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incredible diversity of explanatory systems (some heuristic, others theoretic) dauntingly facing the young medical thinker or natural philosopher in the mid-eighteenth century. Thus Hutton opted for belief in five chemical principles (for Hutton principles were *ad hoc* labellings rather than ultimate constituents of Nature): salt, water, sulfur, earth, and air. It was as good a classification as any of the many other listings available.

It is possible that certain of Hutton's later traits of reasoning are already present in the dissertation. The dissertation operates within a highly explicit natural theological framework, in which the functions and final causes of the varied kinds of chemical principle are as important as their material and efficient causes (thus Hutton was already concerned with the role of air in the cycle of plant life, though of course – unlike later – he was not yet working within a phlogiston chemistry). And the very use of the concept of microcosm indicates that for Hutton throughout his career considerations of order and harmony were constitutive for his natural philosophy. This excellent edition will undoubtedly spark studies of the debt owed by the mature sage to Young Man Hutton.

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MARTIN S. STAUM, *Cabanis. Enlightenment and medical philosophy in the French Revolution*, Princeton, N.J., and Guildford, Surrey, Princeton University Press, 1980, pp. xi, 430, £15.10.

Martin Staum's study of the physician and philosopher Pierre-Jean-Georges Cabanis should prove to be a valuable resource for historians in a wide variety of specialties – including political historians, historians of philosophy, and not least, medical historians. Although portions of this work concerned with Cabanis's "Science of Man" have previously appeared in the *Journal of the History of the Behavioral Sciences* (1974) and *Studies in History of Biology* (1978), the present publication offers a comprehensive and well-documented interpretation of the many aspects of Cabanis's medical, philosophical, political, and administrative activities. This interpretation is characterized by two principal theses which Staum seeks to defend, the first concerning the relation between Cabanis's specifically medical ideas and his more general philosophical thought, and the second concerning the relation between Cabanis's intellectual position and his politics during the revolutionary period.

The first of Staum's theses is that Cabanis's philosophical monism was not a variety of mechanistic materialism, as so many nineteenth-century critics claimed, but was rather a "distinctively biomedical" conception, a "unique synthesis of disparate eighteenth-century ideas" of life and nature. This thesis is clearly articulated and forcefully argued by Staum, who devotes the first three chapters of his book to a survey of the various eighteenth-century intellectual currents, which he sees as being relevant to an understanding of Cabanis's work. At times this survey becomes a bit tedious, since its principle of coherence is not always clear to the reader; but Staum does attempt periodically to foreshadow the importance for Cabanis of the various doctrines under review. The detailed discussion of Cabanis's medical and philoso-

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phical thought begins in Chapter IV and culminates in Chapters VII and VIII, where Staum is at his best with an analysis of Cabanis's *Rapports du physique et du moral de l'homme*. Two later chapters (IX and XI) complete the argument for Staum's first thesis with comments on the works of some of Cabanis's contemporaries who pursued themes similar to those treated in the *Rapports*, and finally with a discussion of Cabanis's posthumously-published letter on "first causes".

Staum's second thesis (developed especially in Chapters IV-VI and X) is less easily characterized than the first one, and less successfully argued. Negatively, Staum holds that Cabanis's socio-political position was not derived from his philosophical doctrines, but neither were his doctrines derived from his socio-political position. Positively, however, Staum shows that a similar tension animates both the philosophical and the political thought of Cabanis – a tension arising from the valorization of the "natural" and the "free" on the one hand, and a justification of "rational" intervention and "regulation" on the other hand. How these contradictory elements could come to coexist in both these spheres of Cabanis's thought, and to what extent they generally characterized the political and philosophical doctrines of this period, are questions not thoroughly explored by Staum. The issue is treated purely as a biographical problem concerning the individual, Cabanis; and there the matter rests. Staum has no conceptual tools to take him beyond this limited framework, and he is dismissive of two alternative methodologies that might offer such tools: marxist historiography (of which only the most rigid stereotype is presented without any exemplars of this position being instanced), and Michel Foucault's analysis of the relations between power and discourse (which is travestied as a conspiracy theory). So, on balance, a great opportunity is lost and the matter is left unclear.

This limitation aside, however, historians of medicine who are interested in the revolutionary period in France should find a considerable amount of useful material in Staum's book. The analysis of Cabanis's medical writings and of his involvement in the reform of medical education and the hospital system is lucid and informative. Staum explicitly notes his points of agreement and disagreement with other recent studies in the area (particularly those of Sergio Moravia), and the scholarly apparatus of his book is competently elaborated. Finally, it is worth mentioning that the volume in its physical aspect is well-bound, pleasantly-designed, and free of conspicuous typographical errors.

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G. L'E. TURNER, *Essays on the history of the microscope*, Oxford, Senecio Publishing Co., 1980, 8vo, pp. [viii], 245, illus., £14.95 (paperback).

In recent years a great deal of interest has been shown in the history of the microscope, not only by scientists and historians of science but also by museum curators, members of the antique trade, and the general public. The number of microscopes constructed must be huge, and they are found all over the world. Old microscopes have become a symbol of science and eminently collectable because of their intrinsic