PIERRE DUHEM'S CONCEPTION OF NATURAL CLASSIFICATION*

ABSTRACT. Duhem's discussion of physical theories as natural classifications is neither antithetical nor incidental to the main thrust of his philosophy of science. Contrary to what is often supposed, Duhem does not argue that theories are better thought of as economically organizing empirical laws than as providing information concerning the nature of the world. What he is primarily concerned with is the character and justification of the scientific method, not the logical status of theoretical entities. The crucial point to notice is that he took the principle of the autonomy of physics to be of paramount importance and he developed the conception of natural classification in opposition to accounts of physical theories that contravened it.

Pierre Duhem’s view that physics aims to establish a ‘natural classification’ of phenomena is generally treated as something of an embarrassment, so much so in fact that it is frequently dismissed as an aberration or passed over in silence. Taking his official view to have been that the sole purpose of theorizing in physics is to facilitate discussion, commentators have tended to think that he must have regarded theories as ‘artificial classifications’. Duhem could not, they suppose, reasonably have taken the theoretical physicist’s aim to be both one of summarizing empirical laws in a compendious fashion and one of providing insight into the realities behind the appearances. Indeed some commentators have gone so far as to argue that he introduced the idea of natural classification because he could not bring himself to deny what physicists instinctively believe and some have even argued that he meant something quite different by the idea from what he seems to have meant.¹

This line of argument is tempting if only because Duhem devoted considerable effort to arguing that theories should be regarded as economical classifications. However, it also labours under the difficulty that Duhem frequently stresses that physical theories provide information about the nature of the world and it strains the imagination to suppose that he did not appreciate the difference between artificial and natural classification. While Duhem certainly thought that theories summarize empirical laws, this did not prevent him from arguing throughout his career for the view that they are converging on natural

classifications and he seems never to have doubted the consistency of his position. In fact we would seem far better advised to take Duhem's remarks about physics converging on a natural classification at face value and to attempt to figure out how they can be reconciled with the rest of his philosophy.

Undoubtedly much of what Duhem says in La Théorie physique needs careful interpretation, but what he says about natural classification seems clear enough. Consider for instance his view that “physical theory is not merely an artificial system, suitable today and useless tomorrow, but... an increasingly more natural classification”. Better still, consider his explicit contention that “the aim of physical theory is to become a natural classification, to establish among diverse experimental laws a logical coordination serving as a sort of image and reflection of the true order according to which the realities escaping us are organized”. In these and similar remarks Duhem distinguishes natural classifications for artificial ones, rejects the view that physical theorizing is restricted to the logical classification of experimental laws, and suggests that the classifications that physicists provide are becoming increasingly natural.

In fact Duhem's picture of science is the familiar one of a self-contained evolutionary enterprise in which less good theoretical classifications are replaced by better ones. In his view physicists make progress by replacing classifications that are partly 'representative' and partly 'explanatory' with ones that are more 'representative' and less 'explanatory'. More specifically, he holds that clashes between theory and experiment result in “the purely representational part” of the theory (i.e., the part obtained using the methods of theoretical physics) being taken up “nearly whole” by the new theory and “the explanatory part” (i.e., the part not so obtained) giving way to “another explanation”. We are to think of each theory as passing on to its successor “by virtue of a continuous tradition... a share of the natural classification that it was able to construct”.

True, Duhem takes consistency, unity and agreement with experimental laws to be the only 'logical conditions' on physical theories. He does not however take these conditions to be the only ones that theories should satisfy, still less regard theories that satisfy them as equally acceptable. In his view 'logically acceptable' theories are all too easy to come by and it is essential that new theories also be transformations of those already in place. To be acceptable a theory must, he