

industry, and 11,000 pages later, testimony was still being recorded. Now that the record has been closed and the dust from the contest has been allowed time to settle, it is useful to consider some of the questions raised in the proceedings. This paper reviews the evidence on drug research.

I

A major point at issue between the industry and the committee concerned the medical value of industry research. Although forced to admit that expenditures on research were large,² the committee charged that little of social value came from industry laboratories. It maintained that nearly all the important new discoveries in recent years had been derived from research work performed outside the industry and that commercial laboratories are concerned primarily with "molecule manipulations" or new drugs therapeutically quite similar to drugs already on the market.³ The committee implied that industry research was highly duplicate and that a large portion of this work could be eliminated without reducing very much the flow of *important* new drugs. In defense of its efforts, the industry argued that from industry laboratories come most of the new drugs that are extensively utilized in current medical practice.⁴

These opposing views on the nature and significance of the pharmaceutical research effort collided in what may be termed the "battle of the lists." This contest was based on competing lists of new drugs prepared by the committee and the industry. One of the major points of difference between the two is that the committee tended to concentrate on drugs that embodied what it considered to be major therapeutic advancements at the time of introduction. As we would expect, the committee and its lists emphasized the role played by foreign and non-industry laboratories.⁵ The industry list, on the other hand, included new drugs that may not have embodied large steps forward but that are in frequent use and thereby seem to have the confidence of the country's physicians.⁶ A large majority of the drugs on this list were discovered and developed within industry laboratories. While there was some controversy over the origins of specific drugs, it seems likely that both sets of lists and their associated conclusions are essentially correct.

To unravel the issues here, it is necessary to deal explicitly with the nature and functions of industry research. In the succeeding sections of this paper, we shall undertake this discussion in the light of the alternative positions taken by the committee and the industry.

II

Research and development in the pharmaceutical industry is carried on within a context of strong product rivalry, and this factor has affected the type of work that is undertaken. Considerable attention is focused on the rapid introduction

² In 1963, e.g., company-financed research and development totaled \$282 million. This sum equaled nearly 9 per cent of total industry sales (Pharmaceutical Manufacturers Association, "Pharmaceutical Industry Research and Development Activity, 1963-64" [Washington, D.C., 1964 (mimeographed)], p. 1, and Pharmaceutical Manufacturers Association, "Ethical Pharmaceutical Sales, 1963" [Washington, D.C., 1964 (mimeographed)], p. 2). Although N.S.F. data on company-financed R & D as a percent of net sales in manufacturing industries for 1963 is not yet available, 1961 data show that the highest percentage for an industry other than drugs and medicines was 4.4 per cent (National Science Foundation, *Research and Development in Industry*, 1961 [February, 1964], p. 86).

³ This position was based on statements such as the following, which appeared throughout the proceedings: "The question is what then is the goal of this admittedly large-scale laboratory effort of our industry? Partly to exploit and market those foreign and non-industrial advances and compounds that I have mentioned. Mostly, however, to modify the original drugs—just enough to get a patentable derivative, but not to change it enough to lose the original effect" (Testimony of Frederick H. Meyers, associate professor of pharmacology, University of California, in U.S. Senate, *Administered Prices in the Drug Industry* [hereinafter cited as "Administered Price Hearings"]). [Hearings before the Subcommittee on Antitrust and Monopoly (Washington: 86th Congress, 2d Session, 1960)] (Part XVIII, p. 10394).

⁴ Pharmaceutical Manufacturers Association, *The Pharmaceutical Industry, Key Facts at a Glance* (Washington, D.C., n.d.). The industry reported that of the ninety-four important drugs developed since 1945 and in frequent use in 1960, forty-nine, or over half, were discovered by drug companies or in university scientists financed by drug companies.

⁵ The original committee list appears in *Administered Price Hearings*, Part XIX, pp. 10943-45, while the supporting comment is made in U.S. Senate Subcommittee on Antitrust and Monopoly, *Report of the Study of Administered Prices in the Drug Industry* (Washington: 87th Congress, 1st Session, 1961), p. 115.

⁶ E.g., the original industry list included Achromycin as well as Terramycin, two antibiotics that have similar therapeutic effects. This list appears in *Administered Price Hearings*, Part XIX, pp. 10840-54.