And the most certain evidence of the lack of that sort of competition which is beneficial to the consumer is the rigidity of the prices of patented antibiotics, compared with the steady price decline displayed by the few unpatented antibiotics, such as the earlier penicillins.[24] The extent to which patents are used to limit the number of producers of a given drug can briefly be illustrated by comparing the number of producers for 42 drugs, in the categories of hormones, diabetic drugs, tranquilizers, sulfa drums, and antibiotics. Of these 42 drugs, which account for over half of all ethical drug sales four were unpatented, while 38 were produced under patent or patent-application licensing agreements. Of the unpatented drugs, two were made by three firms, and two by seven firms. Of the patented drugs, 24 were made by a single producer, 8 were made by two firms, 4 by three firms, and 2 by five firms.[25] Twenty-four of 42 drugs or 57.1 per cent, were therefore produced by a single patent holder. The concentration of sales is not as great as the concentration of production, but 16 of the 24 patent holders who license no others to produce, also license no others to sell, and therefore market their products as patent monopolists. One firm which licenses another to produce for it licenses no other sellers, and thus constitutes a seventeenth patent monopolist. Of the remaining eight products for which there is a production monopoly, two producers have licensed only one other seller, three producers have licensed two other sellers, and the two other three producers have licensed six, seven, and eight other sellers.[26] Even in an industry without economies of scale, patents can act as a barrier to entry and enable monopoly positions to be attained.

An inelastic industry demand curve does not in itself insure monopoly power on the part of the seller, if there is workable competition among sellers. In the absence of economies of scale, small firms could compete with large firms on a price basis. To minimize the effect of such competition, the ethical drug industry has taken measures to influence the normal means of dissemination of market information so as to prevent the physician from becoming effectively aware that there are lower priced sellers in the market, to prevent the recognition of lower priced alternatives to higher priced drugs wherever the awareness may exist that there are lower priced drugs, and to convince the physician that all lower priced drugs are of dangerously poor quality. These efforts to maximize the degree of imperfection of market information have been extremely successful, in large measure because of the nature of the market in which drugs are bought and sold. It is essential at this point to examine that market in some detail.

The direct buyers in this market consisted, in 1959, of some 2,800 drug wholesalers, 53,000 retail pharmacies with 110,000 pharmacists, 9,000 public and private general hospitals, and 4,000 veterinary hospitals.[27] The individual patient is the final consumer, but the physician acts as his purchasing agent when writing the prescription. The physician may write the prescription in terms of the generic name of the compound, or by use of a particular firm's brand name. The retail pharmacist may fill generically written prescriptions by using any firm's brand of the drug, but any prescription written in terms of brand names must be filled with the brand called for, unless the pharmacist obtains specific permission from the physician to make a "substitution" of another brand. Unless the pharmacist obtains permission in each instance, he is subject to punitive action by the state pharmacy boards in 44 states under the "substitution" doctrine.[28] It must be admitted, however, that the courts are not always willing to concur in this doctrine. In *Michigan State Board of Pharmacy v. E. L. Casden* the state court dismissed the contention that any meaningful "substitution" had taken place

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[24] For the ten-year period 1951–1960 the bulk price of penicillin dropped from $2.50 to $0.21 for ten million units; the bulk price of streptomycin dropped from $3.24 to $0.36 for ten grams; the prices of the patented antibiotics chlortetracycline ("Auteomycin"), oxytetracycline ("Terramycin"), chloramphenicol ("Chloromycetin") and tetracycline (introduced in 1955 and sold as "Polycycline," "Achromycin," "Steclin," "Tetracyn," and "Panmycin") remained constant at $5.10 per bottle of sixteen bbilligram capsules, until August 1960 (one month before the scheduled hearings on antibiotics) when they were reduced by 15 per cent. *Id.* pt. 24, at 13664. It should be observed that all of these antibiotics are produced by the same general process of fermentation, with the exception of chloramphenicol, which is produced by a cheaper synthetic process.

[25] Subcomm. Report 67.

[26] *Id.* at 67–68.

[27] Testimony of Dr. Austin Smith, president of the Pharmaceutical Manufacturers Association, Hearings on Administered Prices, pt. 19, at 10728.

[28] Letter from H. S. McNeil, president of McNeil Laboratories, *id.*, pt. 21, at 11713.