

RESTORATION OF FUNCTION IN THE MOUTH AND TEETH AS A HEALTH MEASURE.

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The ignorance today in which the work of the dentist is so generally misunderstood is appalling, in spite of so much effort being made to show its far-reaching functions. The public ought not to fail to notice and appreciate the policy of the medical and dental professions in giving so much time, work and cash, at present almost unique in its kind. They are promoting in every way possible, two great movements that in a narrow view might seem to be most damaging to them; first, that of education which is designed at great expense, to bring into the competitive field against them the ablest and best equipped rivals; second, research of which the deliberate aim is to prevent dental surgeons and physicians, so far as is possible, from having any work to do at all. Where is there a more notable case of public spirited altruism? Both of these great movements, supported by the professions, tend to improve the knowledge and treatment or better prevention of disease. Great Britain since 1921, requires not only a registration fee, but an annual fee for retention on that registration made by the Dental Board. Even with the small number of dentists there the fund is over 40,000 pounds a year, and this is spent under the management of the Board to promote education and research, also aiding able students needing it, and offering advanced postgraduate courses, etc. If medical men did the same, something more than a quarter of a million annually could be secured. Generous it may be, but like all good things, it has its dangers. The greatest fostering indifference and paternalism, and too much is already given by us to charity which is unfortunately obtained by most of those who do not need it. How to eliminate the unworthy is a task, as well to not pauperize the doctors who must live. Again, where is there another profession which requires the time, energy and cash value to secure a degree of science! The public cares nothing for this so long as relief is given. Hence the faddists come along promising quick results and we all know only too well it cannot be done in the majority of cases. Hence, today we preach the Rules of Hygiene and right living. "It is better to prepare and prevent than to repair and repent." The harvest time is still to come. Especially so in the field of dental research for decay is on the increase—why?

In the important technic of reparative dentistry we must cooperate with the study of scientific and industrial research and for these we undertake special problems in mechanics, physics, chemistry, metallurgy and refractory materials. Even these are not enough, but physiology, anatomy, both human and comparative, must be known; then histopathology, then a most careful watching to note the symmetry of the face and structures. Who can doubt the value and pressing need of this research from the point of view of the citizen? The subject of dental disease is national—yes, international, and brings directly a colossal and terrific volume of discomfort, ill-health, inefficiency, pain and ugliness. We all know now the systemic effects by disorders of the dental appendages. Even a war has its good points when in an effort to make an army, navy and personnel efficient, the shocking conditions, physically and dentally were exposed. The strain, wounds and disease brought forth strenuous efforts by the medical-dental professions and researches, to recover and save from these deformities all possible. New methods, drugs, appliances, treatments were brought about and these cannot be bought first hand—but must be evolved by the brains and efforts of those in charge. The right man in the right place and of his unfettered labor.

Bishop Hall of Norwich, England, said truly three hundred years ago: "There was never good thing easily come by. * * * God sells Knowledge for sweat." Again, a warning—endowment of research not uncommonly leads to a good deal of research after endowment. There are always those, whether trained or not, who will investigate in any direction without definite clue or objective. Hence, cooperation by those of various departments of science is needful. General discussion of the topic, a systematic scheme planned out, and a number of scientific students undertake the subject from various angles. Later, come together and report results, discuss, condemn, suggest, and prove, clear the subject by agreement, then continue by progress or re-study of mooted points. It may be said here, that credit would not be individual. What of it—if the various ones give their views? Then final proof—it is individual as well as collateral and for use to aid mankind. Few medical people ever think or receive their just reward in life; but it may come fifty to one hundred years after death. His family usually suffers with him for ethics stand in the way of selling his discoveries. Medals, pictures and statues are cold and poor bread givers to

his wife, children or himself. Often his own cash has been used for the benefit of others to their detriment. We have too many life-givers who die unknown or unnamed. The true limit to a research program is fixed not by the money at disposal, but by the number of men or women both fit and available for the enterprise and they must spend long hours, without any relief to follow the progress of the subject. Such workers will always be scarce, but *pay them to live and work and do not* put all the money in mammoth buildings and starve those longing and anxious to do their best for mankind. Alien subjects often have a knack of opening a door totally undreamed of and most discoveries come from errors. Teeth may be normal in shape, color or position, and yet with microscopic study, reveal faulty chemistry; hence structural defects are present and do not aid in your remakes.

Why the dental curriculum should be separated from the medical I have never been quite able to understand. Full basic science courses are equally needed and biochemistry is vital to both. Diet during growth, for physiologic processes must be up to par. Anatomic progression we need and progressive care, prenatal as well as postnatal. Experiments have proven that the normal structure of teeth and jaws, like the bones and other organs, depends upon the right supply of metabolic functions to balance and conserve body energy. Pyorrhea, so much dreaded, I regret to say, we still know very little of its etiology any more than we do of cancer; seems to show signs of faulty metabolism which results in the loss of the teeth by pathologic processes. Josef Weinmann and Liebesny report their studies saying, "eighty per cent of them seem to be due to definite diminution in the activity of the pituitary gland. Diathermy and internal glandular doses helped in four to eight weeks. Hence it is to be hoped that clinical work may be started along these lines and reported to Dr. Weinmann of Vienna or others in this country. This brings us to the subject of the paper.

The loss of any organ of the body implies loss of balance, function and value to the patient. It may do harm by bringing about pathological processes. Hence, self-preservation is the law of man and his advisors. Prophylaxis—prevention is the key to the situation. Hence, less routine and more individual study of the patient. Education from the beginning of life and this means embryology, chemistry, biology in its broadest sense for all parties concerned. To others, I leave this topic and speak only of those who, like cancer and tubercular cases, come too late for

perfect results. We may cure but there is always *permanent* damage present. Nature does her best, given the needed stimulus and help to recover—but do we as a rule, grant her this? No, only partway—self indulgence or want of knowledge on the part of both patient and doctor. Oral sepsis is a factor in producing chronic bronchitis and those in middle life should be carefully watched by a dentist. Emphysema and cardiac lesions are usually found. Children are prone to tuberculosis infective diseases, chest troubles, ears, throat conditions and caries. Careful examinations, X-Rays revealed apical abscesses with granuloma or resorption and when removed the chest conditions at once cleared up. Nasal obstruction, antral infections are a forerunner of bronchitis, and bronchial catarrh has some analogy with cases of mucous colitis. Cultures from all sinuses, postnasal spaces as well as the sputum should be made. These patients excrete large amounts of uric acid and we would like to know what is the physiologists' opinion as to it being a factor in health or disease in man? We must not forget the influence of ductless and other glands on the structure of the teeth, also on the nervous system of people at middle life.

In a report by the Director General, of the New Zealand Department of Health, Dr. T. H. A. Valentine the infant mortality rate was 41.9 per 100°, and dental caries given by Dr. R. J. R. Meeredy, over 90% of the children affected. The relation of the candy stores to caries is seen by the greater number in the teeth and treated cases per head in the schools near a store. The actual ratio is as 100 in the school near the confectionary store to 73.5 in those remote. Caries is therefore 25% less and the stores selling sweets etc., are responsible for a quarter of the dental caries found in schools. It is to be noted there are more slight attacks of vomiting, malaise, headaches, foul smelling mouths due to gastro-intestinal disturbances, possibly due now to the *excessive* and *nauseating sweetness* so prevalent in candy today. Many complaints are made and it is a pity the manufacturers do not return to a less sickly compound, whether it is from the honey, saccharose, lactose, glucose or whatnot, that soon converts to acid-ferments etc. *Do away with the sickly confections* and children will be benefitted greatly. The blame lies with all of us from the colleges, teachers, the subject and the operator. There is hope; let the physician take heed of the partial or edentulous mouth and help the patient, the dentist and himself. Times without number, I see cases of so-called dyspep-

sia, gastric ulcer, intestinal toxemia, septic throats, tonsils diseased, antral infection and ears, chronic appendicitis with their friendly gall bladders joining forces, dysenteric ulcers, pernicious anemia, etc., etc.—even carcinoma of the tongue, throat, stomach, etc., yet *the physician does not pay any attention to the functional work of the oral cavity*. It is many years ago since it was observed that gastro-intestinal surgery profits, with splendid results, by first cleaning up the mouth and teeth. The blood picture improves—resistance is gained and bacterial foci hindered. Septic emboli are less common. Mental cases improve. Nervous manifestations with nerve trauma due to fibroid conditions, may cause pressure or toxic irritations with so-called neuralgia of the head and face, and affects the eyes and ears to their detriment. Faulty occlusions can aid pyorrhea by rocking the teeth. Periosteal and periodontal inflammations follow with its attendant sequelæ resulting in osteitis, etc. Pulps begin to show circulatory changes just as the arteries of the body sclerose. Calcific deposits similar to atheroma result, ending in many cases with obliterative masses of secondary dentine and hypercementosis of the apex.

Cases are reported where teeth and bones unite. Various growths can occur by continued trauma—cysts, odontoma, even carcinoma. The cheeks and other soft structures follow and the entire face changed not for the better. Balance, alignment and occlusion are lost; contour of the lips, nose and chin follows, resulting in a picture of a prematurely aged patient. The friends and family all protest, but the patient may have been wrongly advised to delay replacing organs by artificial substitutes. Remember, *the longer a patient goes without replacement, the more difficult it is to know the correct contour and occlusion or bite*. More damage goes on to the features by sagging of the muscles. Functions foreign to a certain muscle creep in and new characteristics are acquired and we have to overcome them, just as an orthopedic surgeon does by a lad letting his brace get loose and faulty habits acquired when further damage follows. The bones of the face acquire a curious deviation from the central path—enough to cause distress, headaches and vision disturbances and even later, paralysis in some form or contractures.

These criticisms belong to the cases in youth as well as those who are injured by extractions. Never in the history of dentistry have we noted so many youngsters needing orthodontic aid. Whether it follows the law of eugenics, we need not wonder. Like

father, like son still carries on and irregularities can be traced through generations increasing in degree as time goes on. Bad habits aid in cause and effect, diet prenatally, possibly; position in uterus is possible in a mild way. Obstetric procedures I rather doubt, on account of the short time required to deliver, unless instrumental trauma occurs so severely as to be permanent. That growing children need most careful watching to see the beginning of mal-occlusion, whether thumb or tongue sucking, breast nursing, too large and long continued nipple use; pulling faces and faulty resting of the jaws *must* be stopped. Forceful gum chewing is, I believe, a danger when indulged in to any great degree. Though muscle action may be helped, their strength may do damage, just as the frenum of the lip or osteoporosis of the maxillæ forcibly separate the central incisors. Consultation of works like Talbot, Kingsley, Jackson, Angle, Dewey, Clapp, etc., offer much in this subject. The orthodontist is here to stay. Cooperation with the rhinologist, laryngologist is needed but the family dentist and physician are the first to become cognizant. Years ago, at a meeting of the American Medical Association, Stomatology Section, I urged *early* regulation of the jaws so the teeth might erupt better and in normality if possible. Three questions arose: (1) How little ones could safely be handled and what appliances to use, as the teeth were small and the bones, tissues and sinuses soft, also to avoid irritation? (2) Would the developing roots and pulps be damaged? (3) Would the child show nervous disturbances, lose weight through pain and discomfort? Dr. E. A. Bogue very kindly said, "If *you will* guarantee these from your scientific work, I am willing to regulate the cases and report results later at this Section." I agreed that the child must be physically trained, examined and the weight and amount of sleep noticed, little stress used, early irritation watched, and procedures stopped or controlled, absolute cleanliness maintained and force limited; those appliances used with a degree of support of the bone and soft tissue as well as the teeth; so movement was general. X-rays then could not be considered. Their valued help, if taken as they should be of the angles of position with the film and teeth noted to avoid distortion. The resorption of apices was merely guessed in those days. Dietary and outdoor care with all hygienic principles watched; I am glad to say the results justified the efforts and the question of learning the amount of necessary expansion found. Dr. Hawley, Washington, D. C., introduced his method, others

followed. What has resulted? In youth the avoidance of bad physical conditions, tonsils, adenoids, a deviated septum with stenosis of the Eustachian canal; pressure on the nerves, compression of anterior lobes of brain through contractions of the antra with optic nerve pressure; bad lungs due to lack of oxidation and faulty chest development, inefficient breathing, asthma, anemia predisposing to tubercular conditions aided or prevented. Nervous and mental cases improved or cured which, from an economic viewpoint is worth considering.

Epilepsy with bad physique and gastric faults have been aided greatly. Malformations always cause distress to those afflicted and operations should be done early to avoid later difficulties in speech, manner and results. *Urge older patients to replace lost teeth as soon as possible*, but beware of faulty mechanical appliances that may do more harm than good. A badly fitted crown or filling may "jump the bite" or cause great damage. Weak abutments, needless failure and expense. Bridges may be a blessing or a curse and the odor always with us from decomposition, if the patient is careless as well as the dentist in his selection of cases.

All patients should be separately studied. All materials vary, as well as the mouth they are selected to help. Experience is needed and should be carefully selected. A beautiful, expensive appliance is of little value, if mechanically misplaced or badly made. Cooperation between patient and dentist is most necessary to allow usage, fitting and encouragement. Patience on both sides is a big asset. Displacement and fault finding because the patient will *not* tax a dentist's time to be fitted, makes enemies and breeds mischief for a well meaning practitioner and may injure both, also the cause of dentistry.

It goes without saying, the oral cavity must be made as healthy as possible by the removal of loose, carious broken down abscessed teeth and gingivitis, fistulous openings cleared up. On all these points *no persuasion or assumed* direction on the part of the patient *must be allowed* to influence your own conviction and opinion. Firmness is on all accounts desirable under such circumstances. Submission to your patient's wishes only involves much vexation as a direct result, whilst it defers that which they regard as a great trial until a future time, when the results of operation render the entire readjustment necessary of any appliance. Perhaps the most vexing question is, "How soon after extraction, artificial teeth may be inserted? Experience by the

dentist and a careful consideration of the patient's condition; with power to stand some discomfort and to help in overcoming obstacles. Many advise a long time to elapse. My own experience from the moment the patient is willing to try and allow impressions to be taken, is to place the mechanical substitute in place. Less absorption has gone on and the main object is that the patient knows how his jaws should come together, and we get a better occlusal fitting, good contour of the face; less aching and discomfort by holding the mouth open to its normal width, than having the jaws brought too close. In early times, measurements by compasses were taken of the size of the jaws; a piece of bone was cut into an approximate adaptation to the space to be filled; the natural gums and teeth were then colored. Walrus tusks were also used to carve into block teeth. Fauchard wrote about his method in 1728 and it was many years later before impressions were taken in softened bees' wax; then came the invention of trays to hold the wax. Later, a composition or plaster of Paris was universally employed. The palatal organs perform an important part in the production of articulate speech; any defects, therefore, in structure, or any departure even from the ordinary type of formation, is accomplished by an irregularity in the chamber of produced sounds more or less marked according to the locality and extent of defects. In cases of congenital fissure mastication and deglutition are interefered with in varying degrees. Children grow up and can adapt themselves in time, but it is a disgrace to allow such to go through life if they should live. By avoiding septic infections of the sinuses and adjacent parts, let alone the dangers to the lungs, etc. Cleft palates were known to Hollerius in 1552, who proposed to stop the apertures with wax or sponge. They were first operated surgically by W. D. Lemmonnier in 1760, and the patients are grateful and the sooner they are operated upon with good surgical skill, the better.

Ambrose Páre of Paris made, I think one of the earliest recorded appliances in 1585, of a metal plate over the opening and screwing on a piece of sponge known later as an obturator. Fauchard in 1728, improved this and so it has been carried on to the time of Eustache of Beziers, 1799-1800, von Graefe who revived operative measures in 1816, Warren of Boston 1820, Langenbeck and others. In England, to Sir Wm. Ferguson 1844, belongs the improved technique, Salter, Snell 1828, Oakley Coles 1868, Heath carried on. America pioneered with Warren, Fillebrown, Richardson, Norman Kingsley 1904, Mears, Talbot,

Brophy, Cryer and Brown of Milwaukee. To give a slight comparison the use of a truss for hernia when with the clean, careful surgery of today, who would wear these odorous, ungainly appliances and constant expenses? The marvels done in facial surgery, ears, clefts, necrosis and injuries, cannot be appreciated as they should, unless the victims are seen and our gratitude is to those who have made such results possible. An artistic, carefully fitted appliance, helps the symmetry, cosmetic appearance of the patient, gives comfort and pleasure to subject and family; saves the photographic image and a good profile is a sure test of adaptation in correct artistic measuring of the lips, nose, eyes and chin. Remember, a great fault of patients is to expect a perfect plate after twenty to fifty years of use. Urge these cases to return and have a remake, because it is your duty as physicians to help the dentist to restore function. Improve the occlusion, lengthen the face to correct the lines of contour, for cosmetic reasons and above all, better mastication, cleanliness, for rubber and metal plates can become foul. Pressure must be relieved on the fifth nerve branches; hardening tissues prevented through long, daily wearing, arrest premature aging and avoid gastro-intestinal and neoplastic lesions. Ill fitting, unclean dentures often cause the intestinal floral changes and colon infections can be far reaching; to the liver, kidneys and heart by bacterial invasions, through the circulatory system, with septic infarcts, emboli, etc. Do not expect many perfectly fitted lower indentures when all the alveolar ridge is gone and the plate lies on the salivary glands and tongue muscles.

Watch for swellings, stenosis and ranula by shutting off the salivary fluid. Even weighted plates have a poor chance for muscle attachments may throw up the plate, due to bad exodontia work, or resorption in an excessive degree and the patient's attitude. The message I bring is to improve the patient's condition by a practical restoration of function as near to her normal one as possible by well fitted appliances. Bring back mastication to a full degree, use cleanliness, chew the food well, eat right foods with enjoyment in moderation, improved elimination results and comfort. Through improvement in facial restoration the patient is helped and pleased and the physician and dentist acquires good friends whether young or old and health is a happy result. And remember that the heart that is truly happy never grows old.