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EDITORIALS

PRIORITY IN SHORT WAVE THERAPY

The increasing interest in short and ultrashort wave therapy is indirectly responsible for advancement of claims of priority both here and abroad. Such claims are no novelty in scientific discoveries when due to the efforts of more than one person. Even when a single individual has announced a discovery, complete in itself, it was not unusual to hear of claims for intimately related research. If such claims were matters of individual gratification they could well be ignored, but in every important scientific advance its historic background interests every practitioner who is not content with mere technical knowledge. This in part explains the interest in the question of who is entitled to credit for the method of therapy which is widely acknowledged to possess characteristics different from and superior to diathermy.

Any attempt to settle the priority question in what we prefer to call "radiotherapy," must not only be founded on an historic basis but must take into consideration that before there could have been any thought of high frequency therapy there must have been high frequency apparatus. The engineer devising such an apparatus or any of its essential parts, such as the lamp or circuit, is as entitled to

credit as is the physiologist who has found its biologic effects, and the clinician who has opened paths for its therapeutic application. In the case of radiathermy the situation becomes somewhat complicated because research has been carried on independently in widely separated lands, and national pride tends to emphasize the contributions in home territory.

Viewing the problem impartially, one must go back to the labors of the German physicist Heinrich Rudolf Hertz, who, in 1888, demonstrated that the waves named in his honor can be propagated through space, reflected, and polarized like light. It is unquestioned that the discovery of wireless telegraphy is the direct outcome of Hertz's great experimental work. Yet even he cannot be accorded the palm for absolutely independent thought, for in the last analysis Hertz was only a continuator of Faraday and Clerk-Maxwell.

From the standpoint of more immediate and practical interest, however, there is no doubt that it is due to the genius of the French electrophysiologist, d'Arsonval, that we owe an eternal debt of gratitude for whatever benefits have been and will be derived from short and ultrashort wave therapy. Nor can there be any dispute in a chronologic sense, for we have the incontestable evidence that it was on May 2, 1891, that d'Arsonval present-

ed the fruits of his epochal research⁽¹⁾, a document which may well be accepted as the *magna charta* of high frequency therapy. Nor was the work of that master-mind permitted to remain a mere laboratory contribution. A number of d'Arsonval's qualified compatriots at once plunged into practical labors, the details of which have been presented in 1931, by Saidman and Cahen.⁽²⁾ So much has been written on the development and clinical use of high frequency therapy in many countries beyond the borders of France that their mere enumeration would fill many pages. All these labors dealt with diathermy, a procedure of high frequency therapy with long waves, whose principal if not sole effect on human tissues is thermic in nature.

When it comes to radiathermy, however, we must realize that we are not dealing merely with diathermy produced by short or ultrashort waves, because while in its clinical application a *mild* heating sensation is an accompanying feature, other physicochemical effects also play a rôle.⁽³⁾ In other words, while in diathermy the aim is to raise the temperature of parts of the body as a direct objective, in radiathermy the heating effect is kept down to the minimum, reliance being had on certain selective qualities of the irradiated biologic structures.

The discovery of short and ultrashort waves for medical purposes is one that cannot be separated from the basic discovery and subsequent studies by d'Arsonval and his followers. The imperfection of the original apparatus has naturally stirred engineers to improve it, while much experimental work was adding valuable information regarding its biological and clinical usefulness. Thus, to illustrate, it was demonstrated that the treatment of neuralgias is fruitful only when the smallest possible intensities are used while even average intensities aggravate the condition.

When it comes to the question of priority, one cannot ignore the fact that the "distant heating effect" of short wave transmitters was discovered not by experts but by amateurs and lay workers. This phenomenon naturally aroused the attention of electrophysicists and electrophysiologists, but there is no doubt that priority for the creation of the new condenser field technics is due to the American, Schereschewsky.⁽⁴⁾ Study of his contribu-

tions, the first of which was published in 1926, leaves no room for doubt that he is the real creator of modern short wave therapy. That he alone could not possibly cover all concerned problems of a field which is still in its incipency, and which is certain to be greatly enlarged in the very near future, hardly needs proof.

Thus the Americans, Christie and Loomis,⁽⁵⁾ and Hosmer⁽⁶⁾ are entitled to priority in establishing the dependence of the heating of an electrolyte on frequencies. Similar findings were arrived at independently by the Germans Pätzold,⁽⁷⁾ and Burtstyn,⁽⁸⁾ but as their publications appeared much later than those of the American investigators, they are entitled to much credit but not to priority.

From the purely therapeutic standpoint the Austrian investigator Stieböck is entitled to priority as an advocate of the highest frequencies. His first contribution⁽⁹⁾ dates back to 1925. Schliephake,^{(10), (11)} whose name is the most prominent in short and ultrashort wave therapy did not present his labors in this subject until 1928, but they had been carried on independently for some time before that date, and his work is of a nature easily to stamp him as the actual founder of clinical radiathermy.

There is already a large number of splendid publications on the subject of short and ultrashort waves in the electrotechnic, electrophysiologic, and electrotherapeutic domains. One is tempted to single out others who have added valued information in their respective fields of labor, but from the standpoint of priority the above historical data will suffice. There is glory enough for all earnest workers and the future holds additional laurels to be earned. Physicists, physiologists, and therapists may still find new paths even though the pioneering labors have already been achieved.

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IMPRESSIONS OF THE MID-WESTERN MEETING

With the interest of the majority of the members of the Congress centered upon the annual national meetings, it is appropriate to point out that the regional meetings, too, have proven of great value from more than one point of view. This has again been demonstrated by the mid-western section which convened on March 12th, at the capitol of the State of Wisconsin.

As was announced, the program consisted of forenoon clinics, of six papers presented during the afternoon, and of two special addresses delivered under the auspices of the Dane County Medical Society following a "get-together" dinner. Not on the program was an informal talk during luncheon by Dr. Buerki, superintendent of the Wisconsin General Hospital, a teaching institution of the state university. This talk dealt rather extensively with the organization and administration of the physical therapy department of the hospital, with especial reference to the relation of that department to the staff of physicians and surgeons, and to the economic problems concerning the upkeep of the personnel and equipment so as to afford the patients the best possible therapeutic results. There was no lack of rapid fire questions, to all of which the able executive gave prompt replies, many of which will aid those interested in hospital administration to overcome certain economic and organizational difficulties.

The scientific part of the program was ably presided over by the sectional chairman, Dr.

James C. Elsom, professor and director of the physical therapy department of the University of Wisconsin.

As the papers and addresses that were presented at the one-day meeting are to be published in the *ARCHIVES*, the readers will have an opportunity to appreciate their scientific merit. We need, therefore, merely sketch some of the striking features of the sessions.

The clinical part of the program consisted of a series of three demonstrations for each of which a large number of patients, men, women and children, were utilized. The management of fractures, the treatment of arthritis, and the methods to ameliorate the effects of infantile paralysis were demonstrated in detail to a capacity audience in a large amphitheater. After each group demonstration by representatives of the surgical, orthopedic, and physical therapy departments, members and visitors were afforded an opportunity to discuss what they had observed. The keynote was sounded by Ewerhardt, of St. Louis, who pointed out the value of the demonstrations, particularly those dealing with massage, therapeutic exercise and manipulation, because they taught the valuable lesson that they must be kept within physiologic limits if they are to be productive of good results. His own experience was given with admirable frankness. Tempted at first to do too much, he accomplished more harm than good, and it was only after he had learned by sad experience to obey the laws of physiology that mechanotherapy in his hands brought relief to his patients. The practical application can hardly be taught successfully by lectures or books, so that the clinical demonstrations yielded valuable instruction in technics and end results. In brief, then, the lesson that was carried away from the forenoon program was the need for a sane conservatism which must be observed in the application of all physical therapeutic measures.

During the afternoon session Lederer, of Chicago, presented a scholarly paper on cancer of the nasal sinuses, which, apart from its diagnostic and pathologic interest, showed the great value of electrosurgery and radiotherapy in what was and still is an almost hopeless condition when treated by other means. Lederer showed by lantern slides the actual operative technic and its results, work which was given unstinted praise by all who