Centenarians and nonagenarians / by W. Gilman Thompson.

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CENTENARIANS AND NONAGENARIANS.*

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IF one considers the balance of medical literature from the point of view of the age of patients it is very noticeable that with an enormous output of works relating to infancy and childhood the opposite extreme of life has met with comparatively little exact study, even when the disproportionate number of survivors to extreme old age be reckoned with.

In this article it is proposed briefly to review some of the morbid conditions and other phenomena of those who have entered upon the tenth decade of life and to include reference to centenarians. With regard to the latter it is my belief that the number of those in this country who have passed the hundredth year is exceedingly few. It is true that references frequently are made in the public press to deaths at 100 to 103 or more years of age, but they are very apt to be among persons whose exact history is obviously impossible to obtain. For example, a few days ago, the death of an Indian at 131 years of age was recorded, but in such cases tradition and sometimes desire for notoriety may easily be confused with fact, and in several exaggerated statements as to extreme old age I have found upon inquiry that the alleged centenarian

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must be placed in the nonagenarian decade. A sailor who lately died in a United States naval home was stated in the public press to be 105 years of age. He had been frequently "interviewed," his portrait was published, etc. As I desired to see and study such a case, if authentic, I wrote to the commander of the home, who replied that the naval records showed that the man was 95 years of age at his death and that he had served 50 years in the navy. Like others of his years he found that his age was becoming a topic of general interest and in talking with reporters was accustomed each time to add a year or two to the date of his earliest recollections. The very old have usually survived all who could give corroborative evidence as to their age, their failing memories confuse tradition with fact, and records of vital statistics in this country which are far from perfect to-day are practically worthless if not completely non-existent when sought for in the early dates of the last century. In some few cases among those of English birth or ancestry, and among New Englanders, it is possible to establish definitely a centenarian age limit. I have such a record in a personal ancestor who lived an active life until the age of 102 years, and I possess the photograph of a woman of my acquaintance who lived for six months beyond 100 years. She was a New Englander and the mother of fourteen children, only two of whom survive her. Up to within two weeks of her death her mind was clear, her eyesight was good, and hearing so keen as to be a matter of surprise. She had no special dietetic or other health fads, and finally died from general weakness of the circulation. Her photograph, taken after living 100 years, shows well her remarkable nutrition.

Turning to the mortality statistics of the United States Bureau of the Census it is found that in 1910 in the special registration area, which comprises 58.3 per cent. of the total population of the country, the mortality within the ages under discussion was as follows: 90-94 years, 6,175 deaths; 95-99 years, 1,427 deaths; 100 years and over, 372 deaths. The total deaths for this area were a little more than three-fourths of a million in the same year.

It is interesting to note the principal causes of death at these advanced ages, which were as follows:

	Years:		
	90–94	95–99	100+
Diseases of the circulatory system	1165	257	54
Diseases of the respiratory system	887	197	43
Diseases of the digestive system	354	63	10
Bright's disease	314	76	15
Apoplexy	485	90	22
Influenza	177	36	9
Cancer	150	22	4

Under the diseases of the circulatory system, organic disease of the heart is recorded for the three periods above given respectively as follows: 703, 156, 35.

Under diseases of the respiratory system pneumonia ranked as follows: 634, 145, 32, and bronchopneumonia 156, 42, 13. Thus, for the entire tenth decade and also among centenarians these two respiratory diseases taken together rank first as a cause of death, organic heart disease is second, apoplexy third, and Bright's disease fourth.

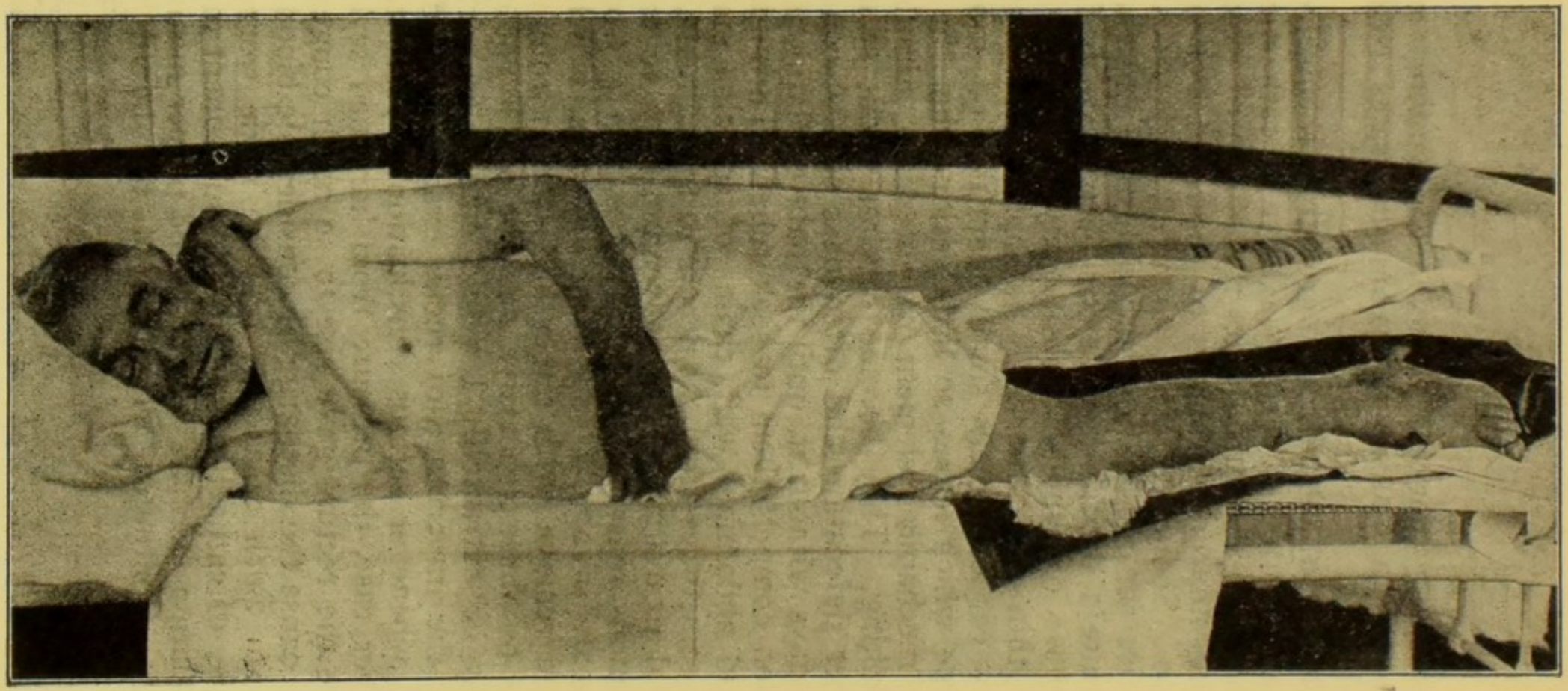
Among the fatal cases of diseases of the digestive system, enteritis outranks all others by a considerable percentage. There are, however, many cases among the aged of serious intestinal obstruction from constipation. In the census lists above quoted

from, there were 25 fatal cases of intestinal obstruction. In my personal observation among the very aged, overeating and consequent overtaxing of the intestine is a very common error. I know a gentleman who shortly after celebrating his centennial died of overindulgence in lobster salad, and I saw a woman of 96 years who died from intestinal obstruction as a result of long-continued overeating, from which her family were unable to restrain her. In her seventh decade she was a moderate eater, but with advancing years her appetite grew and amounted to bulimia. Two sisters were under my observation for many years, one died at 92 and the other is at present entering upon her ninety-second year. They were exceedingly fond of what is sometimes called "old-fashioned New England cooking," and sausages, mince pie, doughnuts, green corn and similar heavy articles of diet were among those for which I was not infrequently called upon to administer correctives! An old gentleman of 90, who visited me during the past summer, and who appeared as vigorous as many a man of 70, astonished me by the variety and quantity of food which he disposed of. In such persons the attainment of ripe years appears to be due mainly to the persistence of good digestion, a survival of the fittest stomachs even after other important organs are seriously impaired. As old age advances and activities and diversions become more and more restricted, the appetite often remains undiminished. The limitation of locomotion, the lack of acuteness of sight and hearing, and other weaknesses, may leave the pleasures of the table almost the only gratification in a monotonous existence. In such cases, if digestion remains fairly active, nutrition may be maintained in an

astonishing degree. The accompanying photograph of a man of 97 years illustrates well this condition.

These patients usually accustom themselves to the nightly use of strong laxative or cathartic pills with which they counteract the effects of excessive eating, improper selection of food and lack of exercise. Sooner or later, however, they are apt to acquire serious, if not fatal, intestinal obstruction.

Quite a different cause for obstruction is found in those of wholly opposite physique, those who are thin and markedly atropic or marasmic. They eat extremely small quantities of food of a type which leaves so little residue that the normal mechanical element of intestinal stimulation is lacking. They become careless about securing proper defecation and often pass several consecutive days without it, until the pain of flatulent distention compels them to seek relief. Through the flaccid abdominal wall, chains of scybalae may be felt, sometimes from the cecum to the sigmoid, and digital examination of the rectum may reveal an enormous mass of impacted feces. In a woman, 92 years of age, I found such a mass, which required removal with finger and scoop through sittings on three successive days before it could all safely be extracted. I would emphasize particularly the importance of rectal examination in the aged whenever serious constipation is present. In another case, the pressure from hardened scybalae above the rectum gave rise to so much congestion as to cause the discharge of considerable blood and mucus. Such cases may only be made worse by the use of cathartics, and oil and subsequent mildly stimulating enemata constitute the proper means of relief. Continued irrigation of the bowel may



Well-nourished man, 97 years of age, with gangrene of the left leg

prove too exhausting in this type of case. A further difficulty arises from the enteroptosis, which often exists in such emaciated patients, and from the colon distention which they often have.

Death from apoplexy is rare among centenarians. It caused only 22 deaths among the 372 cases of 1910. In fact, it becomes progressively rarer after the ninety-fifth year, for the arterial changes which predispose to it are developed, if it all, at an earlier period.

Gangrene of the extremities from obliterating endarteritis or thrombosis is also an infrequent cause of death, but a few fatal cases are recorded. There were 3 among the centenarians and 20 among the 1,427 cases in the second half of the tenth decade. The man, whose good physique is shown in the accompanying photograph, was an Irish laborer, 97 years of age. His age was well authenticated by cross-examination as to dates and corroborative testimony from his family. He had been in excellent health up to the time of his admission to my clinic in Bellevue Hospital to which he applied for a very rapidly progressing senile gangrene of the left leg. He suffered intense pain which was considerably relieved by the method which I have found most useful in the treatment of moist gangrene, the direction of a continuous current of very hot air over the mortifying surface. In a few days, however, he acquired a septic pneumonia to which he naturally succumbed.

Carcinoma, like apoplexy, becomes rapidly less frequent as a cause of death after the ninetieth year, most of the destined victims having died in the sixth up to the ninth decade. In fact, there is a rapid falling off between the eighth and ninth decades, the percentage dropping from 7.8 per cent. in

the eighth decade to 2.5 per cent. in the ninth decade, 2.3 in the tenth, and to about one per cent. for centenarians, there having been only 4 deaths from carcinoma among the 372 persons of this latter class. In the nonagenarian group the chief sites of malignant growth are in the stomach, liver, breast and skin. The bearing of these facts upon the etiology of carcinoma is of interest, for a disease which does not develop until after the ninetieth year may scarcely be due to any hereditary factor, and the infrequency of the disease after this year merely emphasizes the constitutional resistance to extraneous influences which the majority of nonagenarians possess.

Among the diseases of the circulation to which the very aged succumb, cardiac sclerosis and progressive stenosis of the aortic valve would naturally be expected to predominate, and such is the case, but notwithstanding, the nonagenarian is sometimes surprisingly tolerant of the latter lesion. This is no doubt due to the abstinence from all exertion, and a well developed compensatory hypertrophy of the heart which may exist. I have followed several such cases for several years in which there was unexpected absence of the symptoms common to this condition in earlier years, such as vertigo fainting, or any symptoms of failing compensation, like dyspnea, pulmonary congestion or dropsy. Moreover, death is frequently due to causes not immediately associated with the condition of the heart.

Not long ago, I met with a fatal case of typical angina pectoris in a man of 94 years, who had suffered for six months from increasingly frequent attacks, but which did not prevent him from considerable activity, or necessitate his remaining in bed

until two days before he died. Among the 1,427 deaths of the census record of 1910 occurring from the 95th to the 100th year, only 3 were due to this cause, and my case was doubtless one of them as it took place in the same year. Among the centenarians there were no deaths from this disease.

It is a present custom to attribute a great variety of ills to arteriosclerosis and high blood pressure, which is doubtless correct, although there is some tendency to exaggeration in this direction. It is, nevertheless, quite noticeable that nonagenarians, whose arteries may have become extremely rigid or markedly thickened with calcareous deposit, frequently do not present any of the symptoms so often explained on this basis in earlier life. They may remain quite free from vertigo, headache, dyspnea, or any serious symptoms of nephritis, and as stated above, angina pectoris and peripheral gangrene are not common phenomena among them. When they do have symptoms of functional character, referable to high blood pressure, it is inexpedient to adopt the more vigorous measures which are used in younger patients. Vasodilators are usually without effect in such advanced conditions, but chloral hydrate in 5 grain doses, despite the prejudice against it as a cardiac depressant is both a safe and often effective remedy, and the bromides and codeine are also beneficial in this type of case.

One meets with a peculiarly fulminating type of pneumonia occasionally in very old persons. The patient, in previous fairly vigorous health, is attacked with sudden severe intrathoracic pain and dyspnea, and almost at once begins to raise typical blood-stained pneumonic sputum, together with a very large quantity of bronchorrheal exudate. In a receptacle the round distinct masses of bright red

well-aerated pneumonic sputum float freely in a mass of clear white watery mucus. There are widespread crepitant râles, but pneumonic dullness may be obscured by emphysema. There is no chill, and the body temperature may not rise above 100° or 101° F. The pulse is full, arterial tension is high and cyanosis is extreme. Coma may shortly supervene and the patient may die within 24 hours of the onset of symptoms. I saw such a case not long ago in a man just entering upon his ninetieth year whose condition became very serious within six hours of the invasion. In all such cases, morphine is extremely ill-borne, usually making matters much worse, but moderate doses of codeine may be given with applications to the chest of mustard pastes or poultices to relieve pain. There is nothing like the hypodermatic use of atropine with counterirritation to check the bronchorrhea but cupping may not be satisfactorily performed owing to prominence of the ribs in a thin chest wall. High arterial tension should be reduced, when possible, by chloral or nitroglycerine and catharsis.

This very acute type of pneumonia is in strong contrast with the commoner sort in which the onset is so gradual and physical signs are so indefinite that it may be a day or two before the diagnosis is accurately determinable, although the condition should always be suspected in a nonagenarian who experiences sudden weakness with thoracic oppression. This type of the disease usually demands early and active stimulation of the circulation, for the policy of letting the patient alone in the outdoor air, so often successful in young pneumonia patients is hazardous in the afebrile and adynamic cases among the aged.

The so-called senile epilepsy is more common

just before than during the tenth decade, at least as a cause of death. In the census group of 1910 only 4 fatal cases are recorded among the 7,602 nonagenarians, and only one case in a centenarian. When the disease is present, however, the convulsions may become very frequent. I am familiar with a case in a woman of 92 years, who for several years has had convulsive seizures of increasing frequency, until, at the present time, they sometimes number a dozen or fifteen in a day. They are exceedingly rebellious to treatment and in this case codeine and chlorotone proved more effective than the bromides or any other of a long series of sedatives. In the intervals, the patient appears in fair health.

One of the principal difficulties encountered in the treatment of very old patients is that of overcoming their prejudices and obstinacy in matters dietetic and hygienic, for, having lived so long, they naturally believe they know better than anyone else what is best for themselves, and, with a certain irritability, resist interference. They resent the personal contact of the ministrations of a nurse, or refuse to take this or that remedy, so that much tact with firmness may be required in dealing with them. As a rule, also, they are relatively very susceptible to the action of drugs and great care must be exercised not to overdose them. A good general rule is to employ only about two-thirds of the ordinary dosage. A woman of 92 years, whom I had occasion to treat for various ailments, such as chronic bronchitis and attacks of indigestion, would never allow me to see her in bed, no matter how ill she was, for she acquired the notion that if a doctor once caught her there she would never get out of it again, so she would keep me waiting

until she dressed and sat up, immediately going back to bed when I had left! A fortnight before her death, however, she gave in, and, for the first time in her life, permitted a nurse to approach her. Such patients often suffer seriously from lack of attention to personal cleanliness. Originally of cleanly habits, physical or sometimes mental weakness renders them careless and forgetful, with the result that they may acquire considerable cutaneous irritation. In women, I have several times seen ulceration and edema of the vulva extending into the vagina, from lack of cleanliness in micturition, and similar irritation may affect the perineum from carelessness in defecation. Another part of the body which suffers from lack of cleanliness is the mouth, and such teeth as persist become a source of serious irritation. Alveolar pyorrhea, gingivitis and stomatitis are common. From the former, mild grades of septic infection may develop with a subacute temperature and irritation of the heart which may become very irregular in action.

There are a number of diseases common enough in the sixth to the ninth decades of life which are rare among the extremely aged. For example, tuberculosis in the series of the census of 1910 caused only 26 deaths in the first half of the 10th decade, 5 in the second half, and none among centenarians. In these periods biliary calculi are only recorded 5 times in fatal cases, all being before the 95th year. Prostatic enlargement, although common and troublesome, was a cause of death only 35 times in the first half decade, 12 times in the second, and was not reported among centenarians.

One would suppose that having braved the vicissitudes of life for 100 years one would be content

quickly to await the end, but in 1910 one suicide was recorded in a centenarian and nine among nonagenarians. It is not stated, however, in how many of these cases there might have been melancholia or other mental aberration.

There are many modern theories to explain extreme longevity on the basis of individual peculiarities, from the intestinal chronic toxemia idea of Metchnikoff to the functionless ductless gland idea of Lorand ("Das Altern"), particularly of thyroid failure, but no one theory appears applicable to a majority of cases. In many persons the attainment of nonagenarian age appears to be due chiefly to favorable environment, and freedom from harassing worries and poverty. They are like Bill Nye's yellow dog, of whom he was accustomed to assert that "the only real joy that animal had in life was *not* being kicked." They have not been buffeted by the world's cares and trials, and are blessed with serenity of mind and uniformity of function. On the other hand, longevity is about equally found among the struggling poor. The long-lived Bulgarian peasants from whom Metchnikoff derives much of his argument in favor of the use of sour milk are of this type, and among the Irish and Scotch are found many instances of extreme longevity in the laboring classes. The Irishman 97 years of age, above referred to, certainly did not owe his years to ease of life, for he had been a hardworking day laborer almost up to his tenth decade.

A majority of nonagenarians give a history of long-lived ancestry, and there are many families remarkable for this characteristic, but it is not an essential one, by any means, for a line of such ancestry may be broken by intervention of infectious

diseases or by the unhygienic or irrational habits of individuals.

All things considered, however, heredity appears to be a much stronger factor in producing nonagenarians than any special habits, as of diet or hygiene, for the latter are found to present the greatest variety in different cases—hence extreme longevity is largely a matter of natural selection.

That the aged very often exhibit no predominating symptoms of any one disease to which their death is attributable, is a striking fact. They may become so universally sclerosed and atrophic that a general weakness is their only complaint, and although they may have marked arteriosclerosis, nephritis, or myocardial change, the more active symptoms which characterize such diseases early in life may be entirely wanting. They rarely show marked edema, for example, and the typical picture of the last stages of failing compensation of the heart, so familiar in early life, the orthopnea, cyanosis, and general anasarca, etc., is very rarely met with. They die suddenly and peacefully—it is as if the clock had run down. Hence in the mortality statistics "senility" is so often given as the cause of death and accepted by the health authorities without further question.

In the group of cases in 1910 this was the final diagnosis in 26 per cent. of the nonagenarians and in 40 per cent. of the centenarians. Fortunate it is, indeed, that the reward of a long life well spent should so often be a peaceful ending without the long drawn out sufferings so common in the middle decades.

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