COMMENT ON McCORMACK'S "PLEA FOR A
STANDARDIZED TECHNIQUE FOR ORAL
RADIOGRAPHY"¹

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In the last preceding issue of the JOURNAL OF DENTAL RESEARCH (p. 467), there appeared a paper by Mr. F. W. McCormack that, in many respects, is probably the last word in dental x-ray work. Such work should be a great inspiration to all other workers in this field; and many can but envy McCormack's wonderful ability and, equally, his most wonderful equipment and opportunity. Speaking for myself, I certainly do envy him in all of these respects.

That McCormack and his collaborators can diagnose and differentiate periodontitis, alveolitis, necrosis, osteosclerosis, osteitis serrata, osteogenesis, by means of the ray is simply wonderful, and only goes to prove that team work, ability, and an insatiable desire for work, will often accomplish the apparently impossible. I am satisfied that the work of this far-western group has opened the eyes of many x-ray operators to possibilities heretofore undreamed of. Those who heard Dr. Pollia at the Boston meeting of the National Dental Association (last August), were fortunate indeed. Rarely does one meet a man his equal in facility for conveying information; and he gave his hearers much to think about. However, there are certainly a number of features in the paper—features which have nothing to do with the pathological findings, but with the mechanical and physical properties of the ray—which are so contradictory to each other, and which in some cases are so radically different from the *generally accepted facts*, that it appears to me they should not be allowed to pass without comment.

Many interesting (?) points will be ignored, for this brief review can cover the "high spots" only. I am writing in no spirit of carping

¹ McCormack: JOURNAL OF DENTAL RESEARCH, 1920, ii, p. 467.

criticism. I grant unto others greater degrees of ability, but to none a greater interest in the welfare of dentistry.

McCormack has made certain didactic statements that I do not believe are correct. I shall merely call attention to what seem to me to be errors. I am not infallible—I have made many mistakes in the past, and I may be wrong now; but if I am wrong, scores of others are with me; and if wrong, we all are more than anxious to be shown our error. If McCormack is wrong, I am sure he also will be glad to have the errors pointed out, for, of course, he is working for the good of the cause.

McCormack gives to the world what he calls *standard technique*. By that he necessarily means technique that is governed by fixed rules. A *fixed rule* is one from which there is no deviation. We are told that “to standardize a Coolidge-tube technique, five factors must be kept constant.” Then we are also told that there must be “(3) a definite period of exposure sufficient for the *majority* of patients when exposures are made of the same corresponding area.” Here then is a standardized technique which is good only for a majority, say from 51 to 60 per cent of our patients, and for the other 49 or 40 per cent, we must test each case, and vary the time accordingly. And this is called “an exposure technique that is a definite procedure in all cases.”

After the skiagraphs have been taken by this *standardized technique*, the films are developed in a tray by sight in order, *we are told*, that “if there are any variations in the different exposures of one case, she (the dark-room technician) can readily control them, and thus add greatly to the attainment of uniformity.”

One must have a remarkably vivid imagination to be able to include in a standard technique the developing of films one at a time and by sight. A “standard technique,” as interpreted by the real meaning of the words, calls for the suspension of the nineteen films by one set of clips in the developer for a certain definite time—that and nothing else.

Again we are told, by McCormack, that he has “*reproduced* sets of radiograms after intervals of three years.” This statement must surprise most of us. Even the editor of the *Dental Items of Interest*—usually considered to be a well-posted man—could not have been aware of it, or he would not have written such an editorial as appeared

in the July number of that journal, in which he *apparently* gives credit to Dr. F. T. Van Woert for having devised the only practical method of accomplishing this feat.

Is it not strange that, in such an article as McCormack's, in which so much space is given to certain details, the author failed to explain just how the "reproduction three years later" was accomplished, especially as no one previously had ever claimed to do this, and particularly since, in order to *reproduce* films from time to time, certain special appliances must be designed for the purpose.

Referring to McCormack's disposition of the shadows of the malar bones, I must admit that I cannot comprehend his explanation. In one instance, we have a molar root, a malar bone and a target—all three in a straight line with each other, and the target twenty-four inches distant. By all known laws, if one moves the target, keeping, it in a straight line with the other objects, to a distance of forty inches, the three objects will still be in a straight line. How under these conditions, the rays can be "shot under the malar process and strike the molar apices directly," is too much for me.

McCormack's explanation of this phenomenon, using two fingers as he suggests, is not pertinent to the case in hand. He tells us that "you will be able to see the rear finger quite clearly after a very *slight motion* of the hands," which no one will doubt; but with the malar bone it is a different matter, for neither the root nor the malar bone is given any "slight motion" in order to shoot the rays under the malar bone. It is very evident that some other explanation of the phenomenon is due McCormack's readers.

So much for the standardization. Now for some of the conditions "that may be recognized in, and correctly interpreted from, accurate radiograms." I shall consider them serially, as they appear in McCormack's paper.

Plate 1 (1-Z).—"Lower third molar; dark area around apices probably from superimposition of the overlying muscular tissues." *Comment.* How the superimposition of the muscular tissues upon a *normal* lower third molar, deeply imbedded in the bone as it is, can make the area in question more *radiolucent* than it would be without these tissues being superimposed, is beyond my comprehension. In other words, if McCormack's interpretation is correct, such a normal apex

of itself would naturally be radiopaque; but place muscular tissue over it, and it at once becomes radiolucent. I think the phenomenon observed should have been accompanied by a different explanation.

Plate 2. (8).—“Deep filling probably involving pulp canal.”

Comment. Such a film cannot possibly indicate a *deep filling*. The depth of no filling can be shown in a skiagraph. A thin veneer upon the surface would cast the same kind of shadow. Every “oral radiographer” should be made aware of this fact.

(10).—“Lower right first bicuspid; vital tooth.” *Comment.* No skiagraph can disclose whether a tooth is vital or not. Both a vital pulp and a putrescent pulp appear as dark lines upon a film.

Plate 3. (13).—“Lower first molar; deep fillings, probably involving the pulp chamber.” *Comment.* Here again it is impossible to decide whether the fillings are deep or merely veneers—both cast the same kind of shadows upon a film. As for the probability of involvement of the pulp chamber, that is purely conjectural. There is nothing to back that opinion, and it should be taken for what it is worth.

(17).—“Pulpless tooth with a partial root-canal filling.” *Comment.* It is impossible to tell by a skiagraph whether or not a root canal is filled. Every *dentist* of x-ray experience knows that it is possible to fill a root canal, and *fill it thoroughly*, with radiolucent material, and that such a filling will not cast a shadow upon a film. Although *every commercial x-ray worker should be aware of that fact*, probably very few are.

Plate 7. (53).—“Lower right first molar; apparently vital, but with a deep filling; caries under the filling.” *Comment.* The skiagraph cannot possibly indicate whether the pulp is vital, *dead and sterile*, or putrescent. Caries may be under the filling, maybe not. Skiagraphs cannot disclose the relationship of caries to a filling.

(55).—“Lower right second and third molars; vital.” *Comment.* Again we insist that vital pulps cannot record distinguishing marks upon a film.

Every one of the foregoing contentions can be readily substantiated, but, at present, time and space forbid.

As I said before, I know that a world of experienced dentists are of the same belief in this relation as I am. If we are wrong—if McCor-

mack can readily diagnose vital teeth from pulpless teeth; if he can differentiate a surface veneer from a deep filling; if he can tell a radiolucent root-canal filling from a radiopaque one, and so on all along the line—he should not be content with merely mentioning these acquirements; he should come down out of the clouds and tell us less fortunate ones just how to do these various things.

It is most difficult, in fact quite impossible, for any conservative dentist to decide in some cases whether a pulp is dead or alive, unless he drills into it. Consequently, he would “jump” to the use of a method for detecting such pulpless teeth, if he only had the chance.

A paper like McCormack's may do very much harm. Take the situation in which it places me, as an illustration. I have given up general practice and *pose* as a dental x-ray diagnostician. Physicians and dentists from the country 'round about, under the supposition my specialty creates, send me their patients for diagnoses. Now there is Dr. X (reader of the JOURNAL), from some little cross-roads town: he sends me a patient for a diagnosis. I report to Dr. X that I cannot tell a vital tooth from a pulpless one; that I cannot tell an infected root canal from a sterile one; that I cannot tell whether a root canal is filled or not, and that I cannot tell whether a filling is near the pulp or not. And then he throws up his hands in holy horror and says: “Well, what's the use of sending a patient to such as *you*? There's McCormack of San Francisco—he can do all of these things ‘without batting an eye!’ Why don't you ‘get busy’ and learn something about x-ray work before you adopt it as a specialty? Good-night, Dr. Kells.”

Thus, it seems to me, it is incumbent upon McCormack to explain to us less fortunate ones how he can differentiate between a vital pulp and an empty canal; how he tells that a filling is a deep one and not merely a veneer; so that we can render our patients the same service that he does his.²

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² McCormack's reply follows this criticism: JOURNAL OF DENTAL RESEARCH, 1920, ii, p. 557.—(Ed.)