

necessary to sustain life, and in the most perfect proportions. It is nature's own food. In our early life it is our only food.

"Fat and sugar for energy and fuel, lime and minerals for the bones and the teeth, proteins and albumen for sinews and brawn, vitamins for growth and nourishment—this is found in milk. A balanced mixed ration in one food, giving, as Rosenau says, the same nourishment as 'a meal made up of meat and eggs, sugar and cereals, oils and fats, with salt and water.'

"Milk is cheap, even though its price may be comparatively high, for in almost every instance more food value is obtained for the money spent in milk than in other foods. The food value of one quart of milk is about equal to eight eggs or three-quarters of a pound of lean beef.

"Milk should form a regular part of our diet, for, used in generous combination with other foods which provide bulk, such as vegetables, bread, meats, and others, it insures that one gets the various food elements needed by the body.

"Drink milk, pure milk, and plenty of it."—*The Canadian Red Cross*.

A Few of the New Viewpoints of Dental Pathology

Abstracted from volumes by WESTON A. PRICE, on "Dental Infections, Oral and Systemic" and "Dental Infections and the Degenerative Diseases."

IN the consideration of dental focal infections in the past, much emphasis has been put on the biological strain of organism which has chanced to get access to that focus. The extent and nature of the local and systemic reactions have been looked upon as largely functions of that invading organism. The author submits evidence for consideration, which suggests to him that the organisms which are chiefly involved in dental infections: namely, streptococci, obtain their elective localization qualities, when such exist, very largely from the host, which furnishes to them their nutriment and environment, and that they do this largely through their wonderful capacity for adaptation.

(b) With regard to root end infections, the current and general conception seems to be that the extent of an area of absorption about the apex of an infected tooth root, when such exists, is directly a measure of the quantity of that infection, and therefore a measure of the danger. The author believes this to be a misapprehension and misinterpretation. The new data indicate to him that it does

not represent the activity of the invading organism, but does express the reactivity of the invaded host to that foreign irritant, the invading organism.

(c) The presumption in current dental diagnosis seems, in general, to be that potentially equivalent, infected teeth will, in different individuals, be attended by similar local expressions about those infected teeth. The data developed in his researches indicate to him that potentially equivalent, infected teeth will, in different individuals, be attended by very different types of local structural changes in the supporting tissues.

(d) It is currently understood, he believes, that the safety of the host is inversely proportional to the evidence of reaction about infected teeth. For example, it is presumed that those teeth with large areas of rarefaction about their apices indicate that those patients are potentially in danger, because of a large amount of infection, and those with little or no evidence of reaction about the teeth are in relatively little danger. The data which he presents to you clearly indicate to him that with a given dental infection the safety of the host is directly proportional to his capacity for local reaction; and, conversely, his danger is in direct proportion to his lack of capacity to make a local reaction. With a given infected tooth, therefore, a vigorous local reaction means, incidentally, a liberal destruction of bone for the development of an effective defensive quarantine tissue immediately about the source of that infection. He believes that it is at the time that this quarantine tissue ceases to function and breaks down, that the host comes to be in danger, for now the warfare, which up to this time has been waged to a finish immediately about the infected tooth, must be waged in other structures of the body, and that tissue tends to break first, which is most weakened by overload or handicapped by lack of inherited defensive forces.

(e) It may be that with this given infected tooth, the patient may be one who never established an adequate local quarantine, and he never was safe, and therefore never established a zone of rarefaction about the tooth or, if any, a very slight and inadequate one. The factor of safety of this type of person is being grossly misjudged, and often those individuals most needing rescue are mistakenly dismissed as having no source of serious focal infection.

(f) The data, which he presents to you, reveal to him that those individuals who develop the large apical areas because of their good capacity for reaction to an irritant, prove to be the ones who tend to develop periodontoclasia, or so-called pyorrhea alveolaris. They seldom have rheumatic group lesions. That this is not merely a coincidence, but a fundamental law of a defensive reaction, is clearly established in the accompanying data.

(g) Decalcification and calcification processes, as reactions to irritants, have direct significance because they are a fundamental part of the defensive reactions.

(h) The various expressions of different types of reaction, local and systemic, are directly related to fundamental factors of blood chemistry, blood morphology, and blood bactericidal property, for certain types of organisms, chiefly the strains of streptococci and diplococci.

(i) The decreased defensive forces of the blood can often be enhanced, and in some cases, very greatly so.

(j) A long-continued, or chronic, dental infection, which may have given no suggestions of tenderness, may (because of the absence of a local warfare and defensive fight) cause the breakdown of certain organs or tissues of the body, though it may take months or years to do it, during which time the tooth involved may never even be suspected.

(k) Thus, very many of the degenerative, or so-called old age, diseases, may have as their contributing, or as their principal causative factor, such an obscure dental focal infection, with or without local or systemic contributing overloads. These degenerative processes may include various types of eye involvements, including blindness, heart involvements of many types, several types of kidney disease, mild and grave nervous system and brain diseases, many digestive tract diseases, ovarian cysts, a large percentage of the cases of arthritis, many types of skin lesions, several of the allergic disturbances, etc., etc. He believes that he has demonstrated that almost any structure of the body may be involved and many pathological states, which have not been considered to have even a remote relation to focal infection, are now demonstrated to be influenced by them.

Before taking up the detailed study of this problem, he discusses one of the most important of the methods used for making the diagnosis of dental infections—namely, the use of the Roentgen-rays. He assumes that it is currently believed that the actual conditions about teeth are largely as they appear to be in the roentgenograms. That this is not true he believes to be one of the greatest misfortunes which could possibly exist in relation to dental infections, since in them we are dealing with pathological states within vital structures, and therefore beyond the possibility of direct examination. The roentgenogram has been spoken of as the living postmortem. The author states that we would not presume to photograph a dog behind a tree for most obvious reasons, yet we do presume to make roentgenograms of the various structures, such as roots of teeth behind other roots, or behind such dense bones as the malar bone, and of rarefied areas behind zones of condensed structure, without the information that would make possible the correction necessary for the intervening

obstruction. This is abundantly demonstrated by illustrations comparing the roentgenogram with the actual photographic appearance of various conditions that we are called upon to interpret and differentiate.

The above sketch suggests the line of discussion in the first five chapters; the other thirty-nine take up similarly various involved factors. The interpretations of these forty-four chapters are given in nine chapters, 45 to 56, and the general summary is presented in Chapter 57 of Volume I. Volume II presents the application of these principles to a large number of cases in which the various lesions are grouped for consecutive consideration.

Dentistry After the War

BY EDWARD C. KIRK, D.D.S., Sc.D., LL.D.

Although five years have passed since the final gun was fired on the Flanders front, return to a normal state physically, economically or morally is still far from fulfilment. The fact is that certain unhealthy practices, bred by post-war rather than by war conditions, have increased to an alarming extent in the past three years.

Dr. Edward C. Kirk, a man endowed with exceptionally keen powers of observation and with enough years of broad experience to make his observations of practical value, having spent several months last summer in England and on the continent, has contributed the following paper on the post-war status of dental practice.

Dr. Kirk's views have direct bearing on conditions in every country in which dentistry is practised, and should be of keen interest to all who have the progress and advancement of the science at heart.

IT is a trite saying that science knows no geographical boundaries, that knowledge is the common heritage of humanity.

Because each nation contributes its quota to the general stock of knowledge the impulses that make for progress are not a monopoly of any nation or people.

Whatever differences may determine national characteristics, the results of the pursuit of knowledge when expressed as scientific attainment are a cosmopolitan asset.

A clear distinction must, however, be made between the attainment of knowledge and its practical application to human needs, for herein lie the differences characteristic of different national activities.

The evolution of modern dental art, both in Europe and America, has its foundations in the common stock of scientific knowledge from which all rational dental practice springs, but dental art in each