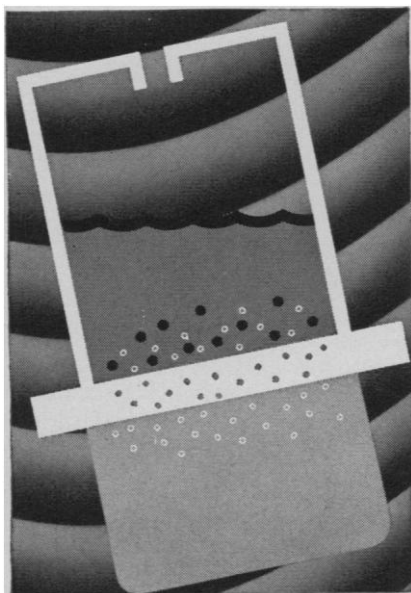
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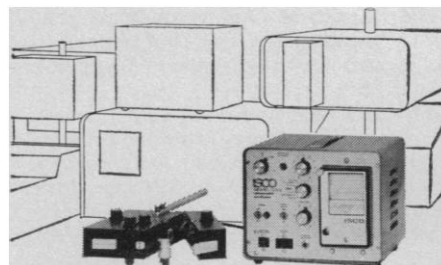
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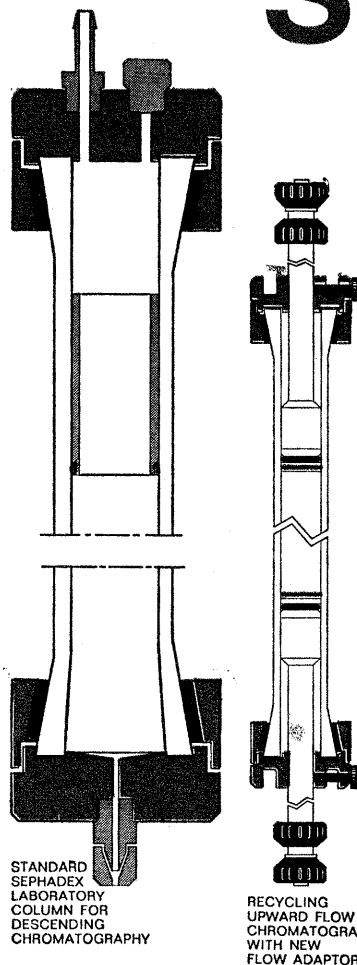
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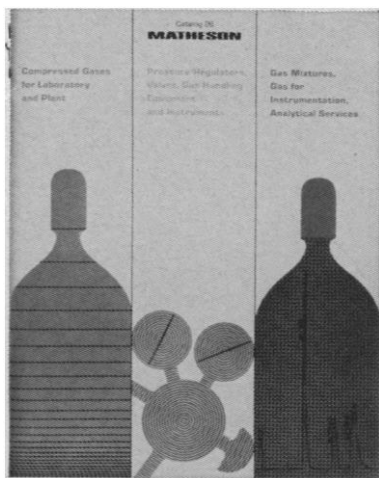
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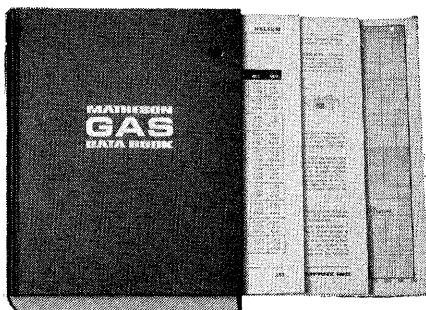
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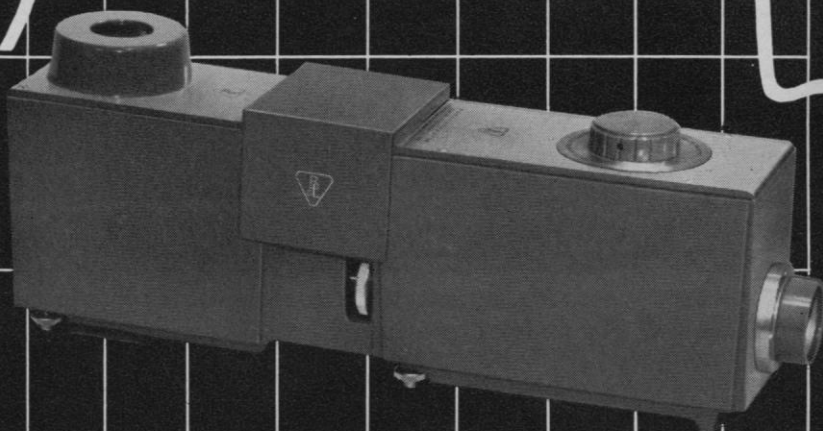
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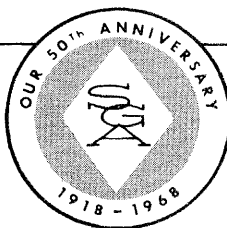
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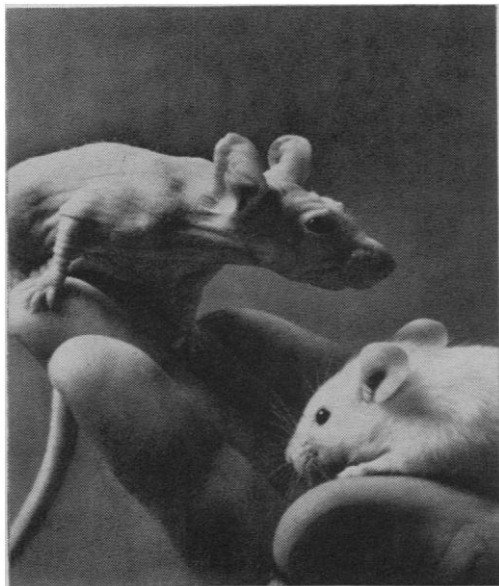
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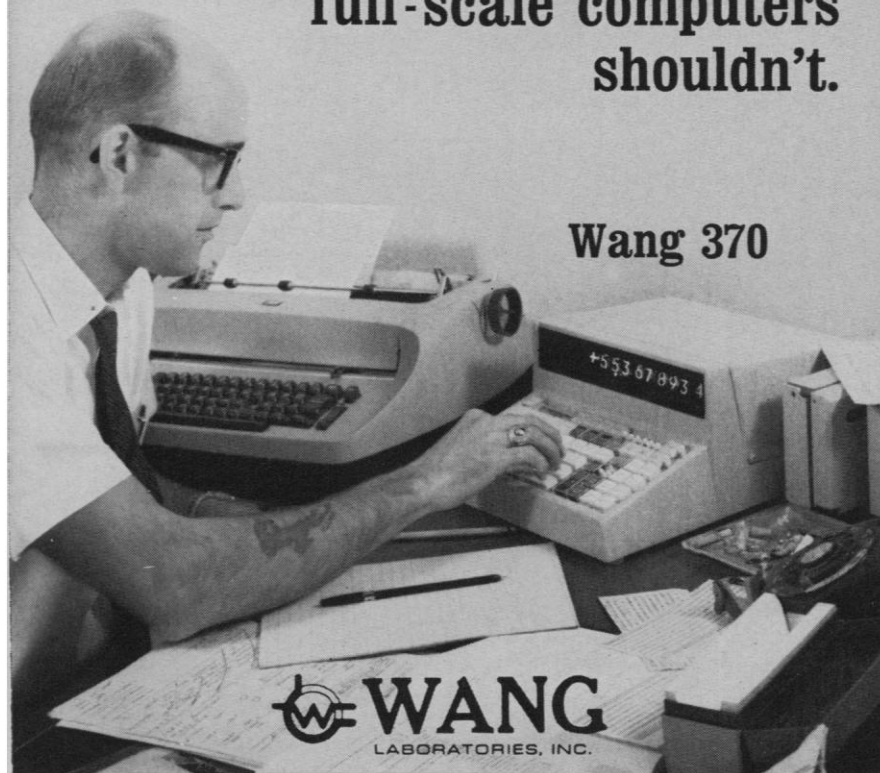
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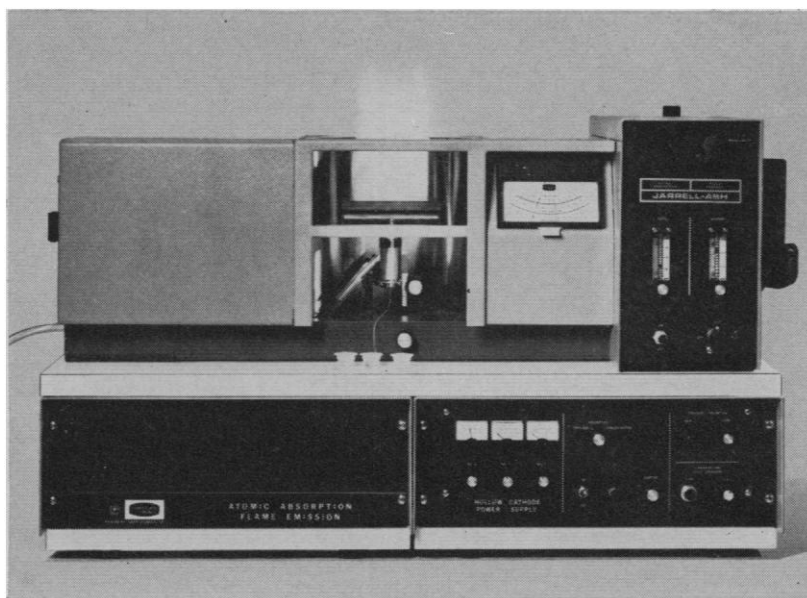
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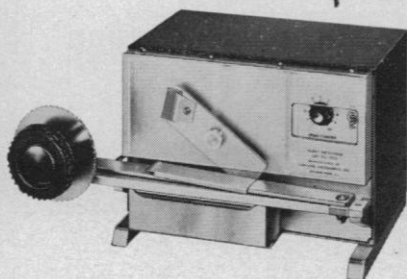
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