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Transmissibility and Curability of
Cancer

(1)

BY

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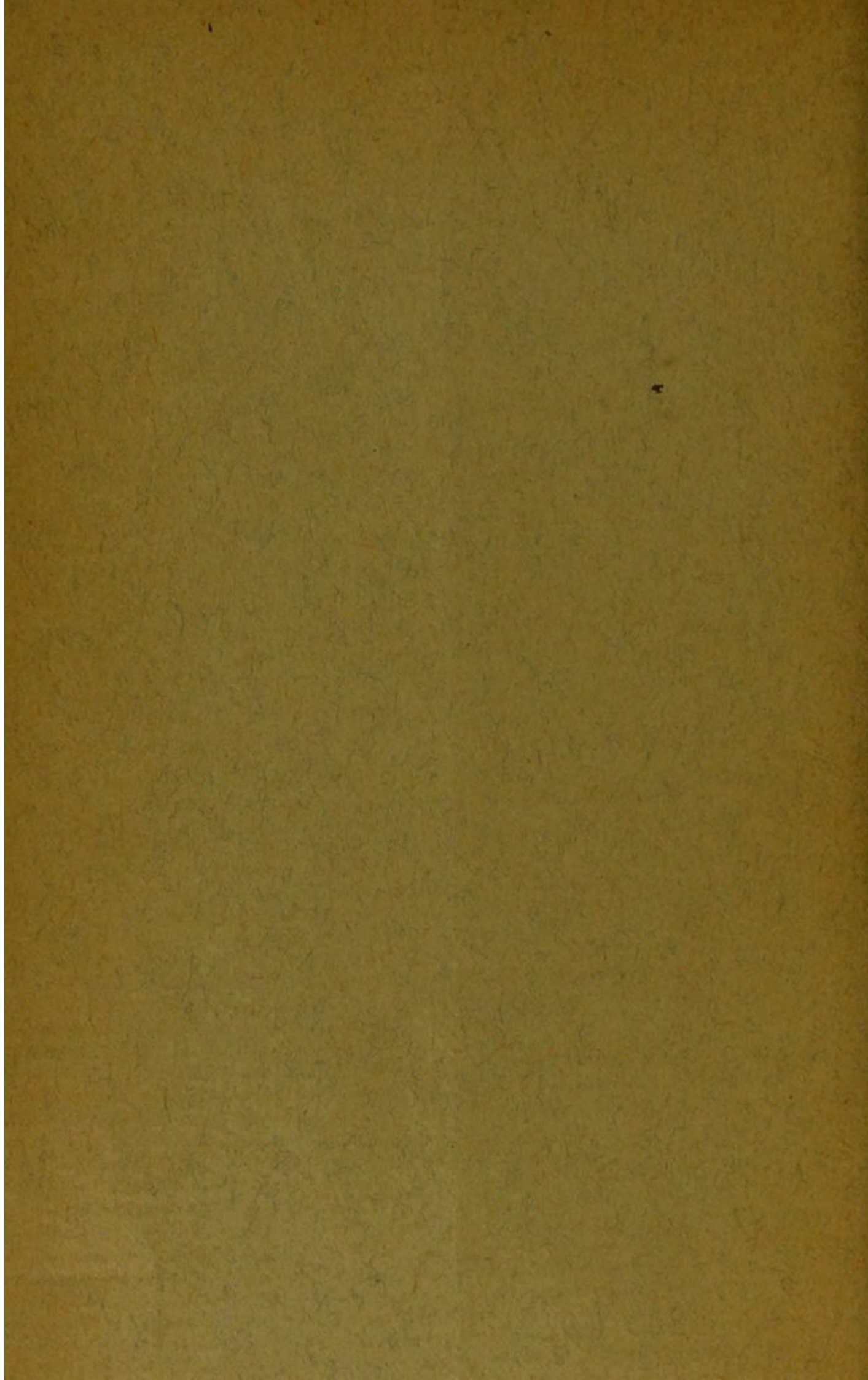
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TRANSMISSIBILITY AND CURABILITY OF CANCER.*

BY WILLIAM SEAMAN BAINBRIDGE, A.M., Sc.D., M.D., NEW YORK,
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“Is cancer contagious?” The question has passed from laboratory to home and highway, and is anxiously repeated on all sides. Boards of health, charity organization societies, and schools of philanthropy are flooding the country with literature concerning the contagiousness or infectiousness of certain diseases, and as a result the public has become thoroughly alive to the existence of our “myriad millions” of unseen foes. No new theory relative to disease can be propounded or research work reported without the probability of distorted or exaggerated versions thereof being flaunted in the public press of the civilized world, to make upon the minds of the credulous masses impressions for good or ill, as the case may be. Reputable physicians, actuated by motives of one kind or another, not infrequently give expression through the medium of the medical press to conclusions drawn from premises that have not been and often cannot be verified, and thus “confusion worse confounded” arises in the public mind concerning matters medical.

No one can gainsay the importance to mankind of the formulation of hypotheses concerning

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disease and the painstaking verification thereof by experimental and other methods. Surely such work should be reported and discussed from all points of view; but it is most unfortunate that such discussion cannot be carried on behind closed doors, — as was done, for example, at the First International Congress on Cancer held at Heidelberg last year, — until the scientific workers have something definite and conclusive to say to the world at large. The public has a right to know the results of all scientific research, particularly as it pertains to health and disease, and more particularly when the public's money defrays the expense thereof. But should they be overwhelmed with theories formulated in the laboratory, and frightened by specters that oft-times exist only in the microscope, or rather in the mind of the microscopist?

The laity have a way of settling these questions for themselves, and not infrequently the public at large reach conclusions and have settled convictions on medical subjects before the medical profession has really given them serious thought.

In this way it has come to pass that the "cancer problem" in some of its aspects is being settled by the laity for themselves; and it is being settled, unfortunately, in a manner that bodes ill for the cancer victim. At the present moment there is a special feeling of unrest, almost of terror in many instances, among those afflicted with cancer. Particularly is this true of persons associated in one capacity or another with these unfortunates. This has markedly increased within the last few months, at least in my own experience, which, I take it, is not unlike that of others who come in contact with cancer cases from day to day. It is a condition which confronts us, as clinicians, on all sides, and we should

face it fairly and squarely, in justice to all concerned.

In very many instances, which I might cite, and which are doubtless duplicated in the experience of others, I am plied with the question, "Is cancer contagious?" About a year ago I sent a graduate nurse to take care of a cancer patient; she went without demurring. Recently I called her for a similar case, and when told that the patient had cancer she absolutely refused to go, acknowledging that she had become afraid of cancer on account of its "danger," and declaring that she would never nurse another cancer patient.

A woman upon whom I operated last November for advanced recurrent carcinoma of the breast, and again in January for the removal of metastatic nodules, recently died. About two years ago, in the same home, her sister died of multiple sarcomata. When some tenants in the house (which is a large apartment house occupied only by the well-to-do) became aware of the nature of the second patient's malady they became alarmed, demanded that the woman leave, and even threatened during her last days to have her evicted.

Still another illustration of this growing fear of "catching" cancer came to my notice recently. I was called to see a patient afflicted with cancer who had been admitted to a small hospital in the Borough of Kings. Upon arrival I learned that the nurses, with the exception of the head nurse, had struck in a body, positively refusing to remain in the hospital if they were expected to care for this patient. Impressed by this incident, I asked the head nurse of one of the large metropolitan hospitals what, in her experience, is the feeling of nurses with reference to the care of cancer pa-

tients. Her reply was, "We are nearly all afraid of it."

A woman of intelligence called upon me recently in evident distress because her husband, believing cancer to be contagious, had become thoroughly alarmed and worried, upon learning that her mother, whom she had recently nursed in her last illness, had died of cancer. This wife came with the oft-repeated question, "Do you believe cancer is catching?"

Only a few days ago an acquaintance told me of a woman friend of hers who had been troubled for some time with intestinal symptoms. The friend had three aunts who had died of "internal cancer," and my informant said, "It is useless for the doctors to conceal the diagnosis, for of course with this cancer in the family she has the disease."

Not only has the watchword, "cancer is catching," gone forth among the more intelligent and well-to-do, but it has penetrated the ignorance and poverty of the tenements, and we find the poor, hard-working mother of the East Side groping in the darkness of despair with a new specter haunting her, — the fear of "giving" her own loathsome disease to her husband or children.

A short time ago a mother, in broken English, said to me, "You say grandma has cancer of the stomach?" "Yes," I replied, "and she has only a few days to live." Then she said, "I am burning all the rags and everything. If we keep her here will we give it to the children?" As she pointed to herself I knew the thought of giving the dread disease not only to the little ones about her, but to the unborn babe, was weighing heavily upon the mother's heart.

I might multiply many times examples of this growing fear of the contagiousness of cancer, but the above will suffice to show that it is no chimera,

but something very real in the minds of many.

This wave of unrest and fear will gather momentum as time goes on, unless checked by a counter-wave of common sense, and the lot of the poor cancer sufferer will be even more pitiable, if possible, than it is at present.

Let us, with unbiased minds, look for a moment at the evidence (or some of the evidence, for it is impossible in a paper of this length to do more than touch upon the more salient parts of the subject) from which this "nameless fear," this "cancer ghost," perhaps, has been conjured into such distressing reality in the public mind.

Three factors seem to play an important rôle, viz., (1) heredity, (2) congenital transmission, (3) infectiousness or contagiousness.

Heredity. — Bashford is of the opinion that heredity and inherited susceptibility are proper subjects for experimental inquiry, "which," he says, "will enable us to avoid the fallacies which are almost inherent in statistics based on the occurrence of cancer in man."

Delafield and Prudden ("Handbook of Pathological Anatomy and Histology") say: "While the influence of heredity is difficult to estimate, there are a few well-authenticated instances of the remarkable prevalence of malignant tumors in families within a few generations. The general facts, however, are not so striking. The statistics of Williams showed that in two hundred and thirty-five cases of carcinoma of the uterus or breast, about 9% gave a history of carcinoma in the father or mother, while in nearly 20% there was evidence of carcinoma in the family. In the estimates of other observers, the hereditary influence seemed evident in about one third or one fourth of the cases. It is, however, instructive in this connection to note that in a study of

Snow, of seventy-eight healthy persons, there was evidence of carcinoma in the family of about one fifth of the cases. It is clear, therefore," they continue, "that while such statistics are suggestive and on the whole indicate that an hereditary predisposition to the development of tumors may exist, this does not in any way account for the immediate incitement of the growth of tumors, and is, indeed, as Menétrier has urged, but one of many examples of hereditary predisposition which is observed in many forms of disease, such as infections, cerebral apoplexy, etc."

McFarland ("Textbook of Pathology") is of the opinion that "Heredity has considerable influence, certain families being particularly liable to mammary, uterine or gastric carcinoma, from which other entire families are free. It is only the predisposition that is hereditary, there being no evidence that the cause of the tumor passes from parent to offspring."

Roger Williams, who has done a great deal of statistical work on cancer with reference to inheritance, in 1892 reported 136 cases of carcinoma of the breast with a history of heredity in 29.2%. He reports 48 cases in 33 families. More than one relation was affected in eight cases; there was a history of carcinoma in the families of both father and mother in four cases; in 6% he found a multiple history in successive generations, and a direct inheritance in 8%. Among other cases cited Williams refers to the fact that the father, brother and two sisters of Napoleon all died of cancer of the stomach, to which disease Napoleon himself finally succumbed. Broca records sixteen deaths from cancer in a family of twenty-seven members. In the "Second Report of the Cancer Research Laboratory of Middlesex Hospital," Hillier and Tritsch, discussing "Heredity

in Cancer," quote the following as "either actually in favor of recognizing a hereditary causal factor or at least not opposed to it": Paget, Velpeau, Virchow, Baker, Roger Williams, Es-march, Billroth, Tillmann, Dietrich, and others.

Among those quoted in the same report, Moore, Harrison Cripps, Snow and Brand were not inclined to attach much if any importance to heredity as a causal factor in the production of cancer. "Brand reasons that the occurrence of cancer in several members of a family, whose parents have succumbed to it, cannot be accepted as evidence of heredity, but it can and ought to be accepted as evidence of infection from an obvious source." Snow attributes the disease not to inheritance, but to chance or infection.

In this connection may be mentioned the statement made by Chantemesse and Podwysotsky: "When the microbic nature of cancer becomes recognized, all the clinical history of that malady, its mode of propagation, etc., will correspond perfectly with its parasitic etiology. Heredity of the neoplasm will become then inheritance of a predisposition to allow of the implantation of the parasite."

Statistics might be multiplied *ad infinitum* to convince the doubting that heredity plays an important part in the etiology of cancer, but since most of these might apply with equal force to the side of infection, it would be profitless to quote more. It will be seen, however, from what has been given, that if the subject ever affords any conclusive evidence on either side it will be only after much further investigation than has yet been recorded.

Congenital transmission. — This subject is even more obscure than is that of heredity, and also furnishes a field for careful observation and study.

Accurate records of such study would doubtless help to clarify the present situation. On this subject Roger Williams says: "I have been greatly impressed with the large proportion of the neoplasms of early life that obviously arise in conjunction with embryonic developmental aberrations. I have found that the proportion of cases in which a history of heredity is recorded is considerably smaller than are the corresponding neoplasms of adult life; consequently I cannot corroborate Hutchinson's dictum that 'malignant disease in young persons is generally inherited.' The newly born infants of mothers, themselves the subject of malignant disease, are hardly ever thus affected."

Numerous cases have been reported of malignant neoplasms of supposed congenital origin, some of which are too vague in their details to be of much worth as evidence of the possibility of congenital transmission, while others seem to be of more value from a statistical point of view.

Dr. A. Jacobi, in 1869, reported the first of a very small number of cases on record of congenital sarcoma of the tongue. A swelling was first noticed a few hours after birth. It was the size of a hazelnut, on the left side of the tongue, one-half inch back from the tip. The tumor was removed by galvano-cautery and microscopic diagnosis of sarcoma made.

Nélaton observed a fibroplastic tumor in a child three days old.

The case reported by Williamson (London and Edinburgh *Monthly Journal of Medicine*, 1841) has been extensively quoted. This was supposedly a congenital cancer of the stomach. The child was apparently healthy at birth, but in a few days began to vomit and become emaciated. This continued until death, which occurred at the

end of five weeks. Autopsy showed the pylorus to be hard and indurated, with the orifice almost closed. The author designates the condition as "scirrhus of the pyloric extremity of the stomach." This was probably a simple hypertrophy rather than a cancer.

Widerhofer, Chiari, Cullingworth, Kuhn, Billroth, Dawson and others report cases of so-called congenital cancer.

Contagiousness or infectiousness. — Belief in the contagiousness or infectiousness of cancer seems to rest chiefly upon four things, viz., (1) the theory of the contagiousness or infectiousness of malignant tumors in mice, based upon the supposed parasitic origin of the disease; (2) the transmissibility of the Jensen mouse-tumor; (3) inoculation experiments; (4) the reports of cases in human beings of coexistent or coincident cancer, supposedly the result of accidental infection.

Apropos of the *first* category we are reminded of the words of the eccentric professor in the University of Prague, Ferdinand Hueppe, who said: "According to the *theatrum diabolorum*, the view prevailed in the Middle Ages that 'every sin is under the control of and operated by a particular devil'; at present each disease in similar fashion has its own devil in the form of a specific bacillus. Beelzebub, the god of invisible evil flies, is peculiarly the protecting patron of the 'specific' bacteriologist."

Of this category, too, Beard, of Edinburgh, says: "Neither in Edinburgh, nor in London, nor in Copenhagen, has the Jensen mouse-tumor been found to be contagious at all! It is only in places where a new cancer-parasite is in keen request and in urgent demand that Jensen's mouse-tumor acquires contagious properties.

These are in direct proportion to the researcher's faith in cancer-parasites!"

In this connection, also, Bashford and Murray (*Lancet*, March 23, 1907) say, "We have observed the effects of inoculating 60,000 mice with carcinomata. The animals have been kept under painstaking observation. The development of tumors that could be referred to infection or contagion has been observed in *not one single instance.*" Ehrlich's experience agrees with that of Bashford and his co-workers. Again, they say, "The housing of mice suffering naturally from cancer with normal animals has yielded no evidence of infection or epidemics, although our observations have now been extended over a longer period than any previous investigations, and much longer than a mouse lives." (The life-span of the mouse is about three years.)

"The positive statements," they continue, "made in regard to infection when small animals suffering from cancer are housed with normal animals can be referred with confidence to (1) fallacious observations; (2) erroneous deductions . . .; (3) unwarranted assertions by those without personal experience." "The very positive statements about infection in the case of mice are at present devoid of all scientific value."

While the majority of laboratory workers in the various centers seem to agree with the views just outlined, Gaylord, Park, Clowes, Lyon and a number of others are promulgating the idea of the infectiousness of cancer, basing their views largely upon the belief in the parasitic origin of the disease. The careful and painstaking work done by these men is too familiar to all to need review for the purposes of this discussion.

J. George Adami, Professor of Pathology, McGill University, sums up the main arguments

for the parasitic origin and infectious nature of malignant growths in part as follows:

1. Increase in frequency of malignant tumors.

2. The incidence of the disease is frequently found to be peculiarly local — certain districts and houses.

3. The lesions produced by the growth of malignant tumors within the organism are comparable with those induced by certain known infective agencies.

4. The more carefully material from malignant tumors is examined, the larger is the proportion of cases in which certain intracellular and extracellular bodies are to be recognized.

5. While the cases on record of apparent direct infection from one individual to another are so rare as to be explained by the law of chance and as being but the coincidental occurrence of the same disease in two associated individuals, and while the experimental inoculation of fresh cancerous material from one individual to the other (whether these be of the same or different species) has almost uniformly failed, nevertheless, in rare cases this would have appeared to have succeeded. "Two factors," he says, "are necessary for successful experimental inoculation, — the virulence of the parasite and the susceptibility of the tissues. To this lack of susceptibility is to be attributed the frequent failure of experimental inoculation."

It may be seen at a glance how some of these arguments in favor of the infectious origin of cancer may be used with equal reason, apparently, by those who do not accept this view of the question, and how some of the statements are contradicted by competent observers. For example, concerning the increase in cancer, Bashford (*Lancet*, Sept. 15, 1906) says that an investigation

into the statistics of cancer incidence with the Registrar-General showed that there was no increase of cancer and no evidence of endemicity in cancer. The observation of the intra- and extra-cellular bodies is claimed by some to be due to errors in staining, and that with the same methods the same bodies are to be found in normal tissue. However that may be, Gaylord, in the report of the Gratwick Pathological Laboratory for 1900, says: "We are prepared to state (from examinations of organs from cadavers who have died from cancer) that all organs, including the blood, taken from all cases dying of cancer, including sarcoma and epithelioma, contain large numbers of the organisms" (parasites).

Again, susceptibility of the tissues argues equally well for those who believe in hereditary predisposition to cancer.

From the above cursory glance at this phase of the question it may be easily seen that etiology is in a maze of doubt and uncertainty, and that there is little, if anything, sufficiently well established to be given over to the medically uneducated, to be warped and distorted according to the individual's susceptibility and credulity.

Of the *second* category mentioned, Bashford says: "The experimental propagation of a malignant new growth means nothing more or less than the continued proliferation of the cells of a tumor of one animal in another animal. . . . The process is as remote from being of an infective nature as that responsible for the natural formation of metastases in organs remote from the preliminary site in sporadic cases, with which it is strictly comparable." Jensen himself holds that tumors developing after transplantation of tissue in mice are direct genealogical descendants of the cells introduced.

Concerning this particular matter another note is sounded by Roger Williams and others who are of like opinion. He holds that the Jensen mouse-tumor differs *in toto* from cancer or any form of human malignant tumor. The differences are summed up by Williams in substance as follows:

(1) The Jensen mouse-tumor is highly contagious; thus, when infected animals are introduced into cages with healthy animals the latter take the malady, as if by local contagion, sometimes in such numbers as to constitute veritable epidemics. Nothing like this occurs with human beings. (We have already seen how radically this differs from the views of Bashford and his co-workers. It coincides, however, with the observations of Gaylord and others.)

(2) "Jensen's tumor" is readily transmissible by implantation to other mice, the proportion of successful experiments often being as high as 30%. No such property is ever manifested by human cancer.

(3) "Jensen's tumor" in over 20% (Clowes) undergoes spontaneous cure, and the cured animals are then immune to further contagion. With human malignant tumors no such spontaneous curability has ever been scientifically demonstrated, although sometimes alleged. (This calls to mind the work of Gaylord and his co-laborers in immunity.)

(4) "Jensen's tumor" is circumscribed and easily enucleable, the tissues of the host forming no part of it; moreover, the latter do not acquire cancerous properties, nor do they become interpenetrated by injurious processes of the neoplasm.

(5) "Jensen's tumor" causes no cachexia. (In this Bashford agrees.)

(6) According to Apolant and Ehrlich, "Jensen's tumor" in the course of experimental transmission often changes its type — from epithelial to sarcomatous, etc., — and Morau found, under similar circumstances, that its physiological type also changed, with corresponding alteration in its power of inoculability.

The *third* category, inoculation experiments, gives little unanimity of result. Early in the last century Alibert, Bielt and others made attempts to inoculate themselves and other persons with cancer, but were uniformly unsuccessful. Experiments with the inoculation of human cancer into animals have been made by Lagenbeck, Lang, Mayet, Bosc and Vedel, and many others, with doubtful success in the majority of instances, and failure in many. Gaylord inoculated guinea-pigs with peritoneal fluid from a human abdominal tumor, and found in the lung of one of the animals what he pronounced adenocarcinoma. A dog inoculated by him with peritoneal fluid from a similar case was killed after ninety days, when numerous nodules were found in the liver. These he considered to be new formations derived from the liver epithelium. There seems to be no proof of the reproduction of the original type of cancer. Many experiments have also been made with the inoculation of animals with cancer preparations from other animals of the same or different species, successful results being reported in many instances. This subject, however, is no exception to the rule of insufficient evidence.

Bearing in mind the conflicting opinions hereinbefore given among men who, by virtue of their splendid facilities for experimentation, should be best able to form conclusions, let us turn for a moment to the *fourth* reason given in many

quarters for the belief in the infectiousness of cancer, viz., reported cases of coincidental or coexistent cancer in human beings. The opponents of the theory brush these aside with age-incidence, coincidence, environment, etc., which seem to them adequate to account for the individual cases of this class. And it is interesting to note that the cases considered, on the one hand, to be instances of cancer contagion or infection, are, on the other, considered excellent examples of hereditary cancer, or predisposition to cancer development.

Cases of "transference" or "transplantation" from one locality to another in the same individual are reported by Bergmann, Newman, Shattuck and others, but these are relatively very rare, particularly in the light of the fact that the surfaces of the body contiguous to the cancer are bathed more or less in the discharges from the malignant area, and would seem, therefore, to be particularly liable (unless it be believed that the individual has become self-immunized, as it were) to infection thereby.

More frequent are the instances of cancer co-existent or coincidental in persons closely associated. And here, it would seem, a number of factors other than infection must be considered, such as age-incidence, environment, heredity, etc.

Handley reports the case of a husband who developed cancer of the breast within a year of his wife's death from cancer of the uterus. Lyon mentions four cases, in two of which the husband and wife lived together and died, in the same house, two and five years apart, and two in which husband and wife lived together but died in different houses, three and eight years apart. In one instance there was a family history of

cancer for each, in two instances for one only, and in the remaining instance no history of cancer in the immediate family was obtainable. In none of these was there cancer of the genitals. A case in my own practice was that of a woman, fifty-one years of age, with cancer of the body of the uterus, whose husband, two months older, has cancer of the bladder.

I may mention in this connection an interesting case reported by Childe. Two sisters were found to be suffering simultaneously with cancer of the lower bowel. Inquiry elicited the fact that they lived in close companionship for many years, occupying the same bedroom all the time, and for the most part the same bed. Following up the histories of these sisters the fact was revealed that a year later a third sister, who had lived apart from the other two, visiting them only occasionally, was the subject of cancer in the same region. Had not the third sister developed cancer the cases of the other two would have been beautiful examples of infection. Childe considers the probability of the third sister "catching" the disease from the others as extremely doubtful, and that the three cases taken together rather support the theory of heredity.

Roger Williams considers the cases of co-existence of cancer in husband and wife so few as to furnish no evidence of contagion. He further states that the children of cancerous mothers have never been known to have acquired the disease, even when the placenta, uterus or other parts of the genital tract have been the seat of the malady. He concludes, from his own observations, that cancer is essentially non-contagious.

The only two cases of alleged infection among surgeons which have come to my notice are reported by Guermonprez, he himself being the

victim in one instance, developing a papilloma of the finger (previously injured) which resisted the cautery for nineteen months. The nodule developed subsequent to an operation upon a patient with epithelioma of the face. The other case which he reports is that of a surgeon who examined a woman with cancer of the uterus while he had an acne pustule on the examining finger. He subsequently developed cancer of the finger. These cases carry little weight, first, because they are so inadequately reported, and, second, because so very rare in view of the thousands of surgeons, of "cancer experts," of nurses and hospital attendants, as well as friends and relatives of cancer victims, who for years have come in contact with cases of cancer, cancer of all kinds and in all stages of development, without becoming infected. The one case, which was exploited in the press a few months ago, of the daughter or niece of one of the above-mentioned "experts," who became a nurse in his "cancer hospital" and subsequently contracted cancer, may or may not be a significant case, but circumstantial evidence, I should say, is overwhelmingly against its being of any value as evidence.

Another coincidence which is, perhaps, not *mal à propos* in this connection, was recently brought to my notice by a woman physician who happens to be a great lover of animals. During her medical schooldays, in another city, a pet mouse (a common gray house-mouse), which was kept in a cage made expressly for it, developed a "sore" extending from the last nipple around to the vertebral column. Upon death by euthanasia of the little animal, autopsy revealed the fact that the "sore" was cancer. Shortly after the death of the mouse a fan-tailed goldfish, which was kept in an aquarium in the same

apartment, developed an ulcer in relatively the same position as that occupied by the cancer in the mouse. Autopsy in this case also showed the malignant nature of the growth. During this time the owner of the mouse and fish came in almost daily contact with a woman on the same floor who was a victim of a distressing cancer of the uterus, for which she underwent operation about this time, subsequently dying in her apartment. There was no question of the malignancy in the woman's case, and the animal autopsies and microscopic examinations were performed by a pathologist of acknowledged ability. An interesting feature of the instance cited is that the woman had passed the menopause, the mouse gave birth to a premature offspring shortly after she became a captive, probably being within the pale of age-incidence, and the goldfish, in the words of the pathologist, was "full of eggs," so that she, too, doubtless came under the category of age-incidence in the female.

Finally, in this connection, I wish to call attention to five cases reported in the *New York State Journal of Medicine*, April, 1906, by Dr. Samuel Lloyd, of New York. These cases are cited not because they are of any clinical or statistical value as given, but rather because they, and the theorizing which they seem to suggest, are striking illustrations of the kind of published matter which has helped to render the "cancer problem" such a complex question. The cases are quoted *verbatim* below:

"Man, an engineer, had a cancer of the tongue from which he died. The night engineer working in the same place came to me about one year later with cancer of the anterior pillar of the fauces. They had used the same drinking cup for several years.

“ Man died in Bellevue Hospital of cancer of the stomach. Within two years the wife was operated upon by me for a cancer of the breast.

“ I also operated upon a case of cancer of the stomach in a man whose father had died of cancer a few months previously.

“ Woman died of cancer of the breast. Two years later I operated upon the sister, who had nursed her, for cancer of the stomach. There were no previous cases of cancer in the family.

“ Physician's wife operated upon for cancer of the stomach. The doctor himself, within a month or six weeks after his wife's death, developed a cancer of the lower jaw and died the first of the present year.”

In the article referred to, Lloyd quotes from Orth, who believes “ every cancer must be designated as an epithelioma,” and goes on to say that if this be true, why look further for the cause of cancer. He (Lloyd) reasons that if we shed our normal epithelial cells, so do we our abnormal ones, and the latter, “ like the desquamation scales of scarlet fever, are blown hither and thither until they find a resting place in some crack or crevice of the body, to become a veritable cancer graft.” Lloyd continues thus: “ If these views are correct, then the obvious conclusion is that in order to control the spread of cancer it becomes essential to do something to prevent the dissemination of whatever element communicates the disease. It is probably impossible to completely segregate the victims of this disease. But the public should be educated to consider it as contagious.” I wish to lay especial emphasis upon the last sentence quoted, viz., that the public should be educated to consider cancer contagious. In this day of the precautionary handling of all matters pertaining to health it is

surely within the bounds of conservatism to insist upon the greatest care in the management of cancer cases, just as is the custom, for example, with tuberculosis, but to advocate the teaching of the contagiousness of cancer to the already over-burdened public, with nothing really proven to substantiate such teaching, seems to us not only unscientific, but decidedly atavistic. Such teaching, emanating from the medical profession, to whom the world must look for enlightenment and help in matters pertaining to public health, would be far-reaching and perhaps brutalizing in its effect, suggesting to our minds the habits, transmitted from lower animals to lower man, of destroying the imperfect and unfit of the species. It would tend to place the cancer victim in the same category with the leper of old — and the leper of to-day — who hears on all sides the cry, "Unclean, unclean!" The fear and anxiety thus inculcated in the minds of the predisposed (granting there be such a thing as inherited predisposition to cancer), and the added mental strain imposed upon the cancer victim himself, would, it seems to us, more than counterbalance the good effect of the precautionary habits which such teaching would stimulate in the public at large.

Still another and perhaps more distressing element of fear and doubt is being given temporary impetus through published articles concerning the question of the curability of cancer. The laity have long been more or less skeptical on this point, and it is not uncommon to hear it said, "Oh, well, if it is not cancer, it will do no harm; and if it is cancer, it can't be cured; so what is the use of an operation." And thus believing, they are added in time to the category of "inoperable," or, at best, "advanced" cases of cancer, with

metastases a practical certainty even in the event of radical surgical procedure. Childe has aptly said, "The alarm that exists to-day is begotten of ignorance, is a counsel of despair and deadly delay." If the public is to be enlightened with reference to this momentous cancer problem, let it not be through the promulgation of too positive assertions of the infectiousness of the malady, nor yet by the "explosive exploitation" of every new remedy which comes into notice.

Far be it from me to decry the application of the scientific test to every method of treatment which seems to merit consideration; let each one be tried by those competent to do so, but while this process of elimination is going on, the importance of *early* operation should be borne in upon the intelligence of the public as the only *demonstrated* means of cure in the vast majority of cases. The sweeping assertions, however, of men like Robert Bell, of London, who claims that *no case* was ever cured by surgical means, can nullify in the minds of the public the experience of years of conscientious work on the part of others, for we all know how prone the laity are to magnify failures and lose sight of successes. In the *Medical Record* of Feb. 16, 1907, Bell says, "It must be obvious to every observer how miserably surgery has failed to give relief in cancer"; and further he refers again to surgery, "which," he says "every one knows has seldom given permanent relief, and usually succeeds only in aggravating the suffering and shortening the life of the patient." In the *Dietetic and Hygienic Gazette*, March, 1907, the same author, referring to a recent article by Senn, boldly challenges "Dr. Senn or any other surgeon to point to a *single case of cancer* which has been operated upon in which recurrence has not taken

place at the very seat of operation, and usually, in the first instance, in tissue which was non-existent prior to the operation, viz., the cicatrix."

A review of the statistics of recurrence based upon the three-year limit gives abundant proof of the fallacy of such radical statements as those above quoted, and proof is not lacking even when the limit is run up to ten, fifteen or even more years. In my own experience, which is not of very long duration, I can recall, without reference to my records, numerous cases in which patients operated upon for cancer, which was demonstrated both clinically and pathologically, have lived three years and more without recurrence, and in perfect health. A striking case in point is that of a man, forty-nine years of age, who was operated upon by me for carcinoma of the tongue and glands of the neck. At the first operation, March 11, 1903, many cancerous glands were removed from the region of the tonsil on the left side to the dome of the pleura, and on the right side from the tonsil to the division of the carotid artery. At the second operation, March 28, 1903, the tongue was removed *in toto*. The wounds in each case healed by primary union, the patient was discharged in excellent condition, weighing ten pounds more than when he was admitted to the hospital. Despite the fact that he has several times been reported in the press as dead, he is alive to-day, perfectly well and strong, weighing forty pounds more than when operated upon. He eats, drinks, talks, sings, smokes, — and, as he says himself, does "anything anybody else can do." He is safely beyond the three-year limit, and present indications point to his living out his allotted span free from the dreadful condition from which, I am convinced, nothing but radical surgery could have saved him.

Another case, a woman of fifty years of age, fifteen years ago had one breast removed for carcinoma, and four years ago the other breast was amputated for the same condition. Last year she had a complete hysterectomy for multiple, non-malignant fibroids, but otherwise has been perfectly well and able to do her work.

A nurse while in India developed cancer of the breast, came to this country and subsequently consulted me. I advised immediate operation, and during my absence from the city she went to Philadelphia at my urgent request and was operated upon by Keen. She returned two years later to India, and at the end of three and a half years more died of dysentery. It was her expressed wish that a full autopsy be made to determine whether there was any malignancy present; this was done, and the report was that there was absolutely none.

A man, operated upon four and a half years ago for sarcoma of the axilla and forearm is to-day perfectly well, with no sign of recurrence.

A woman developed cancer of the breast during an attack of double pneumonia and pleurisy. While attending her during this illness I was able to watch the development of a tumor in the breast. When she had sufficiently recuperated from the pneumonia and pleurisy, she was operated upon, April 19, 1902, a complete Halsted operation being performed. She is now perfectly well.

Another case which was brought to my notice some time ago was that of a woman, over sixty years of age, who was operated upon twenty-four years ago by Byford, of Chicago, for cancer of the uterus, a complete hysterectomy being done at that time. The diagnosis was subsequently verified microscopically. She is now well and strong.

In a paper read at the recent meeting of the American Surgical Association at Washington, on the subject of "End Results Following Operations for Carcinoma of the Breast," Halsted expressed the opinion that all statistics should exclude the totally inadequate operations. Following this rule, he said that of 89 cases of cancer of the breast operated upon at Johns Hopkins Hospital, 43% were free from recurrence at the end of three years. Of 110 cases with axillary involvement, 25% remained cured; of 101 cases with cervical gland involvement, only 7% had remained cured.

The cases above mentioned might be multiplied many times. They are doubtless duplicated in the experience of every surgeon who operates for cancer and who takes the trouble to follow up his cases. The literature abounds with statistics culled from the experience of the world's greatest surgeons which prove the fallacy of the statement that cancer cannot be cured by means of surgery. As Childe has said, "*It is the positive cases which are cured that prove cancer curable. The negative cases in which it returns prove nothing with regard to its curability.*"

Thus a brief view of some of the more recent literature of the subject of cancer reveals to the open mind the chaotic state of our knowledge concerning the causative factors involved in the production of malignant disease. Much valuable experimental work has been done along different lines in the various research laboratories, and doubtless the future will see the mists of uncertainty cleared away; in the meantime, clinicians should supplement the work of the laboratories by keeping careful records of all cases and by following up the after-history as far as possible. We have seen of how little statistical or scientific

value are many of the cases reported, and there comes to mind the plan, said to be adopted by the British government, of offering a money prize to all hospital physicians within the British empire who give accurate reports of cancer cases, and of fining physicians in the employ of the government who fail to do so.

In the light of our present knowledge, what may we, with due conservatism, say to our patients and to their friends in answer to their eager questioning concerning this important subject? The following points, I believe, may be safely adduced from the mass of conflicting evidence, and, until such time as the "cancer problem" shall be solved, will lead no one into danger:

(1) That the hereditary and congenital acquirement of cancer are subjects which require much more study before any definite conclusions can be formulated concerning them.

(2) That in the light of our present knowledge they hold no special element of alarm.

(3) That the contagiousness or infectiousness of cancer is far from proved.

(4) That evidence to support the theory of contagion or infection is so incomplete and inconclusive that the public need not concern itself with it.

(5) That the public need merely be instructed to apply the same precautionary measures as should be brought to bear in the care of any ulcer or open wound.

(6) That the danger of the accidental acquirement of cancer is far less than from typhoid fever, syphilis or tuberculosis.

(7) That in the care of cancer cases there is much more danger to the attendant of septic infection, of blood poisoning from pus organisms, than from any possible acquirement of cancer.

(8) That the communication of cancer from man to man is so rare, if it really occurs at all, that it can practically be disregarded.

(9) That in cancer, as in all other disease, attention to diet, exercise and proper hygienic surroundings is of the utmost importance.

(10) That cancer is local in its beginning.

(11) That, when accessible, it may, in its incipency; be removed by radical operation so perfectly that the chances are overwhelmingly in favor of its non-recurrence.

(12) That once it has advanced beyond the stage of cure, in many cases suffering may be palliated and life prolonged by surgical means.

(13) That while other methods of treatment may, in some cases, offer hope for the cancer victim, the evidence is conclusive that surgery, for operable cases, affords the surest means of cure.