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The Malocclusions of Science*

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About a century ago, it seems to me that science was in the relatively happy situation of an old darky, who was observed by some kind person to be chewing away. The darky was asked, "Well, uncle, how are you getting along? You don't seem to have many teeth."

He replied, "Well, sah, I'se only got two teeth, but bress de good Lawd, dey hit!"

Now, science, a century ago, hadn't many teeth, but on the whole, they seemed to hit fairly well. Today, it seems to me that science is somewhat like a shark, with rows upon rows of sharp teeth, and other series rising successively to take the place of those that are worn out, but, unfortunately, many of these teeth are not hitting. I am tempted to classify some of these failures of cooperation, or malocclusions of science. I shouldn't dare to say that I have a new "angle" on malocclusions, but I am going to follow out the classification of dental malocclusions and say a word or two about the way I look at the malocclusions of science, from my limited point of view.

Class I of these scientific malocclusions might be called normal, mesiodistal relations. Here the malocclusion is between biological science and social science.

Now, these normal mesiodistal malocclusions, I am told, involve only the front teeth. Hence in this case, the malocclusions apply more to social science, which, I often think, is all front teeth. Indeed, institutions are like front teeth, in that they show up quite clearly and stick out when they are crooked or badly arranged. The best thing that everybody attempts to do is to try to straighten them, or to fix them, and then it is assumed that everything else will be all right. But I do not think that in the true sense,

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perhaps, there are any of these normal mesiodistal occlusions, which involve only the malocclusions of the front teeth. I am inclined to think that when we have these social malocclusions, they probably go back into the biological region also. I am particularly concerned, and have been for some time, at the fact that the world seems to be devoting its intentions and its attention primarily to adjusting and correcting institutions, the immaterial culture of man, without reference to the organism, and to the possibility of organic mal-functioning or malformation being at the basis of our social difficulties. I do not see why I should enter into any details about that general problem, but I feel very strongly about it.

I might go a little further into Class II, which, according to my classification, are biological malocclusions; that is to say, failures to hit, failures to correlate the different branches of biological science. There are, for example, the malocclusions between dental science and general medical science, based, perhaps, on the fact that there has been a tendency in the past to divide the organism into the teeth, on the one hand, and everything else on the other hand, and to deal with these as if they were distinct and separate parts.

Of course, we do very much appreciate and rightly emphasize more and more the fact that general nutrition of the body may affect the form and function of the teeth, and also that endocrine disturbances carry with them growth changes which alter the dentition, its occlusion, and its functioning. Well, it may be like flogging a dead horse to talk about the lack of proper articulation between dental science and general medical science, but there still is very much to be sought in the way of full cooperation and total merging of these interests, which have been held separate much too long.

The second division of biological malocclusions, I should say, involves the more general hiatus between theoretical and applied human biology—for example, the relation between heredity and form, and again, between heredity and function.

Another malocclusion, or failure of proper articulation, occurs in connection with the studies of environment and form in biology. Now, I do not think that these have been neglected to the extent that studies of heredity, with relation to form, have been neglected, because no one can fail to observe the enormous effect of nutritive disturbances upon growth and bone formation. Yet, I do feel that we still have a very great deal to learn by following out these lines and relating nutrition to form and function, not only in Orthodontia, but in every branch of human biology. Then, again, I am not sure that normal variation and pathological variation have been adequately correlated.

There are some of us, perhaps anthropologists, who are interested in the normal variation; there are others—medical scientists—who are necessarily preoccupied to a great extent with pathological variation. We anthropologists often do not recognize the invasion into our field of pathological variation. I think that it is wholly conceivable that the medical specialist frequently does not know very much about the range of normal variation. Then, generalizing this sort of a malocclusion, if it is a malocclusion, I think there is an enormous lack of correlation between studies of the organism in general and studies of the behavior of the organism. As I am inclined to feel that the behavior is very largely a function of the organism, I think this is one of the basic malocclusions of science. The human organism may be compared with the man who was going down to Jericho and fell among thieves, who beat him and robbed him and left him lying for dead by the roadside. Then, all of the unapplied and theoretical sciences—the priests and the Levites—passed by on the other side until a good Samaritan came along, and, thank God, that Samaritan was experimental medical science. Yet, it appears to me, in my ignorance or perhaps in my prejudice or in my generally benighted state, that really what we need in medical science is more correlation.

Now, the etiology of these malocclusions is clear. We begin to learn so much that a division of labor in science is necessary. Fields of research consequently become more and more minute. One man cannot really cover adequately even his own infinitesimal bailiwick. Hence, there is a divergence of knowledge, as it gets more intensive, and there is the ever more crying need of regarding the human organism as a whole and of correlating studies in diverse and varied specialties.

I do not see that much comprehension of that fundamental need is prevalent among scientists or in educational institutions or among intelligent people at large. If we are to utilize all these beautiful researches and these delicate and exact achievements in knowledge throughout different fields, we must have correlating institutions. These must not be merely arm chair correlating institutions, but organizations in which research is carried on, on large bodies of normally varying individuals, in all pathological directions, and in which the principal object will be to straighten out the malocclusions of science. We must learn to deal with man as an organism which functions as a unit and must not divide him into microscopic parts and shut ourselves up with one, two, three or twenty-five of these parts, while the rest of them go sour.