

commerce based on an agricultural economy. As Roe states, it was "political geography" that determined encouragement of those crops which produced good revenue. Pellagra appeared in 18th-century Spain and Italy, in 19th-century France, and in the 20th-century United States whenever nutritionally poor cereals became the main food for impoverished agricultural workers whose subsistence was harnessed to exportable crops and who were at the same time denied the means of growing or purchasing other nourishment.

Perhaps the most striking chapter of Roe's book is her account of the elimination of pellagra from mid-19th-century France, when, despite the prevalent view that pellagra was an infection transmitted by sheep to hereditarily susceptible peasants, the French government was persuaded by Théophile Roussel's investigation of pellagra to restrict the cultivation of corn and to force production of potatoes and other cereals and encourage animal husbandry. Roussel, convinced that scientific and medical knowledge was inadequate to the task of curing the disease, won the coveted prize in medicine of the French Academy of Sciences by his advocacy of social intervention where science failed.

Roe's indictment of ignorance and obduracy occasionally fails to take into account the context in which science and medicine were so gravely delinquent. The search for agents of contagion and the predisposition to account for susceptibility to pellagra in terms of heredity were, after all, attempts to apply scientific methods which appeared to be successful elsewhere. And surely apathy and remoteness from the poor-sick who were the victims played as great a part as malevolence in delaying the observation that led to the elimination of the disease.

Roe's book reflects the surprised hurt of the scientist discovering the conceptual constraints that restricted her predecessors. Another recent study, by the social historian Elizabeth W. Etheridge, provides a chronologically narrower yet historically more satisfying account of pellagra. In *The Butterfly Caste* (Greenwood, 1972) Etheridge describes the social and intellectual habits which resisted observation, experiment, and discovery and continued to impede implementation of prevention well after clear evidence concerning the cause of pellagra. Furthermore, Etheridge documents the manifold ob-

stacles to care of the diseased that persist even when commitment to treatment is made. In 1930, 15 years after it was conclusively shown that pellagra could be prevented by simply providing cheap garden "greens" and minimal amounts of milk, there were still 200,000 pellagrins in the United States with a 33 percent fatality rate. In 1940 there were 2000 deaths reported, and only the enrichment of bread and other cereals with B vitamins during World War II and subsequently has permitted the poor to escape this devastating disease.

The poor in both urban and rural areas are still today disproportionately the victims of malnutrition and disease, and reports such as *Hunger USA: A Report by the Citizen's Board of Inquiry into Hunger and Malnutrition* have not moved substantial numbers of doctors, lawyers, or merchant chiefs to advocate measures to end poverty. Perhaps a widespread circulation of Roe's and Etheridge's historical studies among scientists could serve to suggest some largely overlooked connections between social intervention and basic research.

BARBARA GUTMANN ROSENKRANTZ
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Department of the History of Science,
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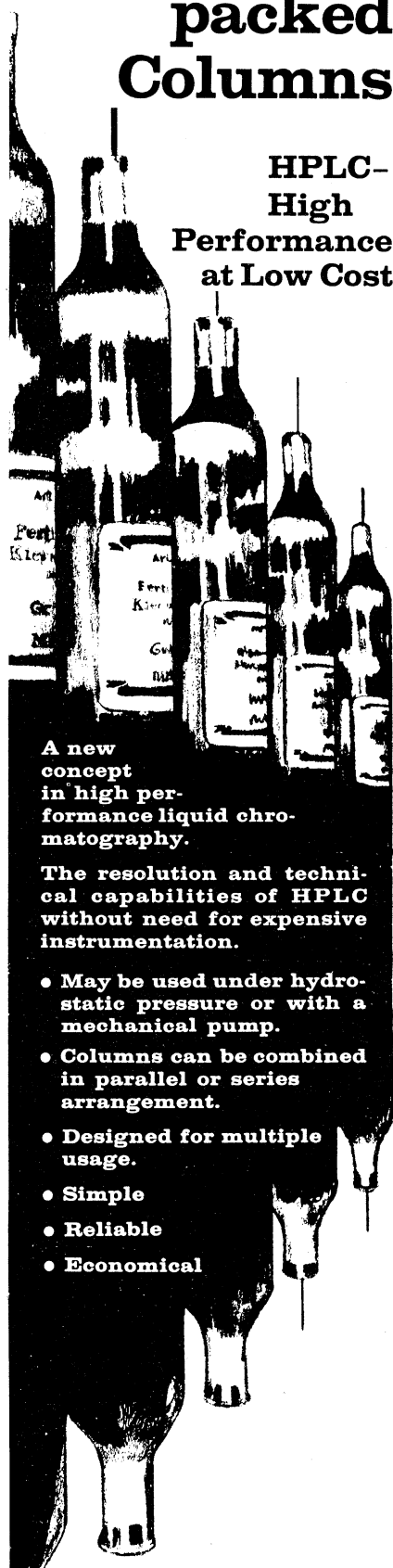
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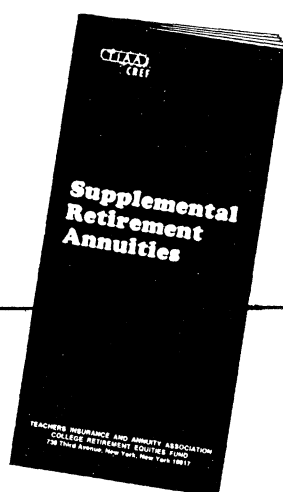
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