THE SIGNIFICANCE OF CONSERVATIVE DENTISTRY FOR HYGIENE

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Mr. President, Ladies and Gentlemen,

The secretary of the Hygiene Commission of the I.D.F. has urged me to present a lecture on a subject probably better known to most of you than to myself, and I only dare to ask your indulgence to listen, as the commission wanted to state by the authorities present the hygienic advice to be recommended to the public.

The significance of conservative dentistry means the achievement of the science and art to conserve teeth, the influence of our prophylactic and therapeutic measures. I must confine myself to proved generally accepted theories and treatments, and to our struggle against the two principal foes of the teeth, caries and alveolar atrophy.

Since 40 years, Miller's theory on the etiology of dental caries stand undefied though completed in details.

Anno 1891, Miller published three articles in the Dental Cosmos on "the human mouth as a focus of infection". Whether the warnings of Miller were sufficiently appreciated by the dental and medical profession, I dare not judge. But you all know that the investigations and clinical observations of the last 15 years, assisted by Roentgen radiograms, have established the fact, that the consequences of dental caries, the foci of infection in the peridental tissues,

are frequently the cause of dangerous afflictions in many organs of the body. We are aware that on different parts of the alimentary tractus, of the respiratory organs, of the urogenital apparatus there may exist ulcers and other foci of bacteria, and it is not yet possible to estimate the percentage of infections issued fram these organs as compared with the infections due to a dental focus. The latter,however, must certainly be charged with a considerable guilt. There cannot be any more doubt, that the consequences of dental caries, the infectuons processes in the surrounding tissues are, by disseminting bacteria, especially streptococci, through the blood and lymphvessels, the cause of many cases of anemia, arthritis, kidney disease, carditis, pleuritis, nervous distrubance, infectuons lesions in the gastro-intestinal tract and its accessory organs. Hygiene justly expects from our profession to prevent and to heal dental caries, the cause of to manyfold and to severe sufferings of the teeth and the body.

For the prevention, we have to view the predisposing factors. While there is no considerable difference in the amount of mineral salts in the enamel, that could account for the varying susceptibility to caries, there seem to exst differences in the molecultar construction, appearing as differences in hardness, and there certainly are dentures with many crevices, cracks, pits, in the enamel that invite caries, and others with smooth, dense enamel. The shape of the crowns and the position of the teeth too are responsible for food retention and caries, and so are the enamel erosions and other stigmata of rickets. The quality of the saliva and of the mucus accounts for the easy sticking of food particles to the teeth and probably for the development of acid forming bacteria. Now how can we promote the development of dentures immune to caries?

A congenital improvement of structure, shape and harmonious position of the teeth could only be the result of careful selection, of pure race breeding, but nowadays mankind is unconsiderably mixing up races-probably it will fall down to the

impurity of race standart of the streetdog rather than to obey eugenical consideration. We may cherish the hope that a clearer insigt into the action of the endocrine glands may some daij offer us a chance to improve the structure of enamel and dentine. A considerable improvement has been reached by our victory over rickets by ultra violet rays. A sincere hommage is due to or milk activated by these rays. A sincere hommage is due to professor Kantorewitch, for the systematic application and propaganda of vigantol for the prevention and healing of rickets. I doubt that at present we are able to improve the secretions of the mouth, when they are sticky to make carbohydrates adhere to the teeth, or when they offer favorable conditions for the development of acidforming bacteria, or when the mucus itself is containing acid and dissolving the enamel at the gum margin. But I trust that our best investigators, devoting their endeavours for a solution of these problems, will finally succeed.

When enamel is dissolved by lactic acid, no outward remineralisation could restore the lost tissue, so the possibility of safeguarding teeth by the use of remineralising dentifrices seems very doubtful to me. No more can I espect any general prevention of caries by recommending disinfectants for the destruction of sugar splitting bacteria, — people would not bestow the time, necessary to reach this result, while the continuous action of the disinfectads might damage the mucous membranes of the mouth.

Much can be and is being reached to arrest caries by a judicious choice and a right sequence of food, sticky carbohydrates are to be avoided, coarser kinds of foodstuffs to be preferred, sour fruits must be recommended to finish a meal. The fatal stuffing of the retentionplaces of the denture with cake and sweet at frequent little occasions between the meals is severely to be condemned.

The careful removal of foodremnants may as yet be called the best prevention measure against caries. Thorough rinsing is most important, the careful use of a toothpick is indispensable and ought not to be disdained, as in advanced age, after reces-

sion of th gums, the interstitia cannot be cleansed by any other means. Flossilk is useful at any age. Finally the toothbrush, so generally used and recommended, ought to be a subject of unprejudiced consideration. The brush removes foodrests from the surfaces of the crowns, according to its hardness, its judicious application and to the kind and amount of dentifrice used.

It cannot cleanse the interproximate surfaces nor the deep fissures and crevices, and it generally leaves bacterial films near the gum margin. By friction of the gums, it exerts a wholesome massage. But frequently the brush has a pernicious influence upon the enamel, wearing it away and causing sensitive wedge-shaped erosions at the cervical margin, that finally invite decay. Besides, most pepople don't spare the time to disinfect the brush, which in time of rest develops microörganisms, and during use inoculates the same and the mouthbacteria into the crevices that it tears in the gum epithelium. I am conviced that a great proportion of pyorrhea cases is to be imputed to the brush. To my judgemet, it ought to be replaced by a less dangerous means of cleansing. I made an atterupt to find an apt instrument by fixing a short cotton roll in a pair of pincers.

In use, the cotton takes easily up materia alba and food-remnants, and you will be surprised how much smoother and cleaner the teeth feel after its use thans after that of the brush. No infection is possible, as the cotton is sterilised and does not tear the epithelium open. Three or four cottons are generally sufficient, as they can be used both sides. For gum massage, a rubber finger, I think, is preferable.

For removal of food, the movements of the tongue, cheek and lips are more effective than the brsuh, the unconscious movements with speaking as well as the intentional ones, that smake us suck clean the interstices. The most rapid progress of caries can one find with slow inert children, whose teeth are left almost as undisturbed in day time as during sleep. Lively people, with a sensitive tongue, are likely to feel uneasy as long as corpora aliena stick to their teeth, and they try ot get rid of

them by sucking and pressing the saliva through their teeth. Could not this action be tought the childern? I should propose to add it to our hygienical recommandations.

While we may desire that our hygienical measures will reduce dental caries in future to a rare affliction, I fear that some of us may not live to see this utopia; so considering the significance of conservative dentistry for hygiene, I am obliged to view our action to combat the destruction caused by caries. The decalcification, while slow in the beginning, is progressing in ever advancing tempo, in relation to the dimension of the hole formed, that is filled with food. When the molars are deeply worne down by attrition, we sometimes find the traces of a fissure caries, spontanously arrested. Or, when a tooth is broken down or extracted, the carious cavity in the neighbouring tooth sometimes becomes self cleansing and the decalcification stops. Except of these two instances, I know of no other example of a standstill of the process of caries without interference of the dentist. Practically spoken, caries once begun and not treated, certainly results in the destruction of the tooth in from two to about ten years, generally accompanied with pain and pathological complications. In a small minority of cases the caries can be arrested for some time by impregnating the decalcified tissue with nitrate of silver or by grinding the place to make it self cleansing.

But in 99 out of 100 cases a carious tooth is lost, unless it is filled. Now proper filling certainly arrests the caries, and executed in accordance with the classical rules of Black, the cavity judiciously extended for prevention, will prevent secondary decay. But of coarse a fissure cavity may be followed by one or two approximal cavities, a buccal one may follow and in advanced age, after retraction of the gums, the cervical region may alltogether be weakened. So in a life time any tooth may, if conditions are poor, require a number of fillings, — but the tooth is saved, it is protected

against infection, it remains useful, it contributes to the harmony of the denture.

Whereas when it is broken down or extracted, the antagonist too becomes useless, prolongated and prone to cervical approximal decay, while the two adjoining teeth are frequently tilted over the opening, losing firmness and a great part of the chewing surface. So, one tooth lost mean more lost and in the long run a considerable decrease of stability. Certainly many a filling will require renovation after a number of years, but any dentist who like me has the opportunity to observe dentures treated 40 years ago, will confirm the long durability of fillings under favorable circumstances, gold, tin and gold or amalgamfillings, made 35—40 years ago and still conserving the tooth.

With bad enamel hypoplasia or extreme weakening of the crown by decay, the gold crown or porcelain crown comes in the place of filling, and carefully constructed and placed, will restore and conserve the tooth for two or three decades and more. Even when charged to support a bridge, the crowned tooth may be saved for a quart century and more, as I had the apportunity to state several times.

When the pulp has been reached by the decay, the result of conservative treatment is not quite safe, there is a percentage of failures, and the Roentgenphoto has drawn away the veil from many of them. On the other hand many conscientious operator will confirm the conservation in apparent sound condition of many teeth without living pulp, and showing no osteoporosis on the Roentgenfilm. The utmost care und devotion, required for rootcanalwork, may in many a case have been deficient, the healing properties of the tissue been lessened by constitutional weakness, and the usual method of rootfilling with guttapercha points may possibly be — and to my judgement is — not quite appropriate for a recovery of the torn tissues at the apex. This can explain many failures. I trust that our endeavours to gain a feasible and absolute safe way of pulp — and rootcanal treatment will finally succeed.

At present we have seriously to face the question: Does the percentage of failures justify a condemnation of conserving teeth without living pulp?

Would we better leave the aching teeth of our patients alone or to the exodontist, than to restore them at the cost of his money and patience and of our atmost exertion?

For dental caries and pulpinfection there is no restoration by the healing properties of the body, — when left alone, it certainly leads to loss of the tooth, pain and local er extensive infection, and later on to the loss of more teeth and o disfigurement, and deficiency of mastication and pronunciation. The sepsis under a goldfilling so severely censured by Hunter, could not have been avoided by leaving the carious tooth untouched. Bij far the most fillings are placed in living teeth which keep alife and without sepsis because they are filled and which without filling certainly would become entirely decayed and infected. Even if a filling after five or ten years becomes a failure on account of secondary decay or poor work, it has saved the tooth and postponed the pernicious consequences of caries for a number of years.

If we take into consideration that, on the continent at least, to my estimation ¾ of the population live without conservative dental are and let their teeth decay and break off, by far the most foci of infection by bad teeth must be judged due to neglect of conservative treatment. I cannot confirm Hunter's statement that the sepsis under filled and crowned teeth is particularily severe and hurtful in its effects, because it is damned up in the bone and in the periosterum. Untouched teeth with decay and sepsis have the carious cavity stopped with food débris and all sort of foul matters, and when the crown is broken down, the pressure of foodstuff upon the rootcanal will from time to time push the infectious matter through the apex.

The dental litterature of the past 30 years is there to prove that conservative dentistry had had no higher aim than to prevent sepsis under fillings and crowns. Alas, it has in some

degree been missing the support of the medical profession. Did the family doctor insist that the little children had their dentures inspected and the carious milkteeth restored before the pulp was in danger? Did the doctor insist that his patients had their teeth periodically inspected by the dentist, did he refuse the demand of the toothache patient to escape from dental treatment by a mouthwash or a narcotic pil?

The state of matters is so miserable, dental caries so universal with the majority of civilized mankind, and in such a degree accompanied by pulp infection, that even in the supposition that people became aware of the grave consequences of decay and could offer the patience and the money to have their teeth cared for, it could not be done, or the number of dentist would have to be multiplied. The ideal state cannot be approached, we have to be contended with the reachable, but besides we have our responsibility for the future, for the coming generation. In order to save it from the ravages of dental caries, we should most vetiemently shout out the proved means to prevent it and endeavour to have a care of childrens teeth generally organized and effected, so that henceforward carious infection has no more chance to reach a pulp. Conservative dentistry, freed from the charge of pulp- and rootcanal treatment, will be able to accomplish several times the amount of toothsaving it achieves now and safely defy any mausoleum indictment against conservative treatment.

L. a. G., the significance of conservative dentistry for hygiene comprises also our activity against the sphinxlike ailment originally named Rigg's disease or pyorrhea alveolaris*). It is ine last 40 years honoured with a dozen of scientific names and many dozens of theories of etiology and treatment. The etiology of the cases, by Gottlieb so characteristically named, „Schmutz Pyorrhoe" (dirt pyorrhea) may be evident, the influence of malposition, overcharge, medicines, tobacco, and many constitutional diseases and debility, must be taken in

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*) Which is respousible for the premative loss of so many undamaged teeth, und in severe cases menaces health with infection.

consideration, but on the active cause and the typical course of the disease agreement is far from being reached. Allow me here be pronounce my belief, that a good many cases of pernicious pyorrhea in clean mouthes are caused by the infectious action of the toothbrush. I generally find these cases combined with pronounced erosious caused by the friction of the brush and I beg to direct your attention to this striking coïncidence. Heaven may save conservative dentistry from a second plaintiff, exclaiming: The worst cases of alveolar atrophy are caused by the preventive and therapeutic measures of dentnstry; toothbrush, toothpick, flossilk, orthodontic appliances, rubberdam attachements, scraping, filling, grinding and crownsetting, form a real inoculation of bacteria in sound mouth epithelium and the cause of pyorrhea and toothloosening!

While much has been done to clear the pathology of the affection and the predisposing factors, and cleanliness of the mouth, gummassage and a salubrious standart of life are certainly useful, we are as yet unable to safeguard humanity against it by any general hygienic measure. It is like with carcinoma, we know many predisposing agents, but not the principal cause and alas not a reliable treatment for all cases. That we are justified to be a little sceptical with every new proposal of treatment, will be evident to you, if you will just listen to what has been proposed in the Dental Cosmos alove to heal pyorrhea to heal pyorrhoea since 1889. To disinfect and cauterise the pockets, Dr. Rhein recommended bichlorate of mercury soluted in hydrogene peroxyde, followed by carbolate of caustic pottasssa, Dr. Atkinson tincture calendulae and salicylic acid, Dr. Coyle: acetate of zink, Dr. Kirk: aristol, Dr. Cravens: sulphuric acid, Dr. Holmes: nitrate of silver, Dr. Barret: trichloracetic acid, Dr. Ottolengui: caustic. pyrozone, Dr. Osman: piperazine, Dr. Arrington: campho-phenique, Dr. Sudduth: resorcin, Dr. Talbot: Tincture of sodine, Dr. Whittles: green iodid of mercury, Dr. Hart: tincture of benzoin, Dr. Marshall: caustic potasch sol in carbolic acid and iodine in creosote,, Dr. Arrington: saturated solution

of spirits of turpentine and gum camphor, Dr. Whitslar: cresylic acid, Dr. Head: hydrogen ammonium fluorid, Dr. Beck: bismuth subnitrate, Dr. Barret: emetine hydrochlorid. Many other medicines were recommended, and a number of local treatments, f. i. replantation by Dr. Younger, cataphoresis by Dr. van Woert, compressed air by Dr. Powall, devitalisation of the pulp by Dr. Howard, ray and high frequently currents by Dr. Parker, root amputation by Dr. Adair, extensive bridging by Dr. Primrose, immobilizing by Dr. Houston, light therapy with carbonarc lamp by Dr. Michel, d'Arsonval curent by Dr. Noud, electric cautery by Dr. Clement, gum exicision and bone trimming by Dr. Nodine, Roentgen and udtraviolet rays by Dr. Arnone, local vaccine by Dr. Fielder Bridge, dressing compound of bacterial bodies suspended in agar, by Dr. Frey, Besides many constitutional treatments were recommended, f. i, homeopathic treatment by Dr. Burchard, bitartrate of lithia by Dr. Thompson, opsonic treatment by Dr. Goudby, vaccine by Dr. Carmolt Iones, Yoghurt diet by dr. Zentler, vegetarien diet and others. Wat has been recommended in latter years and is being practised nowadays, ou are well aware of, but are you sure that it will last?

While the disposition to alveolar atrophy can be regarded as a symptom of infirmity of advanced age, afflicting many persons previously, we may hope that in future it will, like other symptoms of senility, be arrested by administration of suitable hormones. Ovary and testicle, besides producing germcells, contain endocrine gland elements, producing hormones, they are the active elements to develop the secondary sex marks for each sex, and to furnish youthful vigour and tonus to the body. When it will be possible to stimulate this production of the glands or to produce and administer these hormones — like is being done with the hormonies of the thyroid and the pancreas glands, perhaps alveolar atropy will in a considerable degree be prevented or arrested. At present, much is attempted by conservative dentistry to prevent and to arrest the ailment and to fix loose elements. Early diagnosis is ne-

cessary, while it requires our best tact to inform the patient as to the pernicious consequences of this affections, without making him hypochondrical.

L & G., let uns nuw presume that the Nil nocere rules the therapeutic efforts of Dentistry, that we are generally succesful in preventing focal Infection and lesions of the gums apt to introduce infection, then what is he significause of conservative dentistry for hygiene?

Denal cairies is retarded by hygienic advice to the patient, it is, when founl, arrested, the decayed elements are restored by filling or crowning, the denture is saved form destruction the breath is kept clean, the biting and masticating faculties are maintained, the pronounciation kept unimpaired, the beauty of the mouth and face preserved, pain and infection precluded. That means no toothache, no jaw infection, no alveolar abscesses nor fistulas, no inflammation of sixus maxillaris, nasal, orbital, lingual and sublingual tissue by infected teeth, no foci of infection in the apical region. Consequently less anemia, less rheumatic afflictions in joints, muscles and heart, less kidney, stomach, galbladder infections. These merits van conservative dentistry place it in the front row of medical achievement, few branches of the medical art can boast of more beneficial results for undertaining and restoring the health.

This conservative dentistry means for the population, consulting the dentist, the able and conscientious dentist, since the days of the first denture, and ever treated in due time.

Now this statement contains several restrictions. Unable dentists ought not to pass the sieve of examination and every effort ought to be made to make the study of dentistry both scientifical and practical as effecive as possible. Conscientiousness, though principally an inborn quality, ought to be the prime

aim of dental education and ethica. The state ought not to tolerate dental treament by unqualified persons. Then the boon of conservative dentistry reaches only a part of the population, those who come regularly for inspection and restoration since early childhood. Why is it that the majority neglect the care of their teeth? The four principal reasons are ignorance, indifference, fear of pain by treatment and unwillingness or unability to bear the pecuniar charge.

It is the duty of the dental profession to combat these factors and to ask the aid of community and state for this purpose. Now this struggle, you know, is not an easy one and requires indefatigable perseverence.

May I cite my own experience: 32 years ago I proposed to the Dutch Den al Association to start an evergetic propaganda for mouth hygiene by popular booklets, shoolinstruction, lectures, a kind of university extension. 1901 was founded the Rotterdam Dental Club with a clinic for conservative treatment of the poor classes. This local society with its limited means propagated dental hygiene by editing booklets, a wallmap, by lectures and by adressing the community to ask denal inspection for shoolchildren and conservative treatment by sickfunds. The same ideas I pleaded 1903 in the Tijdschrift voor Tandheelkunde and 1909 in the Nederlandsch Tandheelkundig Genootschap. Shortly afterwards we founded the N. V. t. b. v. Th. Tandbederf, which was altogether dedicated to make propaganda for dental hygiene. Now since 3 decades some progress certainly has been made in Netherlands, in some places there are shooldentists for inspection and opportunity is given for conservative treatment for the poor, all of this with excellent result. But it is for from being universal, it only reaches a small minority of the population, and what seems decisive, it does not reach the childern belom six years.

Our aim has to be to attain similar results as have been so systematically and succesfully reached by Jessen, Strassburg and Kantorewitch. Bonn, where the children leave the school with complete perfectly sound dentures, educated to inspec-

tion and conservative treatment. Now the majority of the full-grown part of this generation is lost for this ideal, we have to impress our hygienic requirements to public authorities, to the family doctors and the pediatrists.

When we succeed, a most effective means to make the growing generation interested in dental hygiene would be, to furnish a dental register to every child at the beginning of the inspection. In this booklet the dentist or his assistant has to note the status preasens and later on every treatment. The booklet is kept by the child, which can gradually become interested in the history of his teeth. It furnishes valuable information to every succeeding dentist, and it can keep the Roentgenfilms. Experience has proved, that a leaflet or a chard is easily lost, while a neat booklet is more appreciated and guarded. So I designed a dental chronicle and offered it to the profession at Berlin 1903 and Utrecht 1904, but my suggestion was judged for advanced to my century. I show you some examples and I most emphatically impress the idea for execution to the Hygiene Commission now.

Is the dental profession qualified to require from the community and the stae dental shool inspection and the foundation of dental clinics for conservative treatment of poor children? It is, because there is no other way to save the dentures and to spare to the people the fatal consequences of caries and alveolar atrophy. May conservative dentistry hope to succeed?

The results of treatment in due time are absolutely effective, the rational way of treatment is determined, only the execution with the support of commonweah has to be reached. This accomplished, one of the meanest plagues of mankind will be banished. After much disregard of the importance of sane teeth, future, I trust, will bring the victory.

What the systematic application of preventive and therapeutic measures, with the aid of community means to the general health, is proved bij a surveij on the achievements of hygiene and medical art in the past half century. In different way the

state is charged with hygienic measures. It organizes medical instruction, examination and qualification, proohibits quackery, it regulates sickness insurance, it gives directions for hygienic shoolbuildings and against slumhouses; the community takes the care of canalization and watersupply, it forwards even bathing ettablishments. The state actively partakes in the struggle against infective diseases, bij performing quarantaine and house desinfection and many other measures, even vaccination against small-pox is prescribed. The results are exceedingly satisfying: Pestilence, cholera, leprosy are almost banished from civilized community, trichinosis, rabies, malaria, syphilis, typhoid, yellow fever, diphteria and other infective didiseases much reduced, tuberculosis changed into a curable malady. The average duration of life has been more than doubled, infant mortality halved. Incalculable sufferings have thus been prevented, and this is due in the first place to the splendid performances of medical science and art, and then to the joint exertion in state and community for hygienic action.

Now dentistry must have its turn, conservative dentistry especially, the way is clearly indicated and prepared by our profession, state and community have to take their charge. The dentures of the coming generation may not be abandoned to decay, sufferings, manyfold infections and extraction. Even the hope to restore the loss by neglect, by putting in false teeth, may not be encouraged, Black schowed already 40 years ago their poor chewing qualities and Haber wih the gnathodynamometer offers the occasion for any dentist to com pare the force of bitnig and chewing with natural and artificial eeth. Our ideal has to remain conservative — no change!