

lated material was originally composed in rather complex German, it is clear that a fair reading knowledge of the French language will be required. Second, *Marx and Contemporary Scientific Thought* scarcely touches upon theoretical and/or experimental developments in the natural sciences. "Scientific thought" in this instance relates almost exclusively to the social sciences.

Despite those two provisos, I hope that this bulky volume will attract a certain portion of *Nature's* audience. For the work crystallizes out a set of theoretical tendencies potentially as important to social scientists as the May Days were to young revolutionaries. I refer here to the first major re-evaluation of Marxist social theory since the 1930s. Interestingly enough, the leading theorists behind this re-orientation were themselves students and young lecturers shortly before the Second World War. Since that time, Marx's writings have served them not as an orthodoxy but as an essential point of departure. Thus three leaders of the new movement—Adorno, Habermas and Marcuse—while subscribing to Marxism in general terms, have felt free to alter Marx's concepts of, for example, revolution and the labour theory of value.

The outline of the neo-Marxist synthesis is only now emerging, perhaps because many of its practitioners, such as Eric Hobsbawm, are historians who have regularly eschewed the role of theoretical sociologist. In his essay for the work under review, Hobsbawm does attempt to explain the ideological presuppositions behind his own work. The end result, however, is less the synthesis of a new view than the destruction of several prevailing ones. As an example of theory building of considerable power, Jürgen Habermas's piece on "Technique et Science comme 'Ideologie'" should be consulted.

Whatever may be said about the direction of the "new Marxism", it is evident that it stands little chance of becoming the new Communist orthodoxy within the foreseeable future. To judge from the papers presented by the Russians at the Paris conference, the wave of the present in Eastern Europe is iconography, not iconoclasm.

PAUL GARY WERSKEY

## Fine Fare

*Synthetic Food.* By Magnus Pyke. Pp. viii + 145. (John Murray: London, December 1970.) £2.25.

WE know, or think we know, all the essential components of an adequate diet and so can discuss the feasibility and wisdom of making synthetic food.

Every component except B<sub>12</sub> can now be manufactured; no doubt even that strange molecule will be synthesized soon. Two questions now arise: first, which nutrients are more economical to synthesize rather than to grow? And second, would the synthetic product be available to people in all parts of the world where it is needed? Pyke uses "synthesis", with commendable strictness, to mean production by purely chemical processes (though the parent substance may be a product of agriculture such as glucose); he does not therefore include conversions brought about by fermentation. In principle, the starting products could have been CO<sub>2</sub>, NH<sub>3</sub> and so on. In essence, Pyke agrees with the remark attributed to Steinmetz, in conversation with Baeyer: "You can make indigo more cheaply than God, you will probably be able to make rubber more cheaply than God, but you won't make starch or cellulose more cheaply than God". Few other limitations on synthesis are foreseen.

Cheapness depends on the scale of production and the amount of effort put into improving the processes used. The effort expended depends partly on the natural impulse of an expert to be as efficient as possible; it is also stimulated by competition. A scientifically based industry is likely to be so superior to peasant farming and processing techniques that the peasant industry disappears. There is then little incentive to start the agronomic and biochemical work that would be needed to give the "natural" product any hope of being competitive. But it is legitimate to wonder whether, in every instance where synthesis has prevailed, the "natural" product would not have been cheaper had a comparable amount of research been done on it—especially research aimed at producing multipurpose plants.

When food is being handled by mass production methods and is being distributed through supermarkets, synthesis is probably the cheapest way of obtaining many of the factors that can advantageously be added to it; there is no reasonable alternative to synthetic vitamin A or C in packaged foods. Similarly, the nutritional value of many of the protein sources destined for inclusion in "broiler" rations is greatly enhanced by adding small amounts of methionine. Pyke is so carried away by these facts that he tends to overlook the fact that the people most in need of help do not eat packaged foods and could not use "broiler" methods of animal feeding. The first paragraph of his book asserts that the "complex life of a modern community" would be just as impossible without adequate housing, paper, clothing and transport as without adequate food. That may be true;

but it is possible to be less complex. He glosses over the fact that peoples' food requirements are similar wherever and however they live; the amount of clothing and paper that they use varies dramatically. This parochial outlook leads him to disparage various projects for local production of better foods from local products by simple means. Overlooking his own usefully reiterated figures showing the steady diminution in the costs of making amino-acids and vitamins, he says these novel foods are too expensive. How can one tell until they have been made in bulk? The important point is that local methods do not depend on the continuing goodwill of outsiders.

To round off this survey of the place of synthetics in supermarket nutrition, there is a chapter on "non foods"—edible rubbish guaranteed to do the consumer no good. The long term consequences of a community with its guts stuffed with alginates, methylcellulose and plastics are not discussed—but bacteria have interesting adaptive abilities!

N. W. PIRIE

## The Arctic at Risk

*Productivity and Conservation in Northern Circumpolar Lands.* By W. A. Fuller and P. G. Kevan. (Proceedings of a Conference held at Edmonton, Alberta, 15–17 October 1969. IUCN Publications, New Series No. 16.) Pp. 344. (International Union for Conservation of Nature and National Resources: Morges, Switzerland, 1970.)

THIS symposium of thirty-six short papers covers a very wide range of subjects, chiefly concerned with ecological problems of conservation in terrestrial regions of the arctic and subarctic, and to a lesser extent with measurements of the primary and secondary productivity of the principal ecosystems. It brings together reports from work going on in Alaska, the Canadian arctic, Greenland, and the arctic parts of Europe and Siberia.

The first contributions include a brief but masterly review of the essential features of the climate of the tundra zone, illustrated by a series of maps, and a review of the complex interrelations between permafrost and vegetation. This is followed by several papers devoted to the general characteristics of vegetation with a special emphasis on primary productivity and the limitation imposed by the very short growing season, low irradiance and low rates of nutrient turnover. Research on mammals is summarized in papers on reindeer, lynx, polar bear and arctic fox. Finally, the problems of conservation are reviewed in terms of wild life management, utilization of mineral resources and human population.