without a catheter, with some mild antiseptic solution, for its tonic effect on an irritated membrane. There is no further obstruction; the bladder is emptied completely at each uri-

nation, and the stream is free and easy. The prostatic specimens removed are shown herewith.

Century Building.

THE INCREASE OF CANCER.*

By WILLIAM B. COLEY, M.D.,

Clinical Lecturer on Surgery, College of Physicians and Surgeons; Assistant Surgeon in Hospital for Ruptured and Crippled; Attending Surgeon to General Memorial Hospital.

New York.

It is a remarkable fact that a disease so widely prevalent as cancer and one that has from time immemorial held first place in the amount of suffering that it inflicts upon its victims, and is now approaching front rank in the number of those victims, should have received such meagre attention from both local and national boards of health. Anti-tuberculosis leagues have become universal, government boards of health and scientific medical bodies all over the world have long since instituted a well-organized campaign against the white plague, with results that even now justify the hope of speedy control with the possibility of ultimate conquest. While much has been written upon the question of the increase of cancer, many of the papers have been attempts to explain away the figures of the vital statistics, which in every civilized land during the last half century have shown a steady increase in the number of deaths from cancer.

The purpose of the present paper is to go over the evidence at present at our command, in the hope of arriving at some conclusion as to whether cancer is increasing or not.

Roger Williams, in his recent book on the *Natural History of Cancer*, states that the disease has doubled in frequency in periods ranging from twenty to thirty years, the annual increase averaging from 3 to 5 per cent.

Williams refers to the unique statistical study of cancer made by Ekblom (*Hygieia*,

January, 1902,) for the small Swedish town of Fellingsbro. Taking the average for the first and last decennial periods of the century, he showed that the cancer death rate increased from 2.1 per 100,000 living in the former period, to 118 living in the latter.

The only statistics in Great Britain which compare with these statistics as regards the period of observation, are those of the Scottish Widow's Life Insurance Fund (Edinburgh, 1902). The records of this Fund show the proportion of deaths due to cancer to the total mortality among males since 1815:

	Per cent
1815 to 1844	0.92
1845 to 1858	1.79
1859 to 1866	3.00
1867 to 1873	4.56
1874 to 1880	4.93
1881 to 1887	5.44
1888 to 1894	6.38

The records of the German Life Insurance Company strikingly confirm the foregoing figures. The cancer mortality among males from 1885 to 1889 amounted to 3.7 per cent. of the total deaths, and among females to 11.4 per cent.; from 1889 to 1895, however, the ratio was 11.4 for men and 12.9 for women.

In England and Wales the later statistics have separated the rural population from the urban. The cancer rate in the rural districts seem to have suffered much less than in the urban. Considerable difficulty, however, results from the fact that a number of rural cases of cancer go to the city for operation,

*Abstract of paper read by title at the Southern Surgical and Gynecological Association at Hot Springs, Va., Dec. 12-15, 1909.

thus adding to the mortality of the urban population by at least the number of such cancer patients as die from operation. It is probable that the majority of patients who come to the city for operation and recover return to their respective homes, where they remain until death.

During the last six years, in England and Wales, 176,019 persons died of cancer. Of these, 104,418 were females and 71,601 males. Of 10,000 males dying of cancer, 2,172 had cancer of the stomach; of 10,000 females, 2,259 had cancer of the uterus. Of the males who died of cancer in this period, 43,092 died of cancer of the intestinal tract: Stomach, 15,553; intestine, 5,439; rectum, 7,277; esophagus, 4,505; liver and gall bladder, 9,328.

London, per 100,000: 1851 to 1860, 42; 1861 to 1870, 48; 1871 to 1880, 55; 1881 to 1890, *8; 1891 to 1900, 85; 1901 to 1904, 92.

Berlin, cancer and tumors: 1881 to 1885, 55; 1886 to 1890, 65; 1891 to 1895, 75; 1896 to 1900, 85.

French statistics show that the increase has been general, and not an increase of obscure internal or abdominal cases that could be accounted for by increased accuracy in diagnosis.

CANCER DEATH RATES.

Among the places showing the lowest death rate from cancer in the State of New York are: Hudson, 36.8 per 100,000; Little Falls, 17.5 per 100,000; Ithaca, 156 per 100,000; Johnstown, 115 per 100,000.

In New York City in 1908 the rate was 75.4 per 100,000.

The difference in the different boroughs of New York is noteworthy:

In the borough of the Bronx the rate is highest, being 95.8; it is lowest in Queens, namely, 68 per 100,000.

The mortality of the white and colored population, under the same conditions, in New York City is practically the same, viz., 75.4 white; and 71.8 colored.

The death rate of the colored population shows most extraordinary differences in the

different boroughs: In Manhattan borough it is 57.5 per 100,000; in Bronx, 244; in Richmond, 150.

It is very difficult to explain these differences, especially as the general cancer death rate throughout the South is distinctly lower in the colored race than in the white. It is also lower in New York City in general.

The marked, constant, and general increase in the death rate from malignant growths in the twenty-eight principal cities of the United States from 1883 to 1907 is clearly shown in a paper by Roy F. Edwards.¹ These 28 cities,

¹Medical Record, December 18, 1909.
in 1883, with a total population of 6,097,585, showed 2,960 deaths, or a rate of 48.5 per 100,000 living. In 1895 the population of these cities was 9,157,682, with 5,377 deaths from cancer, or a rate of 58.7 per 100,000 population. In 1907, with a population of 12,524,695, there were 9,686 deaths from cancer, or a rate of 58.7 per 100,000 population. In 1907, with a population of 12,524,695, there were 9,686 deaths from cancer, or a rate of 77.3 per 100,000. Thus, in a period of twenty-four years the death rate increased from 48.5 to 77.3 per 100,000.

These figures were taken entirely from local bureaus of vital statistics. Actually, the death rate from cancer is far greater than the rate shown by the vital statistics, for the reason that there is prevalent among the laity a strong prejudice against the name cancer, the result being that in many cases of death from cancer, especially metastatic cancer with internal complications, the family physician, out of respect for this feeling on the part of the family, will assign some of the secondary causes in place of the actual primary cause of malignant disease.

The great extent to which this is true has recently been shown by Guilliot, of Reims, France, who made a careful comparative study of the number of cases certified to have died of cancer, and the actual number known to have died of cancer in a given locality in a given period of years, and found that the num-

ber who had actually died of cancer was exactly double the number certified to have so died.

American Average per 100,000 Population.									
	1900								
	1904	1901	1902	1903	1904	1905	1906	1907	
Cancer.	109	101	102	103	104	105	106	107	
Reg. area.	66.5	64.5	68.3	68.6	70.6	72.1	73.1	74.1	75.1
Boston . . .	89.6	88.2	87.5	89.2	95.1	105.6	106.1	104.6	104.6
Mass'etts . .	82.0	82.0	86.7	85.0	86.3	92.9	90.3	93.5	93.5
San Fran. . .	124.0	115.2	128.3	125.3	134.3	125.0	125.0	125.0	125.0
Indiana . . .	47.0	44.0	47.0	49.0	50.0	55.0	53.7	57.1	57.1
Vermont . . .	81.9	70.0	69.0	95.1	87.0	84.2	85.3	92.0	92.0
N. Y. City . .	65.5	69.0	66.0	69.5	71.1	72.0	74.0	76.3	76.3
New Hav'n . .	79.4	71.9	82.4	82.4	82.4	82.4	82.4	82.4	82.4
Prov., R. I. . .	86.8	86.9	87.2	87.2	87.2	87.2	87.2	87.2	87.2
Registration area, 1900	36,816,581								
Registration area, 1907	41,735,837								
Estimated population, 1907	85,532,761								
Lowest Rates of Cities in the United States.									
Louisville, Ky.	50.1								
Paterson, N. J.	50.1								
Detroit, Mich.	65.1								
Highest Cities.									
San Francisco	125.0								
Boston	104.0								
Providence	108.7								
Lowest rates, Indiana, average 1901 to 1905	43.5								
Highest rates, Maine, average 1901 to 1905	86.7								

Deaths from cancer registration area in the United States for 1907 was 30,514, or 1,494 more than in 1906, and a rate of 73.1 in 1907, compared with 70.8 in 1906. Estimated deaths from cancer in the United States for 1907 was 63,508.

"The crude death rates from cancer continue to increase, and slightly higher rates are recorded for each main subdivision of the registration area. For the year 1908, 33,465 deaths from this disease were returned, and the death rate was 74.3 per 100,000 of population, as compared with 30,514 deaths and a death rate of 73.1 for 1907."

Schuster,¹ in his statistical study of carcinoma, shows the death rate from cancer between 1863 and 1867 to have been 7.14 per 10,000; from 1873 to 1877, 10.39; from 1893 to 1897, 12.21; from 1903 to 1907, 14.76.

According to K. Sato,² of 64,030 patients treated in Japanese hospitals, 1,372, or 2.14 per cent., suffered from cancer. The proportions in which the various organs were affected are as follows: Uterus, 33.53; stomach, 32; intestines, 6.2; breast, 5.69; skin, 2.17; esophagus, 1.53 per cent.

Various attempts have been made from time to time, particularly by Newsholme and his

followers, to question the reality of the increase of population, but, as Williams has pointed out, while the population of Great Britain doubled between 1850 to 1905, the cancer mortality increased six times.

Another explanation of the increase of cancer which has been more widely accepted is, that during recent years, due to improved hygienic conditions, a larger number of people have reached mature life, or the cancer age, and for this reason a larger number would be affected by cancer. Williams' reply to this is that the saving of life in modern times has been almost entirely confined to the precancerous period, the death rates of males over thirty-five years and of females over forty-five years having remained almost stationary, while the proportion attaining old age has decreased.

The objection so strongly urged by Newsholme is that the increase of the cancer death rate is due chiefly to improved methods in diagnosis.

This objection was answered many years ago by Mitchell Banks, one of the most careful students of cancer in Great Britain, and a man of wide experience. Banks stated that while the diagnosis of cancer in its early stages is probably made much more frequently now than in former times, it required little skill to make the diagnosis at the time of the death of the patient. The diagnosis at such a time was by no means beyond the ability of even the rural practitioner of fifty years ago.

Williams further points out that the increase has been far too uniform and steadily progressive during this long succession of years to leave any basis for such an argument, and, taking the increase over the entire period, he believes it to be so enormous as to make the explanation seem far-fetched. While it is possible that improved methods in diagnosis may add slightly to the total cancer death rate, Williams points out that these very improvements in diagnosis may also cause subtractions

¹Department of Commerce and Labor, Bureau of
²Gann. Results of Cancer Research in Japan, 1907.

the Census, 1908, Bulletin No. 104.

from it, and he shows that in the report of the Registrar-General as late as 1880 such diseases as fibroid tumor, polypus, and lupus were usually classed as cancer. Since then these diseases, as well as a number of other conditions at one time regarded as malignant, have been assigned to other causes.

A careful study of the whole subject shows the increase to be a general one and not limited to a few parts of the body. In other words, intra-abdominal or inaccessible cancer, which would be the type most likely to be affected by improved methods of diagnosis, shows even less relative increase than external cancer. In 1868 the death rate for cancer of the stomach per 1,000,000 living, thirty-five years and upward, was 283.65 for males and 193.45 for females. In 1888 the rate had increased to 346.15 for males and 277.75 for females, making an increase of 22 per cent. for males and 44 per cent. for females; but in this particular period the death rate of cancer in general had increased 50 per cent.

The greater death rate of malignant disease in women is due to the large number of cases which occur in the breast and the uterus. In all other localities the liability in the male is much greater than in the female.

Cancer has already increased to such an extent that at the present date it causes more deaths among women than tuberculosis, in 1905 the rate being 100 cancer deaths to 94 from tuberculosis. Even taking men and women together, and at all ages, the death rate from cancer is rapidly approaching that of tuberculosis. From 1851 to 1860 the death rate per 1,000,000 living was 317 for cancer, 2,676 for phthisis, and 807 for other tuberculous disease; while from 1891 to 1900 the rate was 734 for cancer, 1,391 for phthisis, and 619 for other tuberculous diseases.

That the death rate of cancer is often much higher among the rich and well-to-do is shown by some of the Irish statistics. In prosperous Armagh the rate was .104, while in poverty-stricken Kerry, it was as low as .26.

In Switzerland we have a low tuberculosis

mortality, but an exceedingly high cancer death rate; and even here the rate is steadily increasing, having risen from 114 in 1889 to 132 per 100,000 living in 1898. Here two-thirds of the people are engaged in industrial and commercial work and only one-third in agriculture.

Williams states there are no millionaires in Switzerland and no paupers; prosperity is more widely diffused than even in France.

In Denmark the mortality from cancer is 130 per 100,000 living, with a phthisis rate of 150.

In studying the statistics of France we have to consider that they are based entirely upon urban population, excluding the rural populace, thus covering only 12,000,000 out of a total of 39,000,000. The population of France has remained relatively more stationary than in most other countries of which statistics exist, and yet the death rate of cancer shows the same constant increase as elsewhere. In Paris the death rate of cancer in 1865 was 84; 1870, 91; 1880, 94; 1890, 108; 1900, 120.

The towns above 10,000 show, in 1887, 76; 1890, 91; 1895, 100; 1900, 106.

In Australia the death rate per 100,000 living has been as follows: In 1851, 14; 1861, 19; 1871, 25; 1881, 32; 1891, 45; 1901, 57.

The Australian statistics show a remarkable difference between the Australian-born and British and foreign population. Of the former, 58 in 100,000 living died of cancer, against 137 of the British and foreign-born.

There is much difference of opinion as to the frequency of cancer in China, but there is no question that the Chinese in other parts of the world suffer severely from the disease. In 1900 the rate among Chinese in Australia was 72 in 100,000. On the other hand, among the Australian natives, *i. e.*, the aborigines, which in 1891 numbered 60,000, cancer is very rare.

Medical men who have lived among the Pacific Islanders for many years state they have never seen a case of cancer.

In Ceylon and Java the cancer mortality is very low. This, however, may be partly ex-

plained by the fact that the death statistics are very incomplete, the causes of death in the large majority of cases not having been medically certified.

In nearly all the countries from which reliable returns have been obtained the cancer mortality has shown a general tendency to increase in recent years. On the other hand the statistics of tuberculosis show 56,841 deaths, or 6,041 less than the average for ten years.

The cancer statistics of last year show 31,668 to have died of cancer in England and Wales, being 2,882 more than the average for ten years, the male increase over the decennial average being 16 per cent., the female increase 6 per cent., making 794 deaths from cancer per 1,000,000 living males and 732 for females, both being the highest rates on record.

A careful analysis of the statistics of cancer that are obtainable at the present time forces one to the conclusion that there is a constant and considerable increase in the number of people afflicted with cancer in all civilized countries. How can we best explain this increase?

The pathologists together with the clinicians who accept Cohnheim's theory as the true explanation of the cause of cancer try to explain this increase of the cancer mortality by changes in the mode of living as compared with previous years. Many, like Roger Williams, believe that the increased consumption of nitrogenous food has much to do with the increase of cancer. Attempts have been made to show that it is more prevalent among the rich and well-to-do than among the poor and ill-fed. A careful study of the cancer statistics, however, does not fully bear out this assumption. Some of the districts in which the cancer mortality is the highest are rural districts, in which the people live in a very simple manner. Some writers attribute a high cancer mortality to luxurious living, especially to large consumption of meat and alcohol. This is hardly true, as the mortality of Copen-

hagen, 138 per 100,000, is nearly double that of London, Paris, or New York.

My own feeling is that the most rational explanation is to assume that cancer is of extrinsic or microbic origin.

No evidence in favor of the endemic and, possibly, infectious nature of cancer, is found in a paper on "Cancer in New Zealand," by Hyslop and Fenwick.¹

They state that although New Zealand has the lowest death rate for the world, there is, nevertheless, a persistent increase in the percentage of deaths from cancer. In the year 1898 the rate per 100,000 living was 64; in 1907 it was 73. The alimentary tract was the seat of invasion in the great majority of cases of both males and females. In males the stomach was the seat of the cancer in 32.5 per cent. of the total number; intestine and rectum, 10.8 per cent.; liver, 11.8 per cent. In the females: stomach, 21.9 per cent.; intestine and rectum, 12 per cent.; liver, 16 per cent.

One of the writers collected 31 cases of cancer which had come under his personal observation in his own district, and found that of 16 male cases, 11 occurred in the bowel.

Dr. Hyslop describes at length the topography of the district in which his cases were observed—a flat tract, lying between a snow-fed river and a smaller stream. A large portion of the district is seasonally flooded by these streams, and the high mortality from cancer is in harmony with the conclusions of Haviland, based on a careful study of the geographical distribution of cancer.

It is of further interest to note that 6 of the 31 patients all lived in the same house. These 6 persons were all shepherds, agricultural laborers, or farmers, and they were not related by blood, thus entirely excluding the element of hereditary.

As regards the habits of the patients, all drank tea with their meals three times a day, and nearly all of them had meat three times a day.

The great variation in the death rate from

cancer in the different parts of New Zealand is also interesting:

Dr. Britton who, at one time practised at Ross, on the West Coast, found from notebooks and death certificates that during a practice of three years he had 35 deaths. Of these, 20 were under nine years of age; the remaining 15 between ten and seventy-eight years; in 5 of these, or 33.3 per cent., death was due to cancer. While in his ten years' practice on the East Coast his records showed 71 deaths, only 1 of which was due to cancer.

CONCLUSIONS. A great mass of evidence, based upon vital statistics, shows a well-marked and steady increase in cancer in practically every civilized country.

Attempts to explain away this increase as an apparent and not a real increase are far from convincing.

Without any further increase the present death rate from cancer is appalling.

Furthermore, the actual death rate from cancer is much higher than the known rate, by reason of the fact that in many cases of patients dying from internal metastases the strong prejudice of the relatives against the name of cancer is respected by the family physician, and some secondary cause of death appears in the certificate, instead of the primary cause, cancer.

The object in pointing out the ravages of this disease is to awaken a more profound in-

terest on the part of the laity as well as the profession in cancer problems. Physicians can help towards the solution of this problem by making a careful study of every case of cancer that comes under their observation, recording every fact. When collected in sufficient numbers, such facts may throw some light upon the etiology of the disease and help to settle the vexed questions of hereditary and contagion.

The pathologists are already deeply interested in the study of cancer, but the laboratory studies alone of cancerous tumors can never solve this great problem of the cause of cancer. The problem must be attacked from all sides—the clinical as well as the laboratory.

Once aroused to the importance of this problem the laity will lend its support by way of greatly increased endowments for cancer research work, and better and more efficient co-operation of State and National Boards of Health will follow.

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SUBPHRENIC ABSCESS.*

Report of a Case in Which Rupture into a Bronchus Occurred. Operation—Recovery.

By A. B. COOKE, M.D.,
 Nashville, Tenn.

PATHOLOGICAL REPORT.

By WM. LITTERER, M.D.,
 Nashville, Tenn.

Subphrenic abscess, known also as subdiaphragmatic abscess, pyopneumothorax subphrenicus, etc., deservedly ranks as one of the gravest of abdominal diseases. Until the pub-

lication of the illuminating work by Maydl in 1894, it was regarded as both rare and of obscure origin, and the literature upon the subject was extremely scant. Since that time,

*Read before the Tennessee State Medical Association, Memphis, April 12, 1910.