

RESEARCH, PRODUCT DEVELOPMENT

In an age when industrial survival and technological development are so closely linked, the steel industry has failed to heed the message. A 1966 report of the National Science Foundation revealed that there were only three industries of those surveyed that spent less of their sales dollar on research and development than the steel industry: food products, textiles and lumber products.

All of the industries that produce substitutes for steel spend more on R&D than the steel industry. The steel industry in 1964 spent only 60 cents of every \$100 of sales on R&D compared to a \$1.90 average for all manufacturing industry (excluding government sponsored research). If the automobile, chemical and plastics and other industries spent the same amount on R&D as the steel industry, I wonder whether we would be debating a general protective tariff rather than a special one for steel?

The upper echelons of steel management are almost devoid of men who have come up through the laboratory. My own contact with the industry's researchers has found them to be a demoralized group who feel they are the industry's step-child.

Most major recent advances in steel making, BOF, vacuum processing and continuous casting were first developed or implemented in Europe and Japan. It is only in blast furnace technology that we hold any substantial lead, and this is largely due to the recently closed Bureau of Mines experimental blast furnace at Bruceton, Pa. In four years it produced innovations which produced savings in pig iron production of \$5 a ton.

Technology developed by Bruceton but not yet introduced would be capable of reducing costs another \$2.50 a ton. These results were obtained from just four years of intensive research effort in one phase of steel production. It is also interesting to note that most of the new technology developed has been more labor-saving than capital-saving which should enhance the domestic industry's ability to compete against imports.

Technological developments however cannot be confined only to cost saving innovations but also must result in new products to regain lost markets and to develop new ones.

In addition to greater industry expenditures on R&D there is ample justification for greater government research assistance to the steel industry. The steel industry is an orphan when it comes to government sponsored research. It receives less government research funds than any other major American industry.

I suggest that a substantial government program promoting steel research be inaugurated consisting of 1) grants to individual firms and consortium of firms for applied and basic research; 2) introduction of an intensive research program by the Bureau of Mines in developing new technology and uses for steel including reactivation of the Bruceton experimental blast furnace and 3) government and industry grants to universities to stimulate basic research in steel and allied products.

The arguments for greater government assistance in the research area are strong. Many aspects of steel research are extremely expensive and can only be carried on privately by our largest producers. Government sponsored research would make technological improvements available to the more progressive managements of the industry and would increase the competitiveness of the industry by giving smaller producers equivalent access to technological information as major producers.

The image of steel as a tired old industry with hardening arteries painted by some steel critics is a better description of some executives than it is of the technological future of the industry. There is every indication that the steel industry will respond to a greater R&D effort in much the same way that the rest of American industry has over the past two decades. What is needed is the courage to explore the unknown.

PRICE POLICY

While in the long run the competitive ability of the steel industry depends fundamentally on lowering costs through greater investment in plant and equipment, the introduction of cost saving innovations, and the development of new products, even at present cost levels a great deal can be done to improve the competitive ability of the industry.

The internal pricing policies of the industry have aggravated the industry's ability to meet competition from abroad. The industry has widely recognized