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An  
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 B. A. (Madras), L.T. (B.H.U)  
 M. R. A. S. (Lond.)

(DEVOTED TO ECONOMIC AND WELFARE PROBLEMS)

# WEALTH & WELFARE

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## HEALTH.

## INFLUENZA. (Continued.)

B.—The closing of meeting places, schools, colleges, cinema halls, dancing halls, skating rinks, churches, etc.—Regarding these measures universal recommendations cannot be made. The widespread depression in the minds of the general population during epidemic times must be remembered. Such depression may be a predisposing factor in the occurrence of the disease, and it is felt that if measures were passed such as closing all theatres and resorts of amusement, the effect on the public health might be worse than if nothing was done at all.

Again, take the instance of schools; if children were taken from well ventilated schools they might add to the congestion of already overcrowded houses. This matter must be left to individual localities to settle, bearing in mind that it is necessary to limit the number of unnecessary gatherings and that it is necessary to keep up the morale of the public. In this connection attention should be drawn to the dangers associated with travelling in cars and carriages. It is believed that a fertile source of the spread of infection occurs in overcrowd railway carriages, tram cars, etc. The prevention of overcrowding should especially be insisted on at such times and scrupulous cleanliness of carriages and cars be enforced. It is believed that much mischief was done in the last epidemic by the exodus from cities of panic-stricken populations, and facilities for such exodus should be prohibited.

C.—The wearing of face masks.—Opinions are divided as to the efficacy of this measure: it largely depends upon their construction. The masks should be of very close woven muslin or gauze. Recent work in America would seem to point to a gauze with a mesh 44 by 40 to the inch; three to six layers of fine muslin should form the mask and they should be applied so as to cover the nose and mouth completely. The gauze is cut 8 inches wide and 23 inches long. Details of the method of manufacture are given in a footnote.\*

The use of these masks should be made compulsory among nurses and attendants in hospitals which admit influenza patients and might be adopted in houses where cases of influenza are present and among volunteers and others who come in contact with the sick. The wearing of a face mask, whilst having a certain protective action, exerts an educative influence upon the patients. Though it would be more reasonable for the patient to wear a mask, this is impracticable in view of further impeding respiration which already may be difficult.

As there is a small possibility that droplets of infective matter lodging in the eyes may give rise to the disease, the use of goggles by such attendants may also be recommended.

\* The gauze 44 by 40 mesh is cut 8 inches wide and 23 inches long. The sides and one end are turned down one quarter inch. It is folded twice, the unturned end first, making a 7½ inch square. The opposite diagonal corners are cut off 1 inch, and the raw edge is turned in one half inch. It is stitched firmly all around. A 1-inch dart 1½ inches long is taken up at the middle of each side of the mask. A 14 inch tape is sewed on the opposite uncut corners. This mask has the advantage of covering the nose and mouth and in making the traction on the chin and not drawing on the nose and lips.

Another suggested use of face masks is by barbers, dentists, etc., whose occupation brings them into close contact with a number of persons, and who if incubating the disease may otherwise infect their clients.

D.—Isolation.—It is feared that insistence upon isolation of influenza cases in India is impossible. For one thing there is not sufficient hospital accommodation. Every case, however, of influenzal pneumonia should be rigorously isolated as the germs present in post-influenzal pneumonia are themselves infectious, altogether apart from the causative organisms of influenza. Hospitals should attempt to separate uncomplicated influenzal cases from those suffering from secondary pneumonia.

E.—Sprays and Gargles.—The use of disinfectant sprays and gargles is not recommended. Disinfectants are apt to remove the protective mucus of the throat and mouth; to cause irritation of the mucus membranes or lining membranes of these cavities and so predispose to the lodgment of infective material. They can hardly be used strong enough to be protective without causing violent irritation.

The use, however, of a solution of common salt one teaspoonful to a pint or 20 ozs. might be productive of good results if used as a gargle or sniffed up the nose, as it will produce an excess of the normal secretions of the nose and throat and this leads to the washing-out of micro-organisms.

F.—Disinfection.—With regard to the disinfection of infected rooms, it seems fairly established that ordinary cleansing with water, airing, and sunning effect as much good as the use of actual disinfectants. In addition as already suggested, all handkerchiefs, sheets and clothings recently soiled (within 48 hours, as drying kills the infective agent) should be boiled or otherwise sterilized.

The periodic disinfection on the above lines of public places, e.g., railway waiting rooms, trams, rolling-stock, dak bungalows, serais, etc., which in epidemic times may be taken to be infected, is also strongly recommended.

G.—Quarantine.—A limited measure might be practised by local institutions such as resident colleges, schools, asylums and jails. A jail, for example, situated in an epidemic area might by rigid quarantine be reasonably certain of keeping out infection or at least of delaying its appearance. There was evidence of the efficiency of this measure in certain jails in India during the last epidemic.

H.—Notification.—Notification of all cases of influenza would be obviously impossible. A limited notification might, however, be adopted at ports; some value being likely to result from the notification of infected ships and the prompt removal to hospital of actual cases.

Notification of influenzal pneumonia is now compulsory in England and in Australia. This measure in India would only be possible amongst the military and in civil in large towns where the Municipal Acts already permit of the notification of all forms of infectious disease.

## 11.—Prophylactic Vaccination.

A mixed vaccine has been prepared and will be available in India in moderate quantities. Until its efficacy or its non-efficacy is established, we can offer no authoritative statement as to the advisability of general prophylactic inoculation.

## 111.—Measures for Organized Relief.

(a) Local authorities should have ready lists of their requirements for doctors, nurses, the additional hospital staff required, such as sweepers, bhists, etc., mask makers, motor cars, ambulance drivers and volunteers of all kinds necessary for the actual treatment of the sick; and have noted, as far as possible, the actual persons who could prove useful in various accessory capacities. A canvass of private cars which people are willing to lend as ambulances, might advantageously be made. Further, the names of volunteers for district visiting and localization of cases should be noted.

In this connexion too it would be well for municipalities and other local authorities to entrust the actual arrangements prior to an epidemic and preparatory for it to some already organized body such as the St. John's Ambulance Brigade Nursing Association, as in addition to the above, hospital requisites must be obtained, e.g., beds, mattresses, etc. Lists of what are available should be made ready.

(b) Resources of men and material should be centralized under one central authority.

(c) The work of district visitors in a house-to-house canvass, referred to under paragraph (a), above, should be co-ordinated. Valuable information would thus accrue as to the actual extent of the disease. These visitors should also be instructed as to the type of case and home which would justify home treatment being adopted, and when hospital treatment is necessary.

A central clearing house or a bed dispensary might be instituted in large towns and severe cases be transferred from these to the hospitals. Hospitals should be warned to admit only severe cases as their resources will be taxed to the uttermost.

(d) It is needless to say that all other public health organizations, such as vaccination and plague organization staff, etc., should be utilized for the various measures of influenza epidemic control.

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warding off influenza. Among a total of 868 persons in ten collieries, who made a systematic use of the oil, only 19 were attacked with the disease, while out of 522, who refused the remedy, 150 contracted influenza.

The Anti-Influenza vaccine is reported to be best administered in two doses with an interval of seven to ten days between them. A table of dosage for age is given below:—

| Age              | 1st dose  | 2nd dose. |
|------------------|-----------|-----------|
| 4 to 6 years ... | 0.15 c.c. | 0.3 c.c.  |
| 6 to 8 „ ...     | 0.2 c.c.  | 0.4 c.c.  |
| 8 to 10 „ ...    | 0.25 c.c. | 0.5 c.c.  |
| 10 to 12 „ ...   | 0.3 c.c.  | 0.6 c.c.  |
| 12 to 14 „ ...   | 0.4 c.c.  | 0.8 c.c.  |
| 14 and upward    | 0.5 c.c.  | 1 c.c.    |

In cases in which for reasons of expediency only a single dose can be given, then it should be the larger of the two doses. This vaccine is extremely decomposable and in order to avoid wastage, individuals should not be inoculated singly or in small groups but collected so that a sufficient number may be done at one time.

NOTE—No definite data are yet available regarding the keeping properties of prophylactic mixed influenza vaccine, but it has provisionally been decided that if kept at a temperature of 10°C or slightly above (somewhere between 50°F or 60°F) it should be held to remain potent for eighteen months from the date of manufacture mentioned on the label of the tube.

#### VARIOLA IN ANIMALS AND MEN.

[By RAJ SAHIB DEBAKAR DE]

(Assistant Principal and Professor on Veterinary Science, Bengal Veterinary College, and Professor of Diseases Communicable to Men from Animals Diphtheria) in fowls.  
(D.P.H. Calcutta University.)

Variola is known by various names, such as Small-pox in men, cow-pox (variola vaccina) in cattle, horse-pox (variola equinae or stomatitis pustulosa contagiosa) in horses, sheep-pox (variola ovina) in sheep, goat-pox (variola caprina) in goats, swine-pox (variola suilla) in pigs and chicken-pox (Epithelioma contagiosa or Fowl

**Variola** is an infective disease, caused by an ultramicroscopic organism, and is characterised by a rise in temperature followed by eruption on the skin consisting first of papulae or pimples then of vesicles, pustules which dry up finally into scabs. These changes pass through a regular course as will be described later in connection with signs of this disease.

**History**—Small-pox in man is one of the oldest known diseases. Mention has been made of this disease in the Chinese records as far back as 1122 B.C.

Rhazesin, an Arab physician, taught us about this disease in 925 A.D. Sheep-pox was reported by Joubert in 1567 A.D. Cow-pox existed unrecognised for centuries, but it received attention of the British physician and Philosopher Dr. Jenner in 1796, who for the first time transmitted cow-pox to man and proved that it conferred immunity against small-pox. Since

that time vaccination has become established in every country. Jenner and Lafosse were of opinion that horse-pox was identical with cow-pox.

**Etiology**—The disease is caused by an ultra microscopic organism which is infectious. It is contained in the contents and crusts of the pustules, blood, secretions excretions and Chauveil has proved that the infective matter is contained in the solid and not in the fluid constituents of the lymph. The poison of small-pox and sheep-pox remains virulent and active in an infected locality for a month or six weeks, but when it is protected from decomposition it may remain virulent for a considerable time.

**General Symptoms**—The course of the disease is divided into 5 stages, viz., Incubation, Initial period, Eruption, Suppuration and Exciccation.

The incubation period of Small-pox disease is about a week. The initial period lasts a day or two and is marked by fever, cold in the head and eyes.

The stage of eruption which continues from 6 to 8 days is marked by the sudden appearance of red spots like flea-bites or pimples, which are converted into hard red nodules, pin head sized and are surrounded by red (areolæ). After a few days the tops of the nodules become pale and turn into bluish white vesicles, are depressed in the centre and are filled with limpid serous fluid. (At this period the pocks are at their highest state of maturity and are then most suitable for inoculation purposes.)

The suppurative stage lasts for about 2 or 3 days the contents of the vesicles become turbid and purulent, owing to the growth of streptococci and staphylococci and the umbilicated appearance disappears. The body temperature which had decreased during the stage of eruption again rises. Then follows the final stage the exciccation or scab stage. In this stage the pustules gradually dry up into at first yellowish and later on dark-brown scales, which become detached and leave behind white shining cicatrices or brownish-red spots. The completion of scabbing takes about 3 to 5 days.

Differing from the foregoing normal course several of the pocks may run together and form large pustules (variola confluens), or the eruption may be complicated with hæmorrhagic diathesis variola hæmorrhagica) with gangrene of the skin (variola diphtherica) in many cases.

**Anatomy of Variola**:—"If we follow the development of variola under microscope, we shall see above, the papillary body swell and form here and there pale flakes with cells which contain no nuclei. Afterwards, the papillary body is converted into a serous fluid and all the epithelial cells of the stratum mucosum dissolve with the exception of a few, which become drawn out into trabeculae and threads by the accumulated exudate. The vesicles thus form, between the papillary body and the horny layer, which is filled with fluid, and has trabeculae and threads intersecting it. At the same time the papillary body and the cut is lying under it become inflamed, swollen and infiltrated with round cells.

The pustule develops from the vesicle by an abundant immigration of leucocytes from the papillary body into the fluid of the vesicles and by the exciccation of the pustule and by the absorption of the cellular infiltration under the crust. The epidermis is replaced from the remaining tissue and from the edges of the sore. The trabeculae in the interior of the vesicle prevent the centre of the pock from rising up and hence the depressed appearance of centre of the pock."

#### THE SYMPTOMS IN LOWER ANIMALS.

**Horse-pox**—(Stomatitis pustulosa contagiosa). It is a mild disease in equines. The introductory stage mostly passes off unnoticed, the eruption appears on lips, nasal mucosa, genitals and on the hairless portions of the skin particularly the hollows of the feet. The eruptions may appear on the entire body or be localized. The changes go through exactly the same course described previously, or in some cases and in some situations such as the heels of the feet the vesicles burst discharging limpid fluid without going through the suppurative stage.

(b) **Cow-pox**:—This is a mild disease. The pocks accompanied by slight rise in temperature appear on the skin covering the teats and udder. The skin becomes tender followed by appearance of small reddish spots. These coalesce, become vesicles then turn into pustules with depressed or umbilicated centres surrounded by an areola. Many of these vesicles are ruptured by the hands of milkmen and the virus transmitted to superficially injured udders of other cows.

(c) **Sheep-pox**:—This appears in two different forms. The benign simple or uncomplicated form and malignant or complicated form. It is called 'Clavelée' in France and 'Scabrat' in Germany: it occurs epizootically and enzootically. It is usually not fatal; but in bad cases the mortality may be as high as 20%. It is characterised by high temperature followed by eruptions going through the usual stages. The eruptions appear inside the thighs, arms, under surfaces of the belly and chest and sometimes all over the body. In malignant form of the disease there may be hæmorrhages from the eruptions giving the so called "black" sheep-pox. The infection of sheep-pox appears to be through the respiratory tract.

(d) **Goat-pox** (Variola caprina):—This disease closely resembles sheep-pox. At the beginning there are moderate febrile and catarrhal symptoms and different sized vesicles appear inside thighs, udder, face, lips and round the eyes. In some cases, even the milk becomes tainted with blood which is due to small abscesses that develop inside the tissue of the udder.

**Therapeutics**:—Beyond keeping the affected parts clean and dressed with camphorated vaseline or hot Boric compress, I believe nothing more is necessary. The affected animals should be segregated and fed with mashies and nutritious gruels. The milkmen and attendants should be told about the contagious nature of the disease and necessary precautions to be taken to prevent them spreading the disease to healthy stock.

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For God, Crown and Country.

**Wealth & Welfare.**

Lucknow, Friday, 1st July, 1927.

## EDITORIAL.

### MASTERS IN OUR OWN HOUSE.

No one should force the gift of their brains and character on other people when it is not required. Those who wish to jealously guard their rights and liberties should be able to understand the position of others. A difficult form of virtue is to try in your own life to-day what you believe to be God's will. Rather convince yourself by your actions than your expressions; 'one good action is worth twenty good expressions'. We do not deny the advantages that India has gained by the services rendered by Englishmen and women, but it is time now that we should be relied upon to man our own services. The education imparted and training given under the British regime for the past one hundred and fifty years must enable us to do without the help of further recruits from abroad. What is seen now is that insistence is laid that not more than a certain

per centage of the total strength of the higher services should consist of Indians. A regular campaign of recruiting is set on foot asking youngmen abroad to seek service in India. It is causing alarm that British youths are unwilling to seek service in India; If young men from abroad are unwilling to seek a career in India, this is a clear evidence of the fact that the British rule in India has been a success and that it is possible to recruit from among the people of India itself. Local production is cheaper in the market than the imported goods. The economic prosperity of the country though we may see around us on every hand signs of the benefits which we have received in the past by the admission of the foreigners of brains and character, will suffer by the question of forcing the gift of one's own brains and character on India any further and then will really be the cause for a genuine grievance. Can India afford to pay for the services of those who jealously guard their rights and liberties and who do not wish to lose their great heritage forgetting that we also wish to be masters in our own house? It is desirable that the fears and suspicions in the minds of the rulers should be allayed on the co-operation of the Indians availed of in carrying on the administration of the country. Have not Indian Politicians, who formerly resorted to wrecking tactics, virtually abandoned them in the Legislatures? It is essential that the impartiality of the British Government should be beyond dispute. The Indians have started working the present constitution in a spirit of responsive co-operation which did not mean slavish or blind co-operation and Britain should also make a generous response by understanding our position and should cease forcing the gift of their brains by importing into the Indian Services unnecessarily men from abroad. It is essential that they should make Indians feel that the economic prosperity of the country is the real essence of the British administration in India. 'The nobler sort of man is proficient in the knowledge of his duties; the inferior man is proficient only in money-making'. Every unpunished delinquency has a family of delinquencies. Karma!! The march of human mind is slow. All that is human must retrograde if it does not advance. India bases her faith on great ideals and essential things on a belief in Britain in their fair play and tolerance, their desire to uplift India as she fell by the way in her political struggle and on their consciousness of trusteeship which power had given them over weaker peoples. If Britain stands for this and acts accordingly we shall be masters in our own house.

### SECRETS OF GOOD HEALTH.

A sound body cannot be built up from poor material. The right kinds of food produce good health and resistance to infection. The wrong kinds of food make for ill-health and lowered resistance to infection. Many of the ills of civilisation are due to wrong habits of feeding. Among these are indigestion, constipation, appendicitis, and rickets. Even the widespread diseases of tuberculosis, diabetes, and cancer are certainly connected with a faulty diet. The right kinds of food supply not only warmth and energy but everything that the body needs for its growth and maintenance. The foods in common use are largely the wrong ones. This is not to say that they contain any harmful substance. But they are lacking in the special materials which the body needs, so that it falls into a state of disrepair and gradually fails. During the winter months the need for vitamins becomes greater as our diet undergoes the seasonal change. Owing to the rise in the price of milk and eggs, and the smaller choice of vegetables and fruits, it becomes of more importance to see that we are eating enough of those foods which contain the vitamins. Fresh fruits supply vitamin C (the anti-scurvy factor), and with an orange a day we become safe from incipient scurvy, a disease which played havoc in the winter months with people in former days.

Our consumption of vitamin A (which helps us to fight off disease germs) is derived mainly from milk, butter, eggs, and animal fat. We substitute margarine for butter

increased very largely and the volume of work performed by these courts and by the village courts has increased to such an extent that the regular inspection of the records and accounts of these courts is rapidly becoming too large for the existing inspecting agency to deal with adequately. The various means of dealing with this problem were examined in detail. A number of questions relating to the organization, pay and punishment of Government subordinates and certain technical points in connexion with the revenue administration were discussed in detail.

#### A GOOD EXAMPLE.

In refreshing contrast to all these happenings is the smooth tiding over of a threatened strike on the part of the workers in the workshops of the Madras and Southern Mahratta Railway by its Agent. Learning that trouble was brewing in the ranks of the employees he at once sent for their leaders and spokesmen, had a fraternal and heart-to-heart talk with them, learnt all their grievances personally, urged on them his own grievances and difficulties and succeeded in persuading them to induce the men to adopt a more conciliatory attitude. The men's main grievance was that the company had given notice of shorter hours with corresponding wages in the near future. The agent patiently heard this submission and in reply pointed out that it was the unpunctuality and irregularity in attendance of the men themselves that was responsible for such a step being contemplated by him and citing some definite instances in support of his allegations he asked the representatives of the men whether they could deny them. They could not help admitting them and promising to do their best to put an end to all such irregularities on the part of the men in future. On this the Agent cordially promised to rescind the notice about shorter hours and shorter wages if the men were punctual and regular in future. And there the whole matter ended. Here is a splendid example to all capitalists and managers by which it is to be hoped they will not fail to profit. Experience has proved that it is their apathy and lack of imagination which generally lead to industrial disputes.

#### PREVENTIVE MEASURES.

To combat cholera in Bengal the Minister of Local Self-Government has prepared a scheme and has now secured first grant of 3 lakhs of rupees from the Government to provide salaries for cholera doctors, who will shortly be at work in the districts. Propaganda lectures will be delivered on preventive measures in the mofussil, and will be illustrated by cinematograph films for which an order has already been placed.

#### THREATENED WAGE-CUT.

Diwan Chaman Lall, M.L.A., chairman, All-India Trades Union Congress, interviewed in regard to the statement made by Sir Victor Sassoon, in the course of which the latter said 'A cut in wages is implied in the recommendations of the Tariff Board and the central Government,' declared:—

'I am surprised to hear that Sir Victor Sassoon has hinted at the possibility of a reduction in the wages of mill-workers as a counter move to what is alleged to be a breach of faith on the part of the Government in not giving effect to the recommendations, not so much of the Tariff Board, as of the Millowners' Association I think it is, to say the least, disgraceful for anyone to attempt to make the livelihood of indigent mill-workers a pawn in the game now being played between the millowners and the Government. If the dark could of a general lock-out is brought in to obscure the commercial sky in order that its minatory aspect might intimidate the Government, as it once did over the excise question, we will have to muster together every class of industrial workers in order to show once for all that the industrial workers of India refuse to be made a convenience of in the inevitable struggles between the British capitalists and the Government on the one side and Indian capitalist and pseudo-nationalism on the other. 'In spite of the exuberant statements as to the mill-workers' alleged prosperity, the actual position is that whereas, compared with 1914 the price index in January 1927 stood at 146, the increase in the real wage level stood at 121. The mill-worker is worse off to-day economically than he was in 1914, and in 1914 he was pretty nearly subsisting upon starvation wage. If the millowners have an honest case, they must place it before the country. But I warn them not to play fast and loose with their workers. The time indeed has come for the Government to legislate for a minimum living wage and some of us in the Assembly intend to devote the next two years to questions relating to such legislation. I have no hesitation in saying that all the forces at the command of the Trade Union Congress, both political and economic, both national and international, will be ranged against our industrialists if it should be decided to do the workers such palpable injustice as is foreshadowed in Sir Victor Sassoon's interview.'

#### NEWSPAPER FROM TREES.

In order to show how quickly a tree could be transformed into a newspaper, three trees near a large paper mill were recently cut down at 7.55 a.m., swiftly rid of bark, and pulped. They were then made into a roll of paper which was ready for use by a near-by newspaper at 9.34 a.m. The presses began turning at once, and by 10 o'clock newsboys were selling the papers in the streets.

#### CIVIL DISOBEDIENCE!!!

The working committee of the Travancore Political Conference have decided to present a memorial to the Government in connection with the refusal of the Maharani Regent to receive a deputation regarding the proposal to lease out certain lands from Government reserves to the Brooke Bond Company and to resort to civil disobedience!! should their efforts prove unavailing.

#### AGRICULTURAL COMMISSION.

Before the Indian Agricultural Commission, M. Faber, agricultural commissioner with the Danish Government, gave evidence regarding the cooperative move-

ment in Denmark. He said that the Government gave no grants but lent money at about 4 per cent. Registration of societies was not required. Distributive societies were more successful in the country than in towns. He estimated that butter produced by cooperative societies amounted to 90 per cent of the total and bacon to 85 per cent. Capt. Elliott, Under-Secretary for Scotland, expressed the opinion that India would benefit by the Imperial Conference scheme for a chain of research stations. But hitherto there had been no executive or even preliminary investigation. Mr. E. J. Butler, ex-director of the Agriculture Institute of Pusa, declared that there was little or no educated scientific opinion in India among those in a position to secure a continuity of scientific effort. He emphasized the difficulties of research in India and favoured the establishment in India of a station in close touch with the other research stations in the Empire. The marketing board suggested at Pusa should be freed from Government control and council management should be established composed of public men, scientists and a few agricultural officers. The more important provinces should have continuous representation, while the rest should be represented by rotation. It would be sufficient for the council to meet twice every year, provided the director of the Pusa Institute was a man of first rate ability. Pusa had alternatively been the spoilt child and the cinderella of Government institutions. There was a disheartening uncertainty with regard to its future, threatened as it was by successive waves of economy. The majority of influential men in India had never clearly grasped its real function and owing to its geographical isolation few had first-hand knowledge of its work. An educated public opinion was needed to take up arms in its defence. The higher research staff at Pusa must remain English for a considerable period if the institute were to do its work properly. This was not likely to popularize its continued existence as a Government institution. The best way to secure its future was for it to cease to be a Government institution, though Government aid would still be desirable.

The Royal Commission on Agriculture will issue its second report, publishing the evidence of the official witnesses from the Bombay Presidency, representing all the departments connected with the rural problems. The witnesses advocated research by the provincial departments with the help and cooperation of the central Government, wherever necessary. They stated that for propaganda non-official organizations like the cooperative societies and development associations had been found successful and declared that fragmentation of holdings was a serious evil, for which legislation had been introduced, but voluntary efforts on the Punjab lines were also advocated. Reference was also made to the great benefit the presidency had derived from the irrigation works, with regard to which minor irrigation works were likely to make for the agricultural welfare of the dry tracts.

(Continued from page 4.)

**Vaccination:**—Dr. Jenner in 1789, in a virulent outbreak of small-pox in men, observed that milkers were free from this disease. He found eruptions on the udder and teats of cows secured the contents of the vesicles of cow-pox, inoculated several persons including children with this material and found that the inoculated persons were immune to small-pox. Since then vaccination against small-pox was established. Dr. Jenner's wonderful discovery was quite different from what his previous observers had done. Jenner's method consisted of transplanting cow-pox in men and thus immunising them, more or less, against small-pox. At first, soon after his discovery, the original lymph of cow-pox or vaccinia was used for the vaccination of man. The difficulty in obtaining requisite amount of cow-pox lymph was soon felt owing to comparative rarity of cow-pox in cows. Then came vaccination from man to man. Owing to the transmission of human diseases such as syphilis it had to be abandoned and vaccination with lymph obtained from calves has been introduced.

#### THE TECHNIQUE OF MAKING LYMPH.

Calves (about 5 to 12 weeks old) which have been found to be healthy are placed on an aseptic table and secured in latruncumbent position with the right hind-leg drawn upwards. The skin from the symphysis pubis up to the umbilicus, and laterally to the fold of skin at the stifle, is shaved and carefully disinfected. Then either "incision" inoculation or "surface" inoculation is performed, either with long parallel incisions or discrete punctures on the entire surface. These are rubbed over with mature lymph from a previously inoculated calf.

The vesicles generally mature in 4 or 5 days, and the lymph contained in them is used for the vaccination of human beings and for further inoculation of calves. The inoculation material is obtained by means of a pair of clamp forceps, with which the lymph can be easily squeezed out of the vesicle. One calf gives from 1000 to 3000 doses.

**Concluding Remarks:** Of late, many workers have found a very close relationship in the pox found in man, lower animals and birds. Van Heelsbergen (1920) has done experiments to show the close relation between some of them. He describes a series of experiments on the transmissibility of fowl-pox to mammals. He passed the fowl-pox virus through rabbits and the thus exhaled virus was planted on calves and a cow. The reaction produced appeared to be identical to vaccinia. Cow-pox virus was inoculated on combs of fowls and a reaction was similar to natural fowl-pox. He also proved that Pigeon-pox was transmissible to the combs of fowls. Immunity tests were also done by him and it was observed that also done by him and it was observed that infection with cow-pox gave the fowl immunity against fowl-pox virus, i.e. Bassi (1896) and De Jong (1914-15) have shown

that the virus of contagious pustular stomatitis of the horse is identical with vaccinia. In 1879 Freidberger succeeded in transmitting a variola infection to the fowl by means of stomatitis material from horse.

Van Heelsbergen succeeded in transplanting the fowl-pox material on to the mucous membrane of the upper lip of horse. He says that after 3 to 5 days the follicles of the mucous membrane commenced to swell. Vesicles appeared which became pustules. Small ulcers coalesced to form large denuded areas thus resembling contagious pustular stomatitis.

In 1899, while working under late Col. Raymond at Belgachia transplanting experiments with vaccinia on pigs were successful. Though I have not seen a case of swine-pox, it does not exclude the possibility of swine-pox in Bengal. The transplanting experiment is interesting in this way that when vaccinia can be transplanted on a pig the converse may also be possible bearing in mind that other variolae are so closely related to one another or are identical if I may venture to suggest it.

Observers such as Turner Leroi and others believed about a common origin of Variola and Vaccinia. Bollinger maintained that small-pox and sheep-pox were the only woessential forms of Variola and that the other forms met with in other animals evolved from Variola. Roloff and Bollinger held the opinion that cow-pox originated from small-pox.

To sum up, the relation between the different forms of this disease met with in different classes of animals makes one believe that the causative agent is the same but gets modified in the various kinds of environments in which it grows and passes.

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#### BACTERIOPHAGE IN CHOLERA.

##### DESTROYERS OF MICROBES DISCOVERED.

Some months ago the Advisory Board of the Indian Research Fund Association requested Dr. Felix d'Herelle, director of the International Sanitary Council of Egypt, to carry out an investigation of 'bacteriophage in cholera and plague.' Dr. d'Herelle was formerly chief of laboratories at the Pasteur Institute of Paris and Professor at the University of Leydon. He recently arrived in Calcutta and has taken up his investigations in the School of Tropical Medicine. The doctor is a Canadian of French extraction.

With reference to the work that he has been doing he said to a representative of the *Englishman*:—You will understand

that I cannot give you details of the study which I am now making, but I can tell you about the question of bacteriophage in general. I have been working at this subject for 15 years, and it is an extremely complicated one, the main points of which may be summarised as follows:—We all know that infectious diseases of men and animals are caused by microbes, but I have found that microbes in their turn can be attacked by a contagious disease caused by extraordinarily minute parasites. This disease I have called 'bacteriophagy,' and the parasite which causes it the 'bacteriophage.'

#### BACILLARY DYSENTERY.

The first disease, which I studied from this point of view, was bacillary dysentery. I noticed that at a certain stage in the disease there appeared in the dejections of the patient a bacteriophage which had the power of attacking and destroying the microbes of dysentery. A few hours after its appearance the microbes disappeared, and the patient commenced to convalesce. In those cases where the bacteriophage did not appear the patient died.

Since these observations were made I have studied many diseases of men and animals, and in each of them I have found the same phenomenon; recovery from an infectious disease results from the destruction of the pathogenic microbes and this destruction is produced by the action of the bacteriophage. Further, experimental proof of this can be obtained, for it is possible to reproduce this phenomenon in test tubes.

We know that bacteriologists can isolate from the sick the species of microbe which are the cause of the disease and can afterwards cultivate them in glastubes containing the proper liquid nutrient materials. These microbes are extremely small and can only be seen with the aid of a microscope. Bacteriophages are still smaller; the same difference in size exists between a bacteriophage and a microbe as between a microbe and a man.

In spite of their extremely minute size I have succeeded in isolating from convalescent patients' bacteriophages, which are parasites of the microbes causing the disease.

If one introduces the bacteriophage into a test tube containing a culture of these microbes within a few hours the microbes are killed and the bacteriophage has multiplied. Four or five hours after the introduction of a single bacteriophage into a tube containing several hundreds of thousands of microbes there will not be a single microbe left and in the liquid will be found several thousands of millions of bacteriophage corpuscles which have developed at the expense of the microbes which they have destroyed.

We can thus cultivate the bacteriophage corpuscles in test tubes. Can we not introduce them into the body of a patient at the beginning of his illness and so hasten

the natural process by which he is cured? Certainly, and this has already been accomplished on a large scale for bacillary dysentery in Brazil, Germany, and in the Soudan; and for typhoid fever, in Italy, for example. Actually studies on bacteriophagy are now a days pursued practically in all laboratories over the world.

I should say that for each disease special experimental work has to be carried out, and this is often very difficult, and success depends specially on the degree of virulence of the bacteriophage. It is comparatively easy to isolate the bacteriophage; it is often very difficult to isolate a bacteriophage of such virulence that none of the microbes can resist it, and it is only these potent bacteriophages, difficult to find, which can be used for treating diseases.

#### CARE OF TEETH

DR. H. VENKAT RAO, L.M.S., PHYSICIAN  
AND DENTAL SURGEON, MADRAS.

##### PREVENTIVE DENTISTRY.

Dentistry is now being considered as one of the, if not the most important outpost of *Preventive Medicine* and modern Dentists are by duty bound to make it as a means to an end viz., to ensure the soundness of teeth and thereby of the body, of the Nation. "*Preventive Dentistry*" is the only means which offers hope for the future and must be primarily applied to children, especially young school children, by mass education with proper material to demonstrate.

##### DEFORMITY OF TEETH—CAUSE OF DISEASES.

Irregularity of teeth and jaw bones so common among children of the educated classes is the precursor of tooth troubles. The protrusion of front teeth, upper or lower, necessitates mouth-breathing, which foregoes the warming, filtering and regulation of in-going air as through nostrils and induces the narrowing and blocking of the nasal passages and bring an ugly monkey face. The blocking of nasal passages and the heightened vault of mouth cavity pushes out the eye ball and lands the schoolgoing child to eye troubles. Then tonsils get infected and ear troubles crop up and "adenoids" result and the resulting feeble passage of air not fully and properly inflating them, the lungs get infected and failing to expand, chest becomes flattened and in-efficiency and insufficiency of pure air cause diseases as consumption or asthma.

#### DIET AND DISEASES.

Since disease like tooth troubles are directly due to change of diet of man from his natural diet of raw leaves, vegetables and fruits, which are efficient to prevent tooth troubles &c. and ill-health, the diet of children and elders must be as far as possible nearer to natural state. Human milk (of mother or a wet nurse) and in its absence or deficiency cow, goat, sheep or ass's milk is to be allowed to infants and when teeth are cut ghee and rice, whole-meal bread, oranges with sufficient quantity of cow's milk and butter milk must form the diet of young children. Butter milk and oranges given last thing at meals or between meals will keep teeth of children as well as those of elders, free from caries which is quite common among civilised races due to initial feeding of children with bottled milk and patented foods made up of starches and artificial sugars.

The habit of giving or allowing lozenges, peppermint, biscuits, coffee, tea etc., makes the sugary and starchy food debris stick on to, and lodge between teeth, especially irregular teeth, ferment and corrode teeth. Stimulants like coffee or tea (as well as alcohol bare or in the shape of "Tonics") though stimulate the man, are after a time nerve depressers and pull down the health of the teeth and mouth organs. Food must be regulated and teeth and stomach given rest so as to function afresh. Hence three or four meals a day for young children, 3 for school boys and girls and two for elders with a repast of cold rice in the morning are ample and healthy. The habit of taking more often sweets or coffee and the neglect of properly cleaning or rinsing mouth after food is a great sin committed by the present day children and educated classes. Occasional or regular fasting is also essential to ward off the accumulated poisons in the body and to keep the digestive, mouth and stomach organs fit.

##### PROPHYLACTIC DENTISTRY—TOOTH CLEANING.

In addition to the use of selfcleansing foods, teeth and mouth appendages have to be kept clean by artificial methods, as by the use of the hygienic tooth sticks (kuchis) or by a brush, and a scientific tooth powder. Paste is a waste as antiseptic drugs in pastes will unbalance the natural protection against infection by the strange bacteria introduced after the brief action of the antiseptic against the natural and necessary bacteria has passed away. Properly made *kuchi* is to be used for a sufficiently long time to explore and clean all sides and surfaces of all the teeth. The tongue and gums have to be scrubbed and rubbed and massaged with fingers and palm of hand

and mouth rinsed often very thoroughly. In fact rinsing of mouth powerfully and again and again as said in Hindu and Muhammadan Religious Books will prevent tooth troubles as deformity of teeth like protrusion, since keeping water in mouth and powerfully moving it, will necessitate one to keep the lips together over the protruding teeth and will steadily press the children's teeth in and to proper place and develop, and spread out the arch of teeth around. Water is the best gargle since it is harmless, especially if a little salt is added. The habit of using medicinal gargles always is harmful, since it will cover up any odour and sign of disease and drive more dangerous disease as pyorrhoea or caries underground.

##### CURATIVE DENTISTRY.

Though prevention is better than cure and less costly, *Curative Dentistry* has been doing greatest service to tooth-ache. Though the parents care little for the soundness of children's teeth, in their misguided judgment that child is sure to get another set soon, it is to be brought home soon that the disease of the temporary teeth will have anchored safe in the permanent one, before the offending tooth is lost. Hence children's aching tooth or deformed tooth should be set right, as soon as possible. The germs in cavities of tooth in children or adults have to be removed and the cavities filled with cement, silver amalgam or pure gold and irregular, protruding teeth have to be regulated or removed and any consequent disease of body as mouth-breathing, adenoids corrected. Before undergoing treatment or surgical operation on eye, throat or body, it is essential to have the teeth scraped and cleaned properly and honestly by a Dentist and any shaggy or decayed tooth removed—of course by only painless and scientific extraction methods. Else the germ in teeth will have nullified the benefit of medicine or operation.

##### MECHANICAL DENTISTRY.

Mechanical Dentistry ranks the first and foremost place in *prosthetic surgery*, since teeth and properly built teeth will add much to the profile and beauty of face especially for ladies and in fact rejuvenate the toothless. Art conceals Art. Artificial teeth are however to be built anatomically as well as physiologically so that they will not only add to the appearance of the face but also will help the patient to speak, phonate and sing as well as properly masticate ordinarily hard food as *Murukku* bread etc; and thus ensalivate the food and help digestive function and make the patient live comfortably and longer than he would in the absence of a "grinding mill", natural or artificial.—*Health*.

## SCISSORS.

#### INDIA A GRAVE-YARD

Dr. N. S. Hardiker writes in *The Volunteer*:

In 1918 Lord Sinha who was then a member of the Imperial War Cabinet made a statement to the Overseas Press in London and remarked that:—

"It was not a constitution alone that was wanted for India but contentment and prosperity. However, efficient the system of Government might be in India, it would be generally admitted that India was a very poor country, and unless the whole policy of *laissez faire* was changed, was likely to remain so. India had not been prosperous for a long time past, and was not prosperous now. Literally millions in India were on the border of starvation. Half the population never had a full meal in the day, and means must be found to remedy this state of affairs."

This has affected the average length of life in India. The people are gradually becoming dwarfs and weaklings. They are losing their vital vigour and are falling easy prey to diseases. *The longevity of the Indian people to-day is only 24.7 years.*

Herewith a table giving the relevant and comparative figures:—

| Country              | Average Length of life |
|----------------------|------------------------|
| 1. England and Wales | 51.5                   |
| 2. United States     | 50.0                   |
| 3. France            | 48.5                   |
| 4. Germany           | 47.4                   |
| 5. Italy             | 47.0                   |
| 6. Japan             | 44.3                   |
| 7. India             | 24.7                   |

That means premature deaths in the country. The infant dies. The mother and her family suffers.

The mortality rate is very high. It is 30 per thousand.

As compared to other countries it is:—

| Countries         | Population   | Rate |
|-------------------|--------------|------|
| 1. New Zealand    | 12,00,000    | 9.5  |
| 2. Austria        | 55,00,000    | 10.5 |
| 3. New Foundland  | 2,50,000     | 10.6 |
| 4. U. S. America  | 10,00,00,000 | 12.9 |
| 5. Norway         | 26,00,000    | 13.2 |
| 6. Sweden         | 60,00,000    | 13.8 |
| 7. United Kingdom | 45,40,00,000 | 14.6 |
| 8. Belgium        | 75,00,000    | 15.2 |
| 9. Germany        | 6,00,00,000  | 16.2 |
| 10. India         | 31,90,00,000 | 30.0 |

#### TELEGRAPH OFFICIALS.

We read in *The Telegraph Review*:—

It is nearly 3 years that the Compensatory allowance has been granted to all the Gazetted officers of the Department stationed at Rangoon, Bombay and Calcutta, but it is only three months ago that the Government woke to the necessity of granting that allowance to the subordinate staff at those places and that also to a very limited number. The attitude of the Government in this case may be compared to that of some rich men who take a great delight in entertaining their compeers every year and then placing before them all sorts of rich dishes to which scant justice is done by the latter, while they consider it a nuisance and a sheer waste of money to

entertain a few beggars once in a way with the coarsest dishes which, by the bye, these poor men will devour with the greatest relish!

#### EDUCATION IN GERMANY AND INDIA

Dr. Taraknath Das writes in *The Calcutta Review*:

"The total number of German students enrolled in German universities during the Winter Semester of 1925-1926 was 82,602 which is 13,000 more than were registered during the pre-war period and respectively 1 and 4 per cent. more than the number matriculated during the two previous semesters." The number of women students registered in German Universities during the Winter Semester of 1925-1926 was 6,983. During the previous semester, their number was 6,923.

There had been marked increase in the ranks of students devoting themselves to Dentistry, Veterinary Medicine, technical subjects as well as Philology. *The total number of medical students during the Winter Semester of 1925-1926, in German Universities, was 6,438.* This shows that the German nation has recovered educationally from the set-back it received during the World War and the years following it. *The German nation as a whole to-day is more keenly interested in elevating the status of its national health, technical and industrial efficiency and the possibility of greater activity in Foreign Relations and Foreign Commerce than ever before.*

It is also noteworthy that the death-rate in Germany is decreasing and population is increasing. Universal sports are taking the place of universal military training; and Germany will have more efficient medical men and women to serve the nation. If Germany is to recover her former position in the field of industry and international commerce, it is imperative that she must have better trained industrialists and salesmen, who will excel those of other nations in technical efficiency, industrial organisation, and capturing foreign markets. To meet these requirements, the German Universities are going to turn out large number of technical men and industrialists who can speak the languages of the peoples whose markets they wish to capture. To-day more German students are engaged in gaining proficiency in Russian, Spanish, Chinese, Japanese, English, Italian, Persian, Turkish as well as Hindustanee than ever before.

Let us compare the present educational condition and facilities for higher education in India with the existing condition in Germany. First of all we have to admit that the educational standard, including curriculum and efficiency in high schools and universities of India is lower than those of Germany. For this drawback, the British Government in India, Indian politicians, educators, and general public are to blame.

Secondly, India has a population about five times as large as that of Germany. If the educational standard of Indian Universities were equal to that of German Universities, there should have been at least 400,000 students in Indian Universities; and the number of women students in Indian Universities would have been about 28,000. It is safe to say that it is not the case.

Thirdly, the death-rate in India is about double the rate in Germany. Germany is not infested with the preventable diseases such as Malaria, Plague, etc., as is India. The need of medical education in India is far greater than that of any other civilised country. No Indian politician should forget that the British Indian Government claims that as there are not sufficient medical men and women in India; it cannot change its "opium policy" and it now allows practically unrestricted sale of opium, which is a government monopoly, and opposes the policy of restriction of production of opium to medicinal and scientific purposes. The British Government contends that Indian masses should have the privilege of using opium, "as household medicine for ailments" because there are not enough doctors in India to look after the general well-being of the people. Supposing that the need of medical men and women for the people of India is equal to the need of the German people, then there should be at least 32,000, or more medical students in Indian medical colleges. Alas, there are not even 3,200 medical students in Indian Universities.

Fourthly, in Indian Universities the number of students, who are pursuing studies in technical subjects and philology, should be five times of those in German Universities. Undoubtedly that is not the case.

The "Budget commission of the Reichstag has just voted a credit of 500,000 Marks (about Rs. 375,000) for the erection of a building for the reception of foreign scholars who come to work in Berlin."

Although for the promotion of the best interest of India, a large number of well-selected and most efficient students should come to Germany to study, the number of Indian students in German Universities is even less than those from Turkey, Japan and China. It is generally regarded that the Government of India discourages Indian scholars from going to Germany or America, by giving special preference to those who are educated in British Universities. Then again there is the language difficulty, as Indian Universities do not require Indian students to learn the German language. If India is to establish cultural, commercial as well as political contact with other nations, then Indian University students should be encouraged to study foreign languages; and German, French, Spanish, Russian, Chinese and Japanese should receive special attention.

## MISCELLANEOUS.

### WOMAN'S AGE SECRETS.

The effect of age on women's looks was discussed by Sir Thomas Oliver, Professor of Medicine, University of Durham, in his presidential address to the Institute of Hygiene, Portland-place, Marylebone, W., in mail week. He said:

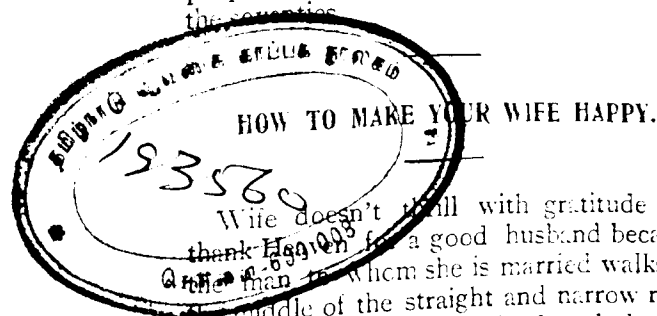
A man or a woman is as old as he or she feels, and not as he or she looks. It has been said that a Woman who conceals her age is a benefactor to her sex: for through her determination to remain young she has set up a superior standard of health, she herself being aware of the fact that by shortening her hair and adopting modern methods of dress she has, so far as personal appearance is concerned, temporarily modified the visible marks of time.

Age is not, however, a matter of years but of changes in the tissues, so that so long as woman does her best to keep her mind and body young, she is young.

Probably the middle period of life leaves more outward signs upon women than men. Fortunately the change is not universal. For many women are just as handsome, attractive, good-looking, and of well-proportioned figures as in the years before the middle period of life, and those much-admired qualities are carried on into old age when the women retain those attributes which charm all who are brought into contact with them.

The amount of sleep required is largely a personal and a family matter. Some people require more sleep than others, while others, again, imagine they need more sleep than is necessary.

If by the time a man or woman has reached middle age he or she has not become his or her own physician as regards food, then no lesson has been learnt from the experience of previous years. Less food, rather than more, is safer for most people when they are graduating towards the twilight of life.



Wife doesn't thrill with gratitude and thanksgiving for a good husband because she is in the middle of the straight and narrow road and provides her with food and clothes. She feels he is doing no more than his duty as a husband, and that when he took her from a good home, or away from a good job she had a right to expect from him a square deal and as good a living as he could make.

But the things that do make her grateful are when he observes the amenities of matrimony: when he adorns domestic life with the little frills of attention and the embroideries of consideration, writes Dorothy Dix in "Tit-Bits."

### The Family Exchequer.

For instance, a wife is filled with gratitude to her husband if he will treat her fairly about money, and if he will give her an allowance voluntarily instead of grudgingly handing it out as if he were giving alms to a beggar.

Of course, in the end, most of the money a man earns does go for the support of his family and passes through his wife's hands. But it isn't what the husband gives—it's how he gives it that counts to a woman. There are husbands who apparently begrudge the very food and clothes their wives and children eat and wear.

No wife is thankful for money she has to wheedle out of her husband, but she is pathetically grateful—considering that she has earned her share of it—for her husband being just enough and big enough to give her an allowance and never ask what she does with it.

A wife is as grateful to her husband for a few kind words as a starving dog is for a bone. Undoubtedly the majority of men continue to love their wives after marriage. But so far as the average wife knows, her husband never takes a look at her after he leaves the altar except to notice some defect. If she fishes for a compliment and asks him how she looks, or grunts and says "Ugh! getting fat, aren't you?" If she calls his attention to her new dress, he tells her it's too gay, or too short, and demands to know why a middle-aged woman can't buy sensible clothes like his mother used to wear.

A wife is grateful for a few attentions from her husband. A bunch of violets, the gratifications of some foolish little wish. A little treat now and then. Remembering her birthday and the anniversaries of when they met and when they became engaged and when they got married. Anything that shows that he still loves her, that he still thinks of her as a woman and not as a mere household convenience, will make any wife grateful.

It's the little personal touch, the giver who gives himself with his gift, the giver who shows he has put tender observations of all his wife's moods and thoughts into what he gives her that makes a thing precious in a woman's eyes.

Women are grateful to their husbands for making chums of them. Nothing pleases a wife so much as for her husband to take her into his confidence and talk over his business with her. And nothing flatters her so much as for him to ask her for advice.

### MANKIND IN 2127.

#### A Doctor's Prophecy.

'The human race is getting healthier and handsomer,' says Dr. Louis I. Dublin the noted American health authority, who

has just completed a world-wide survey for the statistical department of a leading insurance company. 'It is also growing older on an average,' he says 'and, consequently, wiser. A baby borne one hundred years ago, our figures show, could expect to live only one half as long as a baby born to-day. All things being equal and allowing for cures for cancer, Bright's disease, and rheumatism, a baby born three hundred years from now can expect to live twice as long again, to become a centenarian.

'The life span in 1800 was in the neighbourhood of thirty-four years, today, latest reports show it is 59½ years. A cure for cancer will increase this by four years immediately, a sure cure for Bright's disease by another two years. Present day economies enter into this, too. A baby born today is worth £1,447. The value of its future earnings is approximately £8,200. The process of rearing a baby may be compared with winding up a piece of machinery which is later expected to do useful work. From an economic standpoint the bringing up of a child—under conditions of today—is a profitable investment.

Science is cutting down the baby losses every year and making the investment more and more profitable. Each year 120,000 babies die in the United States during the first year of their lives from altogether preventable causes. Their capital value, having in mind net future earnings, is approximately £150,000,000. Now, more and more babies everywhere are surviving, and more young people living longer.

'Future generations will be much more handsome, and the only deterioration will be hirsute,' Dr. Dublin reports and baldness will increase.

'While we were working to remove the causes of death,' the doctor concludes, 'others are working to prolong usefulness while life lasts. Otherwise, as Villon says, 'A man might live a hundred years and be no greater in the end than a great eater of dinners.'

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