

Seaverns (Joel)

ANNUAL REPORT

... OF ...

MEDICAL EXAMINER-IN-CHIEF,

... OF ...

ROYAL ARCANUM.

1892.

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ROYAL ARCANUM.

From New York	340	From Missouri	12
" New Jersey	120	" Michigan	72
" Pennsylvania	100	" Minnesota	20
" Massachusetts	1892.	" Tennessee	20
" Illinois	120	" Ohio	20
" Virginia	21	" North Carolina	10
" Georgia	21	" Wisconsin	10
" Maryland	24	" Arkansas	10
" Indiana	20	" Iowa	10
" Rhode Island	21	" Nebraska	10
" Connecticut	10	" New Hampshire	10

JOEL SEAVERN, M. D.

REPORT OF MEDICAL EXAMINER-IN-CHIEF.

To the Officers and Members of the Supreme Council of the Royal Arcanum :

BRETHREN : During the year that expired December 31, 1892, 3,079 applications passed through my hands and were acted upon as follows: 2,146 were approved, 861 were rejected, and 49 were not acted on. Ten others were forwarded to me by mistake, and 13 were sent for my opinion.

This total of 3,079 applications was made up of 868 which were sent to me from the councils under the jurisdiction of the Supreme Council, and 2,211 which were referred to me by the State Medical Examiners of the states where there is a Grand Council jurisdiction.

Of the 868 coming from councils under the jurisdiction of the Supreme Council, 739 were approved, 111 were rejected, and 18 have not been fully acted on.

Of the 2,211 sent me by the State Medical Examiners, 1,407 were approved, 750 were rejected, and 31 were not acted on. Ten others were, as above stated, sent to me by mistake, and were forwarded from my office to that of the State Medical Examiner for whom they were intended, and 13 were sent me as test cases by the State Medical Examiners for me to express to them my opinion as to the advisability of accepting such risks.

The cases referred to me for action by the State Medical Examiners came from the following states, viz.:

From New York	540	From Missouri	77
“ New Jersey	339	“ Michigan	72
“ Pennsylvania	289	“ Minnesota	56
“ Massachusetts	183	“ Tennessee	53
“ Illinois	139	“ Ohio	52
“ Virginia	91	“ North Carolina	45
“ Georgia	81	“ Wisconsin	40
“ Maryland	34	“ Ontario	18
“ Indiana	26	“ Iowa	16
“ Rhode Island	21	“ Nebraska	9
“ Connecticut	19	“ New Brunswick	6

CORRESPONDENCE.

The amount of correspondence performed at the office has been largely in excess of previous years. In addition to the duties of

returning applications in which were unanswered questions, and of asking for additional information where the history of the applicant or his family history seemed to be stated too briefly or imperfectly, all cases where the occupation has not been made clear have been inquired into, and this not only in cases of extra-hazardous risks, but in every instance it has been required that the application state fully the kind of business of all mercantile employees, such as clerks, book-keepers, and salesmen, the kind of work done by all mechanics, machinists, laborers, and similar classes of men, the nature of the duties of all railroad men and electricians, and the various climates and ports visited by travellers and mariners.

These particulars have been sought out and ascertained not only for the purpose of determining their influence upon the character of the risk and the propriety of its acceptance, which they often materially affect, but also to assist in completing the history of those who die after admission, the better to enable us to judge whether the character of their duties proved unfavorable to their health and longevity. In addition to these points it should also be stated that in the applications showing a marked discrepancy between height and weight none have been decided upon unfavorably, until careful inquiries have determined whether the figures denoting the height and weight in the application were correct, and whether the candidate was weighed and measured by the examiner.

It has naturally resulted from these precautions that out of the whole number of 3,079 applications, 272 have been returned for further revision to the subordinate examiners, and 869 letters of inquiry have been addressed to those officials. This work comprises, of course, only a part of the correspondence of the office, for in addition to this are the letters in response to rejected applicants, letters to persons who desire to become applicants, but are afraid of rejection, answers to inquiries of all kinds from council officers as to the probability of the eligibility of certain persons, and the still larger branch of inquiry ordered by the Supreme Regent in the investigation of the history of deaths. Altogether no less than 3,127 pages of my letter books have been filled during the year.

ENUMERATION OF DEATHS.

The Supreme Secretary reports that 1,170 deaths have been officially reported during the year, and with an average membership of 132,134 men it results that the ratio of deaths to the thousand has been 8.86, which is a little less than the rate of last year, 9.02, but larger than some of the previous years; undoubtedly the grippe still swells our mortality list, though not so greatly as in some of the other fraternal associations.

These deaths were distributed in the various states as follows :

Arkansas	10	Nebraska	3
California	3	New Brunswick	5
Colorado	1	New Hampshire	5
Connecticut	21	New Jersey	55
District of Columbia	8	New York	257
Georgia	43	North Carolina	19
Illinois	89	Nova Scotia	2
Indiana	20	Ohio	90
Iowa	4	Ontario	30
Kansas	1	Pennsylvania	133
Kentucky	1	Quebec	1
Maine	3	Rhode Island	10
Maryland	52	Tennessee	22
Massachusetts	129	Utah	1
Michigan	44	Vermont	2
Minnesota	2	Virginia	47
Missouri	28	West Virginia	2
Montana	1	Wisconsin	26

The mortality of the different states as shown by the proportion which the number of deaths in each bears to the number of members appears as follows: (As in former years the table includes only those states wherein the membership exceeds five hundred.)

State.	Number of Deaths.	Average Membership.	Rate per 1,000.
Arkansas	10	590	16.9
Virginia	47	3,768	12.5
North Carolina	19	1,535	12.4
Georgia	43	3,482	12.3
Maryland	52	4,563	11.4
Ohio	90	9,004	9.9
District of Columbia	8	817	9.8
Ontario	30	3,107	9.6
New York	257	27,679	9.3
Massachusetts	129	13,901	9.3
Tennessee	22	2,404	9.2
Illinois	89	10,267	8.6
Pennsylvania	133	15,623	8.5
Connecticut	21	2,551	8.2
Rhode Island	10	1,232	8.1
New Brunswick	5	631	7.9
Wisconsin	26	3,315	7.8
Michigan	44	5,859	7.7
Indiana	20	2,893	6.9
Missouri	28	4,054	6.9
New Jersey	55	8,369	6.6
Maine	3	503	5.9

State.	Number of Deaths.	Average Membership.	Rate per 1,000.
Nebraska	3	519	5.8
Iowa	4	1,024	3.9
Kentucky	1	530	1.9
Minnesota	2	1,398	1.4

Of the six largest jurisdictions, — New Jersey, Pennsylvania, Illinois, Massachusetts, New York, and Ohio, — the first mentioned occupies the place of honor, as she did two years ago; the others follow in the order given, though the difference between Massachusetts and New York is so small as to require two decimal figures to indicate it. Arkansas is first in the list of mortality, and four other Southern states follow it directly, whilst Tennessee, Missouri, and Kentucky hold an excellent position, the latter having lost but one of its five hundred and thirty members during the year, and being surpassed as regards its small proportion of deaths only by Minnesota. Still, however, in the states where the membership is so small as in Kentucky, Maine, and Nebraska, the occurrence of a single death in one or the other may make a great difference in their relative standing, which seems, therefore, largely a matter of accident.

CLASSIFICATION.

The arrangement of these deaths by classes shows the following results:

Classes.	Whole Number.	Percentage.
Zymotic	93	7.9
Tubercular	170	14.5
Brain and spine	193	16.5
Heart and arteries	137	11.7
Lungs (not phthisis)	141	12.1
Digestive organs	121	10.4
Kidneys, etc.	118	10.1
Casualties	100	8.6
Suicides	29	2.4
Cancers	42	3.6
Unclassified	26	2.2
	1,170	100.0

The proportions of these classes differ but little from the usual average, as will be seen from the following table; but the number of deaths from the zymoses, phthisis, and suicides, is materially less than in many years. Deaths from diseases of the urinary organs, as in the previous year's report, were somewhat more than usual, as were also the deaths by misadventure.

COMPARISON WITH PREVIOUS YEARS.

	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	Aver- age.
Zymotic.....	14	19	11.6	8.8	11.6	10.7	12.2	9.9	10.6	9.3	10.2	9.1	7.9	11.2
Tubercular.....	13	12	17.8	19.5	20.3	16.9	15.9	15.9	14.7	14.5	14.3	15.4	14.5	15.7
Brain.....	16	10	13.7	15.7	15.6	14.4	15.5	17.6	17.6	17.0	16.2	14.8	16.5	15.4
Heart.....	9	9	8.7	7.9	9.1	10.7	12.0	11.8	8.2	9.0	11.4	10.6	11.7	9.9
Lungs.....	13	12	14.1	9.5	12.4	9.9	11.6	10.7	13.7	10.8	14.6	15.0	12.1	12.3
Digestive.....	9	13	11.2	9.7	7.7	12.8	9.0	11.5	10.9	11.0	9.3	9.0	10.4	10.3
Kidneys.....	9	8	5.0	9.7	6.4	7.3	7.0	7.4	8.9	9.6	7.7	10.3	10.1	8.2
Casualties.....	10	9	8.7	7.7	7.7	5.9	8.7	7.1	6.5	8.5	7.0	6.8	8.6	7.9
Suicides.....	5	1	3.3	5.3	3.0	3.7	3.1	2.3	4.3	3.5	3.9	3.4	2.4	3.4
Cancer.....	2	6	3.7	3.8	3.0	4.5	3.0	2.9	3.9	4.5	3.3	3.6	3.6	3.7
Unclassified.....	0	1	2.0	2.4	3.1	3.4	2.0	2.9	0.2	2.3	2.1	2.0	2.2	2.0

ZYMOSSES.

The deaths from zymotic diseases numbered 93, and as usual were made up principally (67 in all) of malarial diseases and of typhoid fever, though the latter had much the greater number, namely, 52. Quite a large portion of the typhoidal deaths were the result of perforation of the bowels or intestinal hemorrhage. In one case the temperature ran very high, being never less than 104, and in the course of the three weeks of the fever running up to 107 degrees. The malarial victims were largely from the Southern states, though not by any means exclusively so.

Of the whole number of zymotic deaths, 21 were from the Southern states, and 70 from the North.

Four were cases of malignant diphtheria, and one was of yellow fever, occurring in a sea-captain during a voyage.

Seventy-three of them died before they were fifty years old and 13 died in their first year of membership. The shortest term of membership were those of a member from Georgia whose death was numbered 6911, and who lived but three and one-half months after joining us, dying of typhoid fever; and one from Pennsylvania, also living but three and one-half months, and a victim of typhoid.

Death No. 6962 was that of a Virginian, who also died of typhoid seven months after joining. Another typhoid death was No. 7051, from Pennsylvania, the member living a little more than six months; and still another was a typhoid case from Virginia (7257), who died in six months. There are, however, no special features of interest in these cases except their brief terms of membership.

The rate of death by zymotic diseases was, however, much lower than usual this year.

PHTHISIS.

The proportion of deaths under this heading has not been unduly large, though I have included in it not only those from phthisis pulmonalis, but all others which were said to have been due to tuberculous deposits, whether in the lungs, brain, or abdomen, and have added all which were caused by chronic pulmonary illnesses, even when they have been designated by the attending physicians as chronic bronchitis, chronic pneumonia, or even asthma. Two or three cases where a sudden attack of hemorrhage of the lungs proved fatal have also been included in the phthisical column, although there was no previous history of continued pulmonary disease, or even ill health.

The whole number of this class of deaths is 170, and they occurred in the various states, as follows:

Arkansas	1	New Brunswick	0
California	0	New Hampshire	1
Colorado	0	New Jersey	10
Connecticut	4	New York	42
Delaware	0	North Carolina	2
District of Columbia	0	Nova Scotia	0
Georgia	7	Ohio	10
Idaho	0	Ontario	6
Illinois	15	Oregon	0
Indiana	2	Pennsylvania	20
Iowa	1	Quebec	0
Kansas	0	Rhode Island	1
Kentucky	0	South Dakota	0
Maine	0	Tennessee	1
Maryland	8	Utah	0
Massachusetts	18	Vermont	1
Michigan	5	Virginia	6
Minnesota	0	Washington	0
Missouri	5	West Virginia	0
Montana	0	Wisconsin	4
Nebraska	0		

In the States which have over 1,000 members the relative proportion of deaths by consumption to the 1,000 members was as follows:

State.	Deaths.	Membership.	Rate per 1,000.
Georgia	7	3,482	2.0
Ontario	6	3,107	1.9
Maryland	8	4,563	1.8
Virginia	6	3,768	1.6
Connecticut	4	2,551	1.6
New York	42	27,679	1.5
Illinois	15	10,267	1.5
North Carolina	2	1,535	1.3
Massachusetts	18	13,901	1.3
Missouri	5	4,054	1.3
Pennsylvania	20	15,623	1.2
Wisconsin	4	3,315	1.2
New Jersey	10	8,369	1.2
Ohio	10	9,004	1.1
Michigan	5	5,859	0.9
Rhode Island	1	1,232	0.8
Indiana	2	2,893	0.7
Tennessee	1	2,404	0.4

California, Minnesota, and 17 others of the smaller jurisdictions lost none by phthisis.

As in previous years of course a very large majority of these fatalities occurred in youthful men of light weight; 22 were under

30 years of age at death, and 52 were under 30 when they joined; 140 were under the normal weight, and 30 were above it.

Fourteen of them were over 50 years of age at entrance, thus affording fresh evidence that we can never exclude all danger of consumption, even in persons well advanced in life.

Nine of our members died of phthisis in less than a year, one in about two months of "galloping consumption," and an investigation of the case led to the belief that the disease existed when he was examined. The commission of the medical examiner was therefore revoked.

Death No. 6295, in a young man of 22, occurred in about four months from an abdominal disease, with emaciation, and was believed by the attending physician to have been of a tubercular character, but no autopsy was held to decide the precise nature of the disease.

Still another of abdominal origin was death No. 6316, where the patient died after an illness commencing, as is stated, shortly after his admission to the order. He had diarrhœa, want of appetite, emaciation, cough and chronic bronchitis, with ulceration of the bowels; there was no post-mortem examination. Death No. 7090 was also considered to be a case of tubercular disease of the mesentery, which proved fatal in about ten months.

Another (No. 7214) died in eleven months after becoming a member, and the duration of his illness is said to have been six months and to have been the result of the grippe; his symptoms were constant cough, profuse sweating, high temperature, and speedy exhaustion. He was a machinist by occupation, and this is believed to have been one of the causes of his disease.

Death No. 7230, also occurring in a few weeks less than a year, is said to have been the result of an attack of pneumonia, from which he never rallied. He had, however, lost a sister by phthisis, so that there was probably a tubercular taint in the family.

The useful restrictions of our laws protect us from the admission of those whose family history shows any marked tendency to this disease, and therefore there have been but few members who have thus died in whom there has been any clearly shown hereditary predisposition. In twenty-four instances only there is direct record of the occurrence of death by consumption in the family of the deceased when he joined. Eleven had lost a parent by consumption, and each of the eleven was more than thirty years of age on admission. One had lost a mother and sister by consumption, but he himself was over fifty years old and was undoubtedly believed to be beyond the age when he was liable to take consumption. Still another had lost three brothers and sisters by consumption, and this applicant was thirty-six years old on joining, and lived eleven years afterwards. He died, however, of phthisis.

DISEASES OF THE BRAIN.

The deaths from diseases of the brain and spinal cord were 193 in number, and were mostly from apoplexy and paralysis; the former, including those designated cerebral hemorrhage, amounting to 84, and the latter, including all called paralysis and paresis, numbering 43; 18 were attributed to meningitis, 13 to brain softening, 11 to congestion of the brain, and 11 were simply designated as brain disease. There were 3 cases of locomotor ataxia, 2 of epileptic or epileptiform convulsions, 2 of nervous prostration, and 1 each of progressive muscular atrophy, acute mania, and multiple sclerosis.

They were, of course, mostly in men of middle age or more, and 10 had reached the age of 70; 149 were over 45 years old, but there were 5 who died before their thirtieth birthday. Of the last mentioned 1 died at 25 of acute meningitis, 1 at 25 of cerebral hemorrhage, 1 at 26 of congestion of the brain, 1 at 23 of what was called "disease of the brain," and 1 at 28 of apoplexy. The first man (No. 6606) died a few weeks after becoming a member. He had had no previous illness, and was an undertaker by trade. The duration of his last illness was four days, with symptoms of catarrh, œdema of the lungs, delirium, and collapse. His occupation may have predisposed him to this disease.

The second (No. 6635) died in less than a year after joining the Order; he was taken suddenly ill, was unconscious for eight hours and a half, regained consciousness, but died an hour later. His family history was good, and he was a printer by trade, but had been using stimulants too freely for the last month before his death.

The third (No. 6861) also died in less than four months. He was a cabinet-maker, and had had typhoid fever and slight piles before joining. The duration of his last illness was but ten days, with inflammation of the brain, terminating in acute congestion. No autopsy was held.

The fourth (No. 6931) died two and one-fourth months after his admission to the Order. He had had no previous sickness, and was by trade a coppersmith. He was ill three weeks with brain symptoms, delirium, coma, etc., and died from meningitis, probably tubercular. In this case, also, no post-mortem examination was held.

The fifth (No. 7043) was a merchant, and had had no previous illness. He remained in a wild frenzied condition for about an hour, then became comatose, with symptoms of compression of the brain, and died in twenty-four hours.

One of the five who died young, the last, had lost a father by the rupture of a blood-vessel, and another had lost a brother at seventeen by meningitis, said to have been the result of an injury.

An evident hereditary tendency to cerebral diseases existed in 17, who had each lost a parent, or a brother or sister, from some kindred form of disease; in one, the father and sister each had cerebral or

spinal disease; one, who died of softening of the brain, had reported that his father died of alcoholism.

It may be said in conclusion that a large majority of the men included in this class were above the normal weight.

DISEASES OF THE HEART AND BLOOD-VESSELS.

Various forms of cardiac lesions caused the death of 137 of our members, of which 34 are said merely to have had heart disease or heart failure, 45 are reported to have had valvular disease, 23 angina, 14 endocarditis, pericarditis, or myocarditis, 6 hypertrophy or dilatation, 8 fatty degeneration, 2 rupture of the heart, 1 had embolus of the femoral artery, and 1 had varicosis. The last is said to have had varicosis not only of the veins of the limbs and abdomen, but of the brain as well, and the attending physician believed death to have been owing to one of the latter vessels. The whole vascular circulation is said to have been involved, and he was under medical treatment and observation for several months; he was forty-nine years old at death.

Most of the men in this class were above the ordinary weight and were no longer young; 81 were above and 54 below the standard of weight to height in our tables. Only one was under 30 years of age at death, 4 were over 70, and 105 were over 45.

In 21 only was there a direct history of rheumatic disease.

No less than 41 died suddenly, or with an illness of not over 24 hours. Some of these were known previously to have had some form of heart disease, but many of them at the time of the fatal attack were apparently in robust health.

No. 6678 had had no illness prior to joining the Order, and was ill but half an hour. He had some organic disease of the heart, and died sitting in his arm-chair, of heart failure.

No. 6785 had suffered at times from pain in his stomach during the past two weeks, and fell from his chair and instantly expired, probably from paralysis of the heart.

No. 7003 was a bank president, and had had no illness before joining. He too died instantly, but had had cardiac depression for some time with a pulse rate of thirty. He had been about during the forenoon, but when he arose from the dinner-table dropped dead.

No. 7189 was a merchant. In 1863, during the war, he had had his arm amputated at the shoulder. He was at his store talking and smoking, and suddenly fell dead. He had a habit of excessive chewing and smoking tobacco.

No. 7248 was a United States gauger: previously had jaundice in the army, and dysentery. He was found dead in his room at a hotel; from the evidence and a post-mortem examination the verdict at the coroner's inquest was that he died of fatty degeneration of the heart.

No. 7298 was a journalist. The duration of his last illness was six or seven hours. He had "breast pang" while getting off a street car, recurring at intervals till death. He had had previous attacks, and was addicted to alcohol.

No. 7425 was ill but twelve hours. He woke at 5 A.M. with pain in the region of the heart and left shoulder, extending down his arm and hand, and continuing till death, at 5 P. M.

Only one of the 137 died in less than a year after his admission to the Order, and the history of his illness is reported simply as that of a case of hypertrophy and dilatation of the heart with mitral regurgitation and general anasarca. He was 39 years old at death.

Of the 7 sudden deaths just described none had been members less than three and a half years, and all but 2 had been members more than 10 years. All but 1 were over 50 years of age.

ACUTE RESPIRATORY DISEASES.

The number of those who died of acute diseases of the lungs was 141, although a few cases, which were called pneumonia, pleurisy, or chronic bronchitis by the attending physician, have been placed by me in the phthisical column, because the history of the attacks and the symptoms seemed to show that the disease was probably tubercular.

A very large proportion of this class of deaths (110) was attributed to pneumonia, some being called simply pneumonia, others typhoid, broncho- or pleuro-pneumonia, according to the prominent features of their attacks.

Others died of bronchitis, asthma, congestion of the lungs, quinsy, laryngitis, and grippe, though in all some lung affection was eventually the principal cause of death.

No. 6584 was ill but three days, but had suffered from la grippe for two weeks, without consulting any physician. He was then taken with severe pain in the right side, followed by fever, with a temperature of $103\frac{1}{2}$ and a pulse of 144, was unable to lie down, had large effusion into the pleura, and a weak pulse, followed by heart failure. He was a glass-blower by trade.

No. 6603 had a duration of illness of one month, and was a manufacturer. He had suffered from gout and had a gouty arthritis of the knee-joint; was threatened with suppuration of the joint, with considerable fever which undermined his health; he also had enlargement of the liver and congestion of the brain. Death was finally caused by œdema of the lungs.

No. 6676 had suffered from bronchitis, and had had quinsy five times in thirty years, leaving a difficulty in swallowing. His last illness lasted one week. He had an invasion of quinsy almost every spring, and was an inveterate smoker, which probably weakened his heart. His fatal illness was caused by an ordinary attack of quinsy; "the inflammation suddenly extended toward the larynx, a sudden

spasm of the glottis supervened, and the heart failed at the same time under the strain; death resulting with extraordinary rapidity. The malignant character might be laid to prevalent grippe." He was a judge.

No. 6772 had had pneumonia five years before joining the order. He was a lieutenant, and while en route to join his station, contracted his fatal illness, and died at Sitka, Alaska, after an illness of two weeks. He had dry pleurisy of the left lung in the axilla, consolidation of the left lower lobe, temperature 104, pulse and respiration nearly normal. Resolution occurred in the left lobe, but the next day the right lung became involved, the lower lobe of this became consolidated, the temperature rose, the respiration became more rapid and labored, the pulse grew rapid, weak, and irregular, low muttering delirium supervened, and though for six hours there was a slight improvement, he then failed rapidly till death.

DISEASES OF THE DIGESTIVE ORGANS.

Among the diseases of the digestive organs from which 121 of our members died during the past year, of course hepatic affections occupied the first place, and numbered 30.

There were 16 cases of peritonitis, and 10 of gastritis, not including 5 cases of hematemesis and 3 of ulcer of the stomach. Gastroenteric complaints were 15 in number, in addition to 10 cases which were called diarrhœa or dysentery.

Eight were cases of intestinal obstruction, including 1 of impacted gallstone and 3 of strangulated hernia.

Twelve cases of typhlitis (appendicitis), a very large number, occurred, and in 5 of them laparotomy (a surgical incision into the bowels) was performed without saving the patient. In one other case also this operation was performed with fatal result. This was in No. 7001, the case of a merchant who had had no illness previous to becoming a member. His fatal illness lasted two weeks, being appendicitis gangrenosa, followed by perityphlitic abscess; an operation was performed successfully, and the case progressed well until hepatitis produced cholœmia and death. This diagnosis was proved by a post-mortem examination.

Death No. 6629 was that of a manager. His last illness was of seven days' duration, with rupture of the appendix vermiformis, abscess, and inflammatory products. The appendix became gangrenous with well-defined abscess, which was opened, and the man died on the following day of septic peritonitis.

The duration of the last illness in death No. 7161 was six days. He was taken sick while in New York, came home to Pine Bluff, Ark., suffering violent pain in abdomen with excessive vomiting. He grew rapidly worse with suppurative peritonitis complicating his disease. Laparotomy was performed and a large quantity of pus

was removed, but he was not relieved, and died a few hours later. He was a cotton buyer.

No. 7250 was that of a merchant who was ill but five days, with intestinal obstruction followed by appendicitis and general septic peritonitis. An operation was performed, but did not save the man's life.

No. 7352 was that of a contractor who had had typhoid fever fifteen months before joining the Order. The duration of his last illness was three days. He also had acute appendicitis and peritonitis. An operation was performed, and the appendix was found gangrenous and perforated. Death followed rapidly.

No. 7475 had a duration of illness of ten days. He was exposed to cold at a funeral and had a chill, followed by appendicitis and perityphlitis. An operation was performed and the vermiform appendix was removed, but he died subsequently. He was a salesman, and was a strictly temperate man.

In one case also (No. 7111) of internal strangulated hernia, an abdominal incision was made, and the case is thus described: He was taken suddenly ill with symptoms of bowel obstruction. Sixty hours later abdominal section revealed strangulation of the small intestine through an aperture in the mesentery. He died of uncontrollable vomiting forty-eight hours later. Internal strangulated hernia was shown by the post-mortem examination. He was ill but four days, and was a ticket agent by occupation.

KIDNEY DISEASES.

There is but little evidence of hereditary tendency in 118 members who died from diseases of this class; only 2 having lost a relative by Bright's disease, 3 one each of diabetes, 1 a sister, of nephritis, 1 a brother, of kidney disease, and 4 different members of the family, of so-called dropsy.

The list was made up of 83 cases of Bright's disease, or chronic nephritis, 14 of diabetes, 9 of cystitis, 2 of abscess of the kidney, 2 of stone, and 1 each of prostatic disease, lithæmia, septicæmia (probably prostatic), nephritic colic, pyuria, and gouty kidneys.

Only one (No. 6827) had been a member less than a year, though 8 died in less than 2 years; but the great majority had belonged to the Order many years and were old men, 67 of them being more than 50 years old, 3 over 70, and only 4 under 30 years of age at death. The one who died in about six months (No. 6827) seems to have been taken with a sudden acute affection of the kidneys, and the tale is briefly told as follows: he suffered from intense congestion, pain, and nausea of stomach, congestion of liver, suppression of the urine and uræmia; death followed at the end of an illness of eighteen days. He was a druggist, and had had dyspepsia before becoming a member.

No. 6839 was the case of a merchant who had previously had occasional neuralgia. His fatal illness lasted one year, and he had lithæmia for some time prior to that, causing insomnia, anorexia, high specific gravity of the urine (1,030) with alternately albumen and sugar, numbness of the limbs, staggering gait, pain in the back, and general malaria, becoming more intensified as the end grew near. After eating a hearty supper he dropped dead from heart failure caused by weakness.

Death No. 6682 occurred in one of our members who was a caterer. The duration of his last illness was two years, and was caused by general overwork, producing sub-acute articular rheumatism of left shoulder, hip, knee, ankles, and the joints of the fingers and toes, with great pain, swelling, tenderness, redness, fever, and symptoms of general nervous prostration. He had no appetite, and was unable to retain food, suffering from diarrhœa, cough, pain in the back and all over the body. The urine contained albumen with casts. Then followed symptoms of uræmia, labored heart's action which became irregular and weak, and he grew gradually worse till death came from heart failure.

The duration of illness in No. 6651 was but five days, though he had previously had symptoms of diabetes lasting eight months. He had passed large quantities of urine since September, 1891, and though at the last he had slight pneumonia, it probably would not have been fatal had it not been for the diabetes. He finally died from exhaustion. He worked at his trade as master mechanic till five days before his death. His mother died in the preceding October of diabetes.

No. 6999 was that of a man who had no occupation and whose final illness lasted several months, with pain and tenesmus in the bladder, and frequent desire to urinate; lithotomy (primal), and supra-pubic cystotomy for encysted stone were performed with consequent exhaustion and death from nerve shock. There was no post-mortem examination.

ACCIDENTS.

No less than 100 of our members have died from the effects of casualties which were of exceedingly various kinds.

Twenty-three died by falling or by being injured by falling objects, 18 were killed by railroad accidents, 11 were drowned, 8 died from the effects of heat (sunstroke, etc.), 7 received gunshot wounds, and 6 were poisoned by overdoses of medicine, 3 were caught in machinery, and 3 were murdered. There were several who met with unusual accidents, 1 of whom died in the deserts of Arizona from the effects of exposure whilst out prospecting, 1 was suffocated by the inhalation of gas, 1 was kicked by a horse, 1 was crushed by an elevator.

Seven of the railroad accidents happened to railroad men, of whom 2 were freight conductors, 2 brakemen, 1 a conductor, 1 an engineer, and 1 a postal clerk. The brakemen were both killed in the discharge of their usual duties; the 2 freight conductors and the other conductor were likewise killed whilst performing their daily work; 1 had both legs cut off; 1 had been a member but four months, and was admitted to the Order by an oversight of the State Medical Examiner. Three engineers were among the dead, 1 being run over whilst standing on the track, 1 drowned by accident in Lake Erie, and 1 murdered, receiving a fracture of the skull and multiple wounds of the head.

The other murdered men were a physician (No. 6346) and a sea-captain (No. 7635). The physician was summoned to the door and shot in the head and limbs and instantly killed. The sea-captain was murdered on board his bark, the "William Hales," of New York, at sea, by the Chinese cook, who killed him and his wife while asleep in the cabin, with the ship's broadaxe. The murderer then jumped into the sea and was drowned. According to the report of the case, the deed seems to have been instigated by the mate. The depositions of the crew were all made and sworn to before the U. S. Counsel at Cape Town, South Africa, the first port made by the ship afterwards.

SUICIDES.

Out of our total of 1,170 deaths only 29 committed suicide, to the best of my information and inquiry.

This favorable showing is doubtless largely owing to the care which has been exercised in keeping out all candidates in whom there seemed to be an hereditary tendency to insanity or suicide; the result apparently vindicates us from the charge so often made of being too strict with applicants who have a family history of insanity.

Eleven shot themselves, 8 ended their lives by hanging, 6 took poison (Paris green, opium, etc.), 2 cut their own throats, 1 suffocated himself by gas, and 1 drowned himself.

Four were less than 30 years old at death, and the youngest was 25; 9 were over 50, and 3 of them were over 60.

They were fairly enough distributed in the different states, for New York had 7, Pennsylvania 4, Massachusetts and Michigan each 3, Ohio, New Jersey, Georgia, Tennessee, and Missouri each 2, whilst Illinois had but 1, and West Virginia 1.

They were still more divided in their occupations, as there was of course a fair complement of merchants, salesmen, and book-keepers, 2 of each, but there was also a minister, a physician, and a dentist, as well as an engineer, a coal dealer, a grocer, and a provision dealer, also a manager, a real-estate agent, a restaurant-keeper, a

chief of police, a livery-stable keeper, a farmer, a piano-tuner, a glass-cutter, etc. No trade or profession seemed to have the advantage of any other in the matter of numbers, and the only point which occurs to me in connection with their occupations is that none of them were plumbers, painters, or printers, or dealers in leaden materials.

CANCER.

Forty-two deaths were the result of cancer or other malignant growths. These occurred mostly in men beyond the middle age, 33 being over 45, none under 30, and 1 being over 70.

The disease occurred 14 times in the stomach, 10 times in the liver, 6 times in the bowels, mesentery, or rectum, and was also found in the lungs, chest, mouth, and tongue, etc.

In 7 instances a surgical operation was performed for the removal of the diseased parts, but afforded only temporary relief.

Two cases only furnished a history of a family tendency to the disease; in one, the mother having died of uterine cancer, and in the other, the father having died of cancer of the stomach. Both these members had belonged more than nine years.

Only one (No. 6302) had been a member less than a year, and the membership of the majority was over 8 years in length.

UNCLASSIFIED.

I have entered in this section 26 cases which cannot be for various reasons included under previous heads. Five of these deaths were due to anæmia, called in two instances pernicious anæmia. No. 6529 was thus described: he had dysentery and jaundice some years before entering the Order. His last illness continued four or five years, and was marked by gradually progressing rhythmical tremor, muscular rigidity, digestive disturbances, impaired nutrition, intercurrent gastric and bronchial catarrh, anæmia, mal-nutrition, and exhaustion. In another invalid the anæmia was accompanied or caused by hemorrhage from the bowels and vomiting of blood.

Seven were cases of chronic alcoholism, 1 being a liquor dealer.

Three died from carbuncle, with the debilitating and exhausting symptoms usually attendant.

One had lymphangitis, or inflammation of the lymphatic vessels, quite probably due to septic causes. He was a liquor salesman, and his symptoms were red lines in the right leg, inflamed glands, an erysipelatous condition, and lastly, heart failure, as these changes subsided. It is said that his social habits and occupation were potent factors in precipitating his illness.

In 2 undertakers blood poisoning was attributed to the effects of their occupation, and was indicated by fever, pain in the muscles

and joints, with impoverishment of the blood, and abscesses, as well as general breaking down of the tissues. One had an abscess of the eye.

One with rheumatism and dropsy is reported to have had great pain from rheumatism, "so that one eye burst." This was succeeded by dropsy of the bowels and limbs, and eventually partial paralysis.

Another is said to have died from convulsions, with a history of spasms resembling those which are the results of strychnia poisoning, but the cause was not discovered.

A case of purpura hemorrhagica is also included, in which the patient had fever for two days, purple spots on the surface of the body, vomiting, and great distress and pain, with sub-normal temperature, and general prostration. A post-mortem showed extravasated blood in the intestines and other viscera.

A patient with gangrene (No. 7086) had the disease in the leg; it was supposed to be caused by a blood clot or embolism. He was a farmer, and had been dissipated.

No. 7361 was one of necrosis of the leg, requiring amputation below the knee, followed by gradual sinking, pneumonia, and death.

The last of the 26 deaths occurred in a tailor who had been very intemperate. This resulted in diarrhœa, vomiting, and nervousness and insomnia. There was some reason to think that an overdose of chloral was the final cause of death.

LA GRIPPE.

In 97 instances in the past year has la grippe been a prominent agent in causing the death of our members. It is not probable that our total number of deaths has been directly increased to that extent by this disease; but in 97 deaths la grippe is spoken of as either causing the mortality, accelerating it, or sowing the seeds of it.

Arranging the cases as in other reports into three classes, first, those in which the epidemic constituted the chief source of the fatal illness (even when the illness terminated, as it might, in acute diseases of the lungs, the bowels, the brain, the kidneys, or some other organ); second, those in which the epidemic attacked persons already invalids, so adding to their burdens that they died in consequence; and third, those who having had the disease and imperfectly recovered from it were left so feeble by its ravages that they soon sank from some chronic disease, as, for instance, consumption.

In the first class there were 23, in the second 18, and in the third 56.

These cases have been distributed among the various classes of diseases in which the symptoms shown by each seemed to place them; thus, 16 are in the zymotic diseases, 22 in the phthisical, 9 in the cerebral, 17 in the cardiac, 7 in the diseases of the urinary organs, and 7 in the diseases of the liver and other abdominal viscera; 2 also

died from cancer of the stomach, though one can hardly agree with the belief entertained that la grippe was the originator of the malignant disease.

Sixteen of the deaths occurred in New York, 14 in Ohio, 10 in Massachusetts, and the remainder were divided about from Maine to Georgia in a way that showed no preferences of latitude or longitude.

Eleven of the victims were under 30 years of age, 82 were between 30 and 60, and 4 were beyond the latter age.

As a whole, however, it is very plain that our proportion of losses from this cause was less than for the two previous years.

GENERAL PARALYSIS OF THE INSANE.

General paralysis of the insane, or general paresis, as it is now more frequently designated, is a chronic affection of the brain, coming on in the prime of life in men who have lived a life of excesses either in their habits or their duties. It is characterized by a gradually failing body and mind, fits resembling epilepsy or apoplexy, and a general impairment of the cerebral functions which eventually (in from 1 to 5 years for the most part) proves fatal. Its most striking symptom, which serves as a point by which it is distinguished from other cerebral disorders, is the presence of what is called by the French the "*delire des grandeurs*," a condition which gives the patient an exaggerated sense of his own power, influence, wealth, and greatness, which buoys him up through all reverses, so that no matter how poor he is he believes himself rich, and no matter how feeble he is he believes himself to be immensely strong.

The whole subject is from time to time prominently an object of study in our medical work, partly from the consideration of the histories of those of our members who have died with it, and on the other hand in the consideration of the eligibility of applicants who have lost a parent or a brother by it. Medical authors, many of whose works I have consulted, but have not room to quote, believe it less often the result of hereditary tendencies than are other brain diseases, and it is more often ascribed to the effects of over-work, over-play, intemperance, or syphilis, the latter especially being of late years considered its most frequent cause. Dr. H. O. Williams, in the "North American Review" for December, 1892, says, "Paresis does not come unbidden. Ruthless as it is when once it has seized a victim, it need have no terrors for any one who does not invite it by his actions." Professor Sachs also says, "There can be no doubt about this, that the disease will never occur in a person from hereditary influences and causes alone: there is always an exciting cause."

So much for the opinions of authors on this topic. In the Royal Arcanum there have been, out of about 7,200 deaths, 58 undoubted cases of mortality from this disease. There have probably been

others, but in some the symptoms and history are imperfectly given, so that it is impossible to say but that the attack may have been the result of cerebral hemorrhage. In the cases herein counted, however, there is a history of symptoms and of the course of the disease, which is easily recognizable as belonging only to this affection.

The history of these cases gives but little support to the theory of frequent hereditary cause; in fact, out of all the 58 there are none which give a direct history of any other instance of general paresis in the family history. In one it is said that the member's mother had died of paralysis at the age of 75, in another that the father had died of paralysis at 65, in a third a brother had died of paralysis at 23, and in a fourth a brother aged 45 had been the victim of apoplexy; and these four instances are the only ones where there is a positive history of paralysis in the immediate family. Still another had lost a father at 35 of delirium tremens, and two brothers at 29 and 33 of intemperance. One more had lost a father at 59 of nervous prostration; the mother of one had died at 56 of general debility, the father of one at 70 of general debility likewise, and one father had died at 60 of "general breaking down;" four parents had died from some unknown cause; and one member who had been intemperate is said to have been neurotic by inheritance, but no details are given.

With these exceptions the family history of these 58 men was good and in many of them unusually good. It appears to me that their family history taken as a whole was quite as good as that of any 58 men among our deceased has been, even of those who died of typhoid fever or pneumonia.

Still further, it might be supposed that their occupations would be found to have been of some character tending to produce brain disease. Even this is apparently not true. Eleven of them were merchants (including dealers in grain, coal, woolen goods, etc.), 7 were manufacturers, 5 physicians, 4 book-keepers, 3 salesmen, 3 clerks, and 1 was an attorney. Two worked in leaden materials, another was a liquor dealer, and there was a mason, a tailor, a sawyer, a magician, a broker, etc., among them.

Of the stated causes of the disease, only one attending physician alluded directly to the intemperance of his patient as being its cause.

In no single case was it attributed to syphilis. This might be explained by the theory that some delicacy on the part of the attending physician may have kept him from making such a disgraceful feature in the man's history prominent in a certificate which would pass not only under the notice of the family, but of the officers of the Royal Arcanum. This may have led to the suppression of this part of the record in *some* instances, as, for example, when the patient has died at home under the care of his family physician; but I cannot think that this would have occurred in all, especially when the patient died, as many of them did, in an asylum or hospital, and in which the certificate has been filled out by the superintendent or an attending physician, whose relations with the family of the deceased could not

have been so intimate as to lead to a concealment of this important element in the case. I am therefore forced to the conclusion that in a large majority of our men syphilis was not an important factor.

As regards ages, 41 of the 58 were over 40 at death, and 3 were over 60, but 42 were under 50.

The results of the analysis of the 58 cases would be disappointing if one had expected to obtain from them positive proofs of the direct effects of heredity, of intemperance, or to syphilis. Nothing in these cases shows the disease to have been plainly the result of either of these causes. The very fact, however, that so many show negative results is, I think, very important, as tending to prove that the prevalent assumption on these points is not confirmed by our records, and that, at least so far as is shown by our own experience, heredity does not play an important part in the etiology of general paralysis of the insane.

Besides the main question of hereditary influence, it appears, too, that no large proportion of these 58 were intemperate, or immoral, or followed occupations requiring an excessive expenditure of brain power, or compelling them to live in unhealthy localities, or within depressing influences.

The chief significance of these results for our purposes lies in the demonstration that it is not of special importance to refuse insurance to men whose family history, habits, or occupation may be thought to have a tendency to induce this disease, and that in point of fact the disease is so rare as not to be an element of essential weight in the consideration of risks for life insurance.

And conversely that on the whole the diseases of these 58 men did not proceed from anything in their family history, their habits, or their vocations in life, which could have led to any unfavorable discrimination against them when they applied for admission.

IMMUNITY.

During the past year a great deal of attention has been paid in bacterial researches by many distinguished observers, notably Professor Metschnikoff, of Berlin, to the consideration of the processes of inflammation and the further question of "immunity," and it appears to be one of these instances in which investigation in what is called pure science seems likely to result in having a marked practical value in excess of what was expected by the observers themselves.

It has long been understood that the human frame enjoys a power of protecting itself against the exciting causes of specific diseases, and that it is in this way that a robust person wards off the attacks of disease to which he is exposed. It is also observed that some persons are not in danger of taking certain diseases, and are protected from them or unsusceptible to the poison of the germs which

convey them. Familiar instances of this are seen in those persons who have once had scarlet fever, or small-pox, or been vaccinated, and who have thus received protection or "immunity" from other attacks of those diseases.

Naturally, by a parity of reasoning, medical men have been considering the question whether there may not be methods or processes by which the human organism may be protected against various other diseases, such as pneumonia, diphtheria, cholera, and many more; and whether we may not learn of means whereby the poisonous action of the bacilli of these diseases may be antagonized or destroyed, so as to render men unsusceptible to or impregnable against these bacilli, or, as it is called, "immune" to their influences.

That this has been done with small-pox by vaccination is a well-known fact, and that Professor Pasteur has done a similar work for hydrophobia, by inoculating the system repeatedly with a mild form of the poison of the mad dog, is also known. This repeated introduction into the organism of what is called "attenuated virus" (virus weakened or diluted) therefore seems to render the animal or the person unsusceptible to further poisoning by the same material, or in other words "immune;" and it has naturally been thought that a similar use of attenuated or weakened or diluted virus of other bacterial products, which in their ordinary strength will produce diseases (fatal perhaps), may by a graduated application produce such changes in the person inoculated as to protect him against the diseases caused by these bacteria. Experiments in this direction with the organisms of pneumonia (called pneumo-cocci) have been made with apparent success. Experiments are also being made in a similar line with the germs of cholera, and possibly another season may show beneficial results from these.

It was long ago observed that there are in animal organisms certain simple movable or migratory cells called leucocytes which have as their special function the taking into themselves all those particles of the organism that have become effete and useless, digesting them and getting rid of them from the system; this they can do not only as individuals, but, when they fail in doing it singly, they can combine and conduct a concerted attack with greater success and certainty. These cells are found to have an instinctive aversion for some materials or germs, a liking for others, and a decided indifference to substances from which they can gain or lose nothing.

In 1881 Carl Roser called attention to the fact that these leucocytes had the power of attacking the various microbes or bacilli, which make their entrance into the body, there to multiply and produce disease, and could take them within their own walls, digest, and assimilate them, and thus prevent their further inroads.

An extension of these observations showed that as the bacilli entered the system the leucocytes might retreat from them, or might meet together, attack and destroy them; and that when this invasion of bacilli took place in an "immune" animal, these cells at once

became the aggressors and destroyed the microscopical enemy. These leucocytes, when they performed this work, were called phagocytes, and the process of devouring the bacteria was called phagocytosis. It has also been found that when doses of the virus or poison produced by a particular bacillus paralyze at first the leucocytic cells, these same cells may by careful preparation and by the administration of repeated (at first small but gradually increasing) doses of the same poison become habituated to them, and eventually take them up as they would other injurious germs, and in time destroy them.

Thus phagocytosis, or the consumption of the bacteria by the phagocytic cells, may be observed when the bacteria are not strong enough to force their way into the body, either because the body is immune to its poison, or when for *any* reason the body is able to recover from an inoculation of bacterial germs.

When in animals that are not immune, the bacilli are introduced into the system, little or no local change follows immediately, but the poisonous germs grow unhindered and produce general disease; when, however, the animal is immune and the same poison is introduced, inflammation and leucocytosis, or a gathering of the leucocytes, is observed at the point of danger, the bacilli are destroyed, and the infection of the system is prevented.

Thus these leucocytes (or phagocytes) are found to have the power of seizing upon everything possessing a less power of resistance than they themselves, and this power is exercised in a marked degree in defending the organism against bacteria. But if the animal into whose tissues the bacteria gain entrance is not protected, and is therefore susceptible to their virus, then the phagocytes seem to be repelled and the bacteria become victorious. Or still again, if the virus which is introduced has been attenuated diluted by any means, the phagocytes meet them more courageously, as if by some attraction, and vanquish them.

I have thus, as simply as possible, and avoiding the use of long technical scientific words, explained the views of Metschnikoff and his followers on this subject; but there is still another school of observers under the lead of Professor Buchner, who maintain the "humoral" theory, as it is called, and who disbelieve in the active agency of the phagocytes, and maintain that the duty of these cells is only that of scavengers, to gather up and remove the bacterial elements which have been destroyed by other germ-destroying agencies. They claim that as the virus, or the bacterial poison, advances into the system, there are certain portions of the blood, especially the serum, which are so dangerous to these microbes as to kill them and thus stop the progress of infection. They claim that there are certain bactericidal or microbe-destroying qualities in the serum of the blood, and that as the bacteria die from the effects of the blood they set up a certain chemical action which attracts the leucocytes, who thereupon gather in force to remove their dead

bodies. Some observers of this school do not deny wholly the phagocytic action of the cells, but claim that this is but one of the means by which the destruction of these organisms is accomplished, and that the action of the blood is quite as important.

It will be expected that investigations made into microscopical objects and with objects so infinitely small that they cannot be distinguished until they have been stained by various aniline dyes, different observers may see the same objects and the same phenomena very differently, and honestly entertain antagonistic and varying views. Hence, before the Pathological Society of London the subject has led to repeated arguments on either side by able microscopists whose views are very conflicting.

For the sake of the layman who would be glad to know of some means by which he himself can obtain protection or immunity against cholera for the coming year, it is to be hoped that these conflicting doctrines may be so far harmonized as to lead to some agreement on methods and processes, and that some means may be agreed upon to give immunity from cholera. On this point it need only be added that already Mr. Haffkine has been experimenting with attenuated cholera virus by inoculation for the production of immunity against cholera in rabbits and guinea-pigs, and has finally made inoculations of himself and other medical gentlemen. Among these were Dr. Hawkes and other physicians of England, who, in the "British Medical Journal," have given an account of their own experience in undergoing these operations, and state their belief that these inoculations can be practiced with safety on human beings, and that inasmuch as these processes have given immunity to guinea-pigs, rabbits, and pigeons, there is reason to hope that they may also produce an equally good degree of immunity in mankind.

Recent French and German journals state that certain men, ill with typhoid fever, have been put under treatment by the inoculating into their systems of the serum of the blood of rabbits which have previously been made immune to typhoid; but the disease has not been thus far checked in these men, and went on in its usual course.

Certain other patients with tetanus and diphtheria have been subjected to inoculations of the serum of sheep, which had been similarly protected against those diseases; but this experiment was also unsuccessful, the progress of the disease not having been modified by the treatment, though the patients were not injured thereby.

The whole subject is therefore still in the stage of experiment and investigation, but gives great promise of auspicious results in the future.

ASIATIC CHOLERA.

The preceding pages had been suggested and made important at this time by the fact that last summer at our very gates pressed the advance guards of a pestilence, Asiatic cholera, whose advent among us cannot but be viewed with justifiable apprehension; whilst the country as a whole did not suffer from its ravages, yet it must be

remembered that it was present in New York harbor, where there were many victims, and that a few cases of the disease occurred in New York City.

It is fresh in the minds of us all that by a special proclamation of the President a vigorous interdict was established by the national and state authorities against the landing of immigrants who had had the disease, and also of those who had been exposed to it or came from ports infected by it. Of the latter, among foreign ports the name of Hamburg was most prominent as a city in which many persons were affected by this disease, and a large number of deaths occurred. The steamers, therefore, which sailed from that city were kept outside our ports on arrival, their passengers quarantined and disinfected, their freight and baggage made antiseptic by disinfectants and steam, and the bodies of the dead cremated.

It was deemed necessary that no sick person, and no one who had been exposed to the influences of the disease, should be allowed to go ashore until every precaution of the most rigorous kind had been enforced to prevent his carrying the disease ashore. Thus not only were the sick detained in hospitals or the ships, but even well people who had had no sickness were kept in the same ships with the sick and thus cruelly imprisoned, away from their friends, their business, or their duties, exposed in the fullest degree to all the dangers of cholera.

It cannot be denied that the results of this rigorous quarantine were completely satisfactory, in that none of the parties infected or likely to be infected escaped from the restraint; and it is believed with good reason that not a case of cholera on land was due to the cases on board ship. The result was salutary, but the question whether the rigor of the quarantine was necessary is doubted even by physicians.

It is agreed by the majority of medical men that cholera is not contagious in the sense in which scarlet fever, diphtheria, or small-pox are contagious.

Ernest Hart, M.D., the famous editor of the "British Medical Journal," says that you "can eat cholera or you can drink cholera, but that you cannot catch it." This by no means signifies that you can eat or drink it with impunity, but that if you eat food containing the germs of cholera, the comma bacilli, you will be likely to take the disease, and the liability is greater from this source than it would be by handling or contact with cholera patients. It is well understood now that with proper appliances and due precautions cholera patients can be nursed without fear of the nurse catching the disease. "Cholera," says Dr. Hart, "is a filth disease, carried along the lines of human intercourse by dirty people, and only flourishing in dirty places; it comes not now by pedestrians and horsemen, but by locomotive and fast steam-boat."

Hamburg, where most of the disease existed and flourished in 1892, owed its prominence in this regard to the polluted condition of its

drinking-water. Its water-supply was taken from the river Elbe, and into this river was also turned largely the sewage of the city, and microscopical investigation of the water showed it to be filled with the cholera bacteria.

It is now confessed that the comma bacillus, as discovered and investigated by Professor Koch, is really the essential feature of the disease; and it is acknowledged that cholera does not exist without the bacillus, but men differ as to how much the presence of this bacillus *necessitates* the presence of the disease. As with all other germs and microbes, it will not grow and multiply and produce its specific effect unless it finds a suitable home or nidus for its growth. Professor von Pettenkofer thinks it is still open to doubt whether the bacillus alone is the cause of the disease. He declares that for the propagation of the disease these three factors are necessary, x, y, and z; x being a specific germ disseminated by human intercourse; y a factor dependent on place and time, which he called "local disposition;" and z the individual predisposition. He is so far satisfied of the truth of his statements that he has not hesitated to eat cholera by taking into his stomach a large amount of the comma bacilli. He says, with German phlegm, that he himself was an old man of 74, toothless, diabetic, and with other infirmities of age, and therefore a person who could well be spared. Two days after swallowing the virus he had severe colic pain and moderate diarrhœa, which continued eight days. He had, however, no dangerous symptoms of cholera, though his stools were found on examination to be swarming with the bacilli. He asks how many millions of these bacilli he must have had in his intestines and yet no symptoms of Asiatic cholera. His coadjutor, Professor Emmerich, made a precisely similar experiment, and suffered much more severely from the colic and diarrhœa, but without any other illness. Neither of these gentlemen are therefore willing to acknowledge that they had genuine cholera, and do not believe that the bacillus is the x alluded to above as the specific cause. Pettenkofer says, however, recently, that the only question now appears to be how the comma bacillus is to be destroyed or at least prevented from multiplying.

Different countries, as may be supposed, under the advice of different sanitarians, have adopted very different regulations of quarantine, some, like England, only requiring inspection of immigrants and isolation of the sick; others, as in our own case, endeavoring to absolutely exclude every person who may, can, or might have received the infection.

In the coming summer the disease will undoubtedly be brought to the seaports of this country, and it is to be hoped that proper precautions will be taken to prevent the dissemination of the disease by the sick, but that the well will be treated with proper consideration and kindness and care, even if they seem to have been exposed to the dangers of the disease.

Should, however, the disease gain a footing in our cities, the precautions for individuals are well understood and agreed upon by almost all authorities. This is what Dr. Hart says: "Keep your houses, your cisterns, your stables, your cow-sheds, pigsties, and slaughter-houses, your drains, your dust-bins, yourselves, and your clothing clean; and help your neighbor to do so. Boil your water, or drink a pure natural table water. Boil your milk. Inspect your fruit, fish, and meat markets. Avoid unsound food and excesses of diet. Feed wholesomely the needy and destitute; help the poor to be as careful in their homes and habits as you will be in yours; and have no fear of contagion. If you take the cholera, it will be because you or those about you have made you liable to it by neglect."

Another authority says concerning food, that "its preparation is a matter of extreme importance; water and milk should be boiled, and the boiling should be very recent. Coffee and tea should be recently made and served hot. All food should be thoroughly and recently cooked. No raw food of any description except possibly a moderate quantity of perfectly fresh, ripe, and absolutely clean fruit should be taken. Salads and other such articles should be interdicted. Bread as well as butter should be carefully protected against the possibility of contagion. The culinary utensils and table-ware should be scrupulously cleaned with boiling water."

The subject of obtaining "immunity" from this disease by inoculation as explained in previous pages, is largely experimental. Haffkine, in Berlin, and Ferran, in Spain, have investigated the subject, and over and over again tested their theories by actual inoculations of physicians and others, and their results are reported to have been thus far successful.

The objectors to this plan, however, make one strong point in saying that in Hamburg, where the epidemic of 1892 was more severe than in any other city, three per cent. only of the inhabitants took the disease, and only one and three-tenths per cent. died with it. Why, therefore, should the remaining ninety-seven per cent. of the population be inoculated against a disease which they did not take when exposed to the directly dangerous influences of the drinking-water filled with the germs as has been mentioned.

CAUSES OF DEATH OF OUR MEMBERS.

In July last 7,000 of our initiates had died, and I have carefully investigated the causes of their deaths to determine how far it is possible for us to foresee in the future the diseases which will prove most frequent and from which deaths must be anticipated.

It is easy, of course, for the medical expert to predict that, as certain forms of disease are especially prevalent in youth, certain others in middle age, or still others in old age, these diseases will, one after another, become more fatal and succeed one another as men grow older. The experience of all ages would have been amply sufficient to teach us, for instance, that phthisis is generally a disease

of men under 40 years old, and that disease of the blood vessels, carrying with it injury to the heart and brain, is a disease of those who have become older; but to see this demonstrated clearly and tabulated before our eyes is very striking. This becomes very interesting in the following figures, which show the number of the 7,000 dead who joined between 20 and 30 years of age, and those who joined in the three successive decades, though we do not now accept men over 55 years of age.

There were 1,376 of these deaths of men who were between 20 and 30 on joining, 2,261 deaths of men between 30 and 40, 1,942 of men between 40 and 50, and 1,421 of men over 50 years of age. Now by collating the causes of death in these four classes, it has been found that in the first class more than one-fourth died of phthisis, another fourth of acute lung disease and diseases of a zymotic type (the latter being nearly double the former), and that the next largest source of mortality is casualties, nearly one-tenth dying of these, probably from the dangers incurred by the hot impulses of youth.

If we go to the other end of the scale, those who were more than 50 when they joined, it will be seen that the tubercular or zymotic classes are no longer conspicuous, but that diseases of the brain and the heart come first in the assigned causes, that acute diseases of the lungs come next, and diseases of the urinary organs are fourth in order. It would undoubtedly have been hard to say in advance that the brain diseases would have outnumbered heart diseases, or that each of them would have been more numerous than diseases of the kidneys, etc. The table is as follows:

AGES AT JOINING THE ORDER.

Causes of Death.	Between 20 and 30.	Between 30 and 40.	Between 40 and 50.	Between 50 and 60.
Zymotic	256	230	130	70
Tubercular	395	450	189	68
Brain disease	124	318	380	289
Heart disease	75	176	229	270
Respiratory diseases (acute)	136	305	264	197
Digestive diseases	113	218	229	133
Kidney and bladder diseases	72	151	195	158
Accidents	135	199	133	79
Cancer	12	79	74	84
Suicides	39	88	70	27
Unclassified	19	47	49	46
	1,376	2,261	1,942	1,421

[N. B.—It will be seen that in the first vertical column the classes of diseases are arranged in a more simple system than that

adopted usually in registration reports, for the purpose of showing clearly the various features which are important as bearing on the examinations for life insurance, such as accident, suicide, and phthisis.]

But this display of figures is of comparatively little interest as compared with the following percentages, which show how the different classes of disease vary in frequency with the increasing ages of the applicants, and are as follows :

PERCENTAGES OF EACH CLASS.

Ages at joining the Order.

Classes of Diseases.	Between 20 and 30.	Between 30 and 40.	Between 40 and 50.	Between 50 and 60.
Zymotic	18.61	10.17	6.69	4.93
Tubercular	28.71	19.90	9.73	4.79
Brain disease	9.01	14.07	19.57	20.34
Heart disease	5.45	7.78	11.79	19.01
Respiratory diseases (acute)	9.88	13.49	13.59	13.86
Digestive disease	8.21	9.64	11.79	9.36
Kidney and Bladder diseases	5.23	6.68	10.04	11.12
Accidents	9.81	8.80	6.84	5.56
Cancer	0.87	3.49	3.81	5.91
Suicides	2.83	3.89	3.60	1.90
Unclassified	1.38	2.08	2.52	3.24

From the above we cannot but observe that the zymotic classes are most severe and dangerous in the men represented in the first decade, and grow less so in each class; that the same is markedly true of tubercular diseases; that brain affections, proving fatal in only nine per cent. of deaths of men between 20 and 30, become rapidly more prominent and fatal with each advancing period of years, until they are the most dangerous of all diseases in men over 50, and that the same is true to almost the same extent with heart lesions; acute disease of the lungs, always a prominent death agent, performs this function more and more often as men grow older, though the increase is but slow; illness caused by affections of the digestive organs seems not markedly influenced by years, being probably more influenced by personal habits and places of residence, and hence remains a pretty constant factor; diseases of the kidneys and urinary organs show, as would be expected, a steady increase; accidents, on the other hand, a steady diminution, with the loss of the fire and hurry of youth; cancer is progressively more fatal, whilst the mortality from suicide seems to reach its highest point with men between 30 and 40. Those placed in the last category (unclassified) comprise many forms of disability, such as alcoholism, carbuncle, general debility, exhaustion, and the like.

Scarcely had these tables been completed when I discovered that by a strange coincidence my friend Dr. Witherell, of Union, N. Y., Chief Medical Examiner of the Knights of Honor, had during the year made similar examinations into the history of 19,387 deaths in that society, and tabulated them under the classification of the Registrar-General of England. This classification is not so convenient for showing the points to which I wish to call attention, and I have therefore rearranged his statistics under the more condensed headings used in the tables above, which seem to show more clearly the large classes here grouped together. In addition, I have computed the percentage of these classes as in the previous calculations, and thus present the following results of Dr. Witherell's tables :

19,387 DEATHS IN KNIGHTS OF HONOR CLASSIFIED.

Age when admitted.

Causes of Death.	<i>Age when admitted.</i>			
	Between 20 and 30.	Between 30 and 40.	Between 40 and 50.	Between 50 and 60.
Zymotic	560	907	997	191
Tubercular	784	1,256	938	125
Brain disease	279	873	1,301	314
Heart disease	122	434	874	233
Respiratory diseases(acute)	317	889	1,251	255
Digestive diseases	187	655	939	161
Kidney and bladder diseases	129	367	637	161
Accidents	307	649	594	88
Cancer	26	166	337	97
Suicides	77	212	294	40
Unclassified	36	109	165	54
	2,824	6,517	8,327	1,719

PERCENTAGES OF ABOVE.

Age when admitted.

Causes of Death.	<i>Age when admitted.</i>			
	Between 20 and 30.	Between 30 and 40.	Between 40 and 50.	Between 50 and 60.
Zymotic	19.83	13.92	11.97	11.11
Tubercular	27.76	19.27	11.26	7.27
Brain disease	9.88	13.39	15.62	18.26
Heart disease	4.32	6.67	10.49	13.55
Respiratory diseases(acute)	11.18	13.65	15.02	14.84
Digestive diseases	6.62	10.05	11.27	9.37
Kidney and bladder diseases	4.57	5.63	7.66	9.37
Accidents	10.87	9.96	7.13	5.11
Cancer	0.92	2.55	4.04	5.63
Suicides	2.72	3.25	3.53	2.33
Unclassified	1.27	1.67	1.98	3.14

(In explanation it may need to be said that the above percentages show, in reading the lines vertically, the relative ratio of those in each decade who died of the several classes of diseases, and, in reading them across the lines, show the increase or diminution of the percentage of deaths from the various diseases as the men grow older.)

The general points of difference in the results of the Knights of Honor and those of the Royal Arcanum do not need to be pointed out, but the points of similarity are very wonderful, and the same comments which I made on the first set of tables are just as true and as significant in the other. The proportion of zymotic deaths is a little larger in each decade of the Knights of Honor than in the corresponding one of the Royal Arcanum, and undoubtedly points to the fact that the former have extended their lines farther into the Southern States. The same reason also may have made their percentage of deaths from acute diseases of the lungs a little larger. It is, however, the gradual increase and the gradual decline, as the years pass along, which will be seen to be similar and so interesting in the tables of each society. The increase by advancing age in the deaths from brain, heart and kidney diseases, and the decrease in zymotic, tubercular, and accidental deaths, will be seen to follow identical paths in both societies. The number of losses from cancer and from suicide are much alike in both organizations.

It seems to me then, in closing these observations, that it is seldom that in the study of vital statistics the result of tables of figures is so effective and conveys such accurate information as do the above tables. From them one can have no hesitation in saying that with a large number of persons insured and who are between 20 and 30 years of age that about one-fifth of those who die (18 to 19 per cent.) will die of zymotic diseases, that more than one-fourth (27 to 28 per cent.) will die of consumption, that nearly one-tenth (9 to 10 per cent.) will die of brain diseases, that about one-twentieth (4 to 5 per cent.) will die of heart disease, and that one-tenth (10 to 11 per cent.) will die of accident.

Still further, it may safely be asserted that as the age of those who join increases, the number of deaths by fevers, phthisis, and casualties will grow steadily less, whilst those by heart and brain diseases will go on in an ever increasing ratio, as will also deaths from cancer and from kidney diseases, until in those who were 50 or more at their entrance diseases of the heart and the brain carry off, each of them, a fifth of the deceased (18, 19, and 20 per cent.), and cancerous deaths creep up to about six per cent. The law of increase and of diminution is undoubtedly as fixed as the tides of the ocean, and may be counted on with all the security and confidence that we can place in astronomical computations.

AT WHAT AGES CAN MEN BE INSURED MOST PROFITABLY?

A careful consideration of this question will show that there are two branches of the inquiry on which the answer largely depends:

first, at what age do the largest number die? and, secondly, at what ages do they live longest after admission? A hasty thought would lead to the supposition that these two are but different forms of the same question; but this is not true. On investigation it appears that of those who get insured in each of the four decades,—namely, those between 20 and 30, between 30 and 40, between 40 and 50, and between 50 and 60,—the smallest proportion dies in the first class, and that the number of deaths increases materially with each of the other classes.

Now it might, a priori, have been believed that similar advantages would be found to exist with the first class as regards their *length* of life; but the reverse is the fact, and it appears that of those who die, the members who were youngest at joining live the shortest time, and those who were oldest at joining live the longest time; in other words, that those who died having joined between 50 and 60 have lived longer on the average than those who had joined between 20 and 30, or at either of the other decades.

Hence the question of the pecuniary returns to be derived from the insuring of these various classes does not depend solely on the question in which the greatest number of deaths will occur, but on this question as modified by the additional one of how much longer they will live and pay their premiums.

Taking this topic into consideration, I find that between June 23, 1877, and January 1, 1892, 149,176 men had joined the Royal Arcanum; of these 55,135 were between 20 and 30, 57,482 were between 30 and 40, 28,574 were between 40 and 50, and 7,985 were over 50.

Still further, it appears that of this whole number of initiates 6,332 had died, being a percentage of $4\frac{1}{4}$ per cent., or at the rate of $42\frac{1}{2}$ per thousand in this period of $14\frac{1}{2}$ years. Of these 6,332 deaths, 1,268 were from the class that were between 20 and 30 on joining, a percentage of $2\frac{1}{3}$ or 23 per thousand; 2,635 were between 30 and 40 on joining, a percentage of $3\frac{1}{2}$ or $35\frac{1}{2}$ per thousand; 1,750 were between 40 and 50 on joining, a percentage of $6\frac{1}{2}$ or 61 per thousand; and 1,279 were over 50 on entrance, being at the rate of 16 per cent. or 160 per thousand, which in tabular form may be thus represented:

Became Members.	Died.	Percentage.	Rate per 1000.
55,135, between 20 and 30	1,268	$2\frac{1}{3}$	23
57,482, " 30 " 40	2,635	$3\frac{1}{2}$	35
28,574, " 40 " 50	1,750	$6\frac{1}{2}$	61
7,985, " 50 " 60	1,279	16	160
<hr/>	<hr/>		
149,176	6,332		

Hence it appears that the frequency of deaths with those between 50 and 60 has been nearly 8 times as great as in those between 20 and 30, a result which will no doubt surprise those who do not reflect that the expectancy of life is much greater in the first than in

the following classes, but a result that should not lead to hasty generalization, for there are additional features to be considered.

As a basis on which to calculate what are the best lives to accept in our Order or any life insurance company, it will be evident that if all these persons pay, as they do in some organizations, the same rates, then the younger men are evidently the better risks; but if, as in the Royal Arcanum, the assessments are graded according to the age of admission, the question contains different elements.

Even with the level graded assessments the question is not wholly settled by the above figures, as it will at once occur to the investigator that not only the absolute number of deaths is to be figured, but the length of time during which members live and continue to pay assessments must also be a factor in the computation. If, therefore, we can ascertain how long each of these men or these classes lived and continued to pay assessments, it will give us something nearer to a solution of the question as to the relative profit and loss in insuring men at different times of life.

To do this for 6,300 men and figure up the number of months of membership singly and together would involve a greater amount of time and labor than is at my disposal; but I have taken 1,000 of the deaths, those between 5,000 and 6,000, and carefully and laboriously figured out the following results:

The 213 in this thousand who joined at ages between 20 and 30 lived 15,456 months. The 318 who joined between 30 and 40 lived 26,282 months. The 281 who were between 40 and 50 lived 25,977 months; and those who were over 50, 188 in number, lived 19,223 months, making the average length of life as follows:

The 20's	lived	72.6	months	each.
" 30's	"	84.4	"	"
" 40's	"	82.4	"	"
" 50's	"	102.2	"	"

This fact, that the average duration of membership is greater in those who died of the men who joined between 50 and 60 than that of those who joined younger is also confirmed by the figures of Dr. Witherell, who has put in tabular form the average duration of membership of 18,000 Knights of Honor of every age between 18 and 55, from which it appears that the average of those who entered between 21 and 30 lived 57.8 months, those between 30 and 40 lived 66.6 months, those who entered between 40 and 50 lived 73.5 months, and those who entered between 50 and 55, comprising rather a small proportion of them all, lived the longest, 75.7 months. Of the first there were 3,204, of the second 6,252, of the third class 7,369, and of the fourth only 1,156. The total number who entered during these years is not given, so that we cannot determine if the ratio of deaths to members joining is like our own.

The full significance and pertinency of these figures may be seen when it appears that they thus demonstrate that, even if those over 50 die in greater numbers, yet individually they live longer. This

showing probably results from the fact that deaths from zymotic diseases, accidents, and even from phthisis, occur more rapidly than deaths following from change in the blood vessels, the results of diseases of old age which produce conditions of the heart, brain, or kidneys that eventually but slowly terminate life.

The tables, as above stated, would therefore seem to show that of the class above 50 nearly seven times as many die in a given time as of those below 30, but that the individuals live longer, in a ratio of 102 to 73. So that the increased rate of payment to be called from the older class should be $\frac{7.3}{102}$ of $\frac{1.60}{73}$, or $\frac{1.1680}{2346}$ or 4.9 times as much.

In my opinion, then, the question whether we shall continue to extend the benefits of our membership to men over 50 years of age is therefore simply a financial or actuarial one, and that if these parties will accept membership and pay rates five times as great as that of men at 21 we can just as well afford to insure them.

It has been urged, as may be well known, that men of these advanced ages have already paid into our treasury more than their share; and this is seen to be true in a certain sense on examination. Dr. Styer, in an interesting article published in the "Guide and Candidate" for December, 1892, showed the comparative amounts paid by men of different ages, from which he found that in a thousand deaths the average amount paid by 187 members who were above the age of 50 was \$426.64, whilst those who were above 55 paid \$559.00, but that the average members whose average age was found to be 34 years had each paid only \$114.09.

He quotes two individual cases, one aged 27 on admission, and who lived nearly 15 years and paid \$209.56; and the other aged 59 on admission, and lived about 14 years, and had paid \$1,059.50.

By similar computation I have found that of five hundred other men who died in the Arcanum between Nov. 20, 1891, and March 25, 1892, 99 were under 30 at initiation and 104 were over 50 years old, the average age of the former being 25 and of the latter 53. The former paid into our treasury \$8,299.02, or about \$83 each, whilst the latter paid into the treasury \$44,970.67, or about \$432 each; and this increased amount of payment made by the old men should be acknowledged as a set-off against the greater mortality in that class.

Taking still another 500 men, in order to see if these results are uniform, of those between 6,034 and 6,500 it will be found that 94 were over 50 and 99 were under 30. But the former, the old men, paid into our hands \$40,207.33, or about \$430 each, whilst the young men paid for our benefit \$8,949.15, or only about \$90 each. Thus with each of these two sets of five hundred men it appears as an actual fact that the older men who died paid us about five times as much as the younger ones, so that if they died nearly eight times as often our loss by them was not so excessive as is claimed by those who desire to have our limit of age brought down to 40 or 50.

As I have before said, the question is wholly one of dollars and cents, for it is quite as easy to reckon the law of mortality in the older as in the younger classes, and it is quite as simple to arrange a scale of payment for the one class as the other. If, therefore, these elderly men are willing to take membership with us, and to pay assessments which will equalize the cost of their membership to that of the younger men (as will undoubtedly be found to be the case), there is no reason why we should not continue to confer membership on them and to accept their payments.

MEDICAL EXAMINER-IN-CHIEF.

The Supreme Council at its last session voted to make the Medical Examiner-in-Chief an *ex-officio* member of that body, but without a vote. This makes it his privilege and duty to attend the meetings of the Supreme Council, and to learn the views of its members and committees. It is to be hoped that this action will conduce to the welfare of the Order.

At the suggestion of the Supreme Regent, a code of rules for the direction of the State Medical Examiners has been prepared by the Medical Examiner-in-Chief with the view of making their action uniform in deciding upon the admission of candidates from the various states, especially as regards the question of family history and occupation.

By further direction of the Supreme Regent, the Medical Examiner-in-Chief has for several months visited daily the office of the Supreme Secretary and examined the death papers which have been received there, for the purpose of making the cause of death to be announced in the assessment notices agree with the certificate of the attending physician, and be at the same time intelligible to the members and medical examiners of the Order. Heretofore the printed cause of death has not always been definite or correct, and has given rise to much surmise and many inquiries by members, both laymen and physicians. It is hoped that in the future the cause of death will be given as briefly, clearly, and correctly as the certificate of the attending physician will permit.

To one matter of detail I would call attention in passing, which is that of the rejected applications of unsuccessful candidates. These papers are now on file in the offices of the various State Medical Examiners, a hundred in one state perhaps, and some thousands in another, and most of them kept with little or no care. These should be collected and placed securely in the vaults of the Arcanum building, and so numbered and arranged as to be ready to be seen at any moment when it is desirable to know when or why the applicant was rejected, so that the full cause of his rejection and his history may be readily ascertained without delay.

For this purpose no method of referring to them would be so accurate and expeditious as a card catalogue, the cards to be kept in one

of the cabinets of the Library Bureau of Boston, a concern who make it a part of their business to provide the suitable drawers, cards, labels, etc., at a moderate expense. These card catalogues are in use in the various Insurance Companies, and in several of the Fraternal organizations, and the Arcanum ought to be similarly supplied. I trust, therefore, that the Committee on Supplies will be authorized to purchase these very necessary accommodations.

STATE MEDICAL EXAMINERS.

The entire courtesy and harmony which have for many years marked the relations between the State Medical Examiners and the Medical Examiner-in-Chief have continued undiminished this year, and the co-operation in the work of the Order by these various officers has been for the most part perfect.

To obviate complaints which from time to time have been made, that applicants of certain classes, in respect of occupation, family, or personal history, were kept out of the Order in some states by the Supervising Examiners and were admitted in other states, a code of instructions was carefully prepared under the directions of the Supreme Regent, giving more definite directions than had previously been issued, declaring just what applications should be referred to the Medical Examiner-in-Chief by the State Examiners, and these rules have been for the most part closely adhered to by the latter gentlemen. Two notable exceptions occurred, in each of which a railroad man's application was approved by the State Examiner, under some misapprehension of the rules probably, when it should have been referred to the higher authority. In both cases the Order had to pay for the mistake, as both the railroad men figure in our list of fatal accidents. One was a brakeman and one a freight conductor.

There is apparently a tendency on the part of some of the State Examiners to refer as few applications as possible, for the reason that they do not wish to trouble the Medical Examiner-in-Chief unnecessarily, though the latter has never complained that too many were sent to him.

SUBORDINATE EXAMINERS.

In the latter part of last year the Supreme Regent also set on foot an inquiry into the honesty, capability, and efficiency of each individual subordinate examiner, and this inquiry has resulted in some changes of these men.

There have been, nevertheless, some cases among our deaths where the final result gives rise to the belief that the duty of the examination was not fully or carefully performed. For the most part, however, the work of the examiners has been, in my opinion, honestly and faithfully done.

SUPREME SECRETARY.

The Supreme Secretary has offered me all the assistance which I could require in the preparation of material for my report, and has ever shown a willingness to assist me in any other parts of my work. The clerks, too, in his office have been steadily accommodating and helpful in the many instances where I have required information concerning councils, secretaries, and all the numberless details on points that arise from time to time and lie more appropriately within their province.

SUPREME REGENT.

Nothing could exceed the courtesy and consideration which have been uniformly extended to me by the present Supreme Regent, nor the zealous and intelligent interest he has shown in all the details of the work of examining applicants and investigating the history of those who have died. I am greatly indebted to him for his unvarying support in the discharge of my duties.

Yours in V. M. C.,

JOEL SEAVERNS, M. D.,

Medical Examiner-in-Chief.

2 DUDLEY PLACE, ROXBURY, MASS., May 8, 1893.

SUPPLEMENTARY REPORT.

EXTENSION OF THE ORDER INTO SOUTHERN STATES.

By vote of the Supreme Council of the Royal Arcanum at its last session, the Medical Examiner-in-Chief was directed to make inquiries into the sanitary conditions of Alabama and South Carolina, proscribed territory in the Southern States, and include the results of his investigation in his next annual report.

This matter in all its branches has been before the Medical Examiner-in-Chief in several other years, and reports have been drawn up by him, first in 1884 on South Carolina, in 1886 on West Tennessee, in 1891 on Arkansas, and in 1892 again on West Tennessee.

It is difficult to find new material or fresh sources of information on which to base a new report. It has been my expectation that by this time the results of the Eleventh Census would have been completed and made public, so that some definite points as to the mortality and healthfulness of these Southern states might be laid before you. With this object in view I have corresponded with the Hon. Mr. Lodge, the United States Senator from Massachusetts, who has kindly sent me Part I. of the Compendium of the Eleventh Census, and has promised to send Part II. as soon as it is issued.

I regret to find that the details in this first volume are not such as to give me any assistance in the question as it is here presented, the tables being simply tables of population.

My investigations are therefore largely limited to the same lines as in previous reports, and the sources therein indicated. To this has, in the present instance, been added a large amount of manuscript testimony from physicians and other gentlemen residing in the parts of South Carolina and Alabama referred to, and obtained and forwarded to the Supreme Council by Messrs. Stephenson, of Hartwell, W. H. Davis, of Toccoa, and S. P. Weisiger, of Augusta, all of Georgia. This testimony, although general in character and not fortified by statistics, speaks in the highest terms of the salubrity and freedom from contagious diseases in the northwestern part of South Carolina and the northern part of Alabama. With regard to the deficiency of statistics as above mentioned, I need only quote from these papers the letter of Mr. Jos. M. Elford, the clerk and treasurer of the city of Spartansburg, S. C., who writes to Mr. Weisiger that "we have a board of health, but no real health commission, and I know of no statistics of health in the city or county that I could refer to." Among these papers sent to the Supreme Council was also the Report to the Grand Council of Georgia on the subject,

dated May 18, 1892, and which also alludes to the fact that no boards of health with proper organizations exist, and that therefore reliable statistics cannot be obtained. This report gives data of the relative mortality of South Carolina and Alabama as compared with other states, all tending to show that in the Knights of Honor the results have been more favorable in those two states than in New York, New Jersey, and Illinois. This report therefore recommends that the Supreme Council be petitioned to extend the Order into all the counties of South Carolina except the coast counties, including even a large part of the State southeast of the line from Augusta to Fayetteville, a line which is said to be the line of separation of the alluvial part of the State from the upland. The report recommends that of Alabama all the counties be made eligible except those south of the thirty-second degree of latitude, a proposition which excludes only the lower fourth part of the state.

Both these suggestions are greatly in excess of the requests of Representatives Gray, of Tennessee, and Adams, of North Carolina, as the former asked only permission to extend our lines into Alabama as far south as the Tennessee River, and the latter only to permit the institution of councils in the Piedmont section of South Carolina. This so-called Piedmont section cannot be said to extend farther south than the line of the sand-hills which traverse the state from the northeast to the southwest in the directions above stated.

My study of the question leads me to the belief that the claims of these witnesses from South Carolina and Alabama regarding these restricted sections are very just, and that the Piedmont section of South Carolina and that part of Alabama north of the Tennessee river cannot be compared unfavorably with the neighboring sections of North Carolina or Tennessee. The country is rolling or hilly or mountainous, with few malarial regions, and for the sick, those especially with chronic pulmonary diseases, is a health resort where many invalids from the South and North gain strength. It would be impossible for me to draw a line between the Carolinas, or between Tennessee and Alabama, where it could be said that the climate in one place is favorable to longevity, and in the other unfavorable; and until we reach the sand-hills in South Carolina I know of no section of the state that is not as healthy as is North Carolina.

If the decision of the question before us rests upon a comparison with other Southern states, there can be no doubt that the reply would be favorable. When, however, it comes to the general question of the advisability of extending the field of the Royal Arcanum farther south, it must be remembered that our experience in the Southern states has been uniformly less favorable than in the Northern, and that the states of Arkansas, Tennessee, Georgia, etc., for instance, have not been so profitable to our organization as the states of Minnesota, Iowa, or Illinois.

To quote the experience of the Knights of Honor, as prepared by our late brother, John A. Cummings, in the "Reporter" of March,

1884, he found that the record of South Carolina was better than that of Georgia, Florida, Alabama, Arkansas, or Texas, but less good than that of Michigan, Minnesota, Connecticut, Nebraska, or Illinois. In the last Annual Report to the Supreme Council of the Knights of Honor, May, 1892, Virginia and Georgia had the highest death-rate for the year, about 20 per cent., Louisiana the next, 18 per cent., and South Carolina and Missouri were next, with a rate of 17.8 per cent. Alabama occupied a much more favorable position, as her death-rate was but 11.9, and she had paid into the treasury more money than she received, the reverse being true of the states previously mentioned. The death-rate of the whole Order was 15.7.

Still one other point deserves mention, in view of the claim made by many medical men in the South that consumption is almost unknown in that region. In the last year, according to the Knights of Honor death-list, in Alabama about 10 per cent. of the deaths were from this cause, in Arkansas about 11, in Florida over 14, in Georgia nearly 14, in Louisiana nearly 13, in Mississippi about 10, in North Carolina 14, in South Carolina 13, and in Texas 13 per cent. It should be stated very plainly that in the whole of New England the death-rate by consumption in this same Order, the Knights of Honor, was but 16.1 per cent. of all the deaths, from which it will be apparent that the disparity of the mortality by consumption in the two sections, though marked, is not so excessive as is usually asserted.

In the session of 1887 of the Supreme Council of the Knights of Honor a report was presented by Dr. I. D. Witherell, showing the number of deaths in each State each year, and the membership and annual death-rate per 1,000 members from 1875 to 1886 inclusive. From this table it appears that the average death-rate per thousand in the States concerning which this inquiry is being made was in Alabama, 10.7, Arkansas, 17.5, Florida, 13.3, Georgia, 9.2, Louisiana, 13.3, Mississippi, 15.6, North Carolina, 10.8, South Carolina, 9.9, and Texas, 13.5. This makes a good comparative showing for Georgia and South Carolina. I have quoted these figures because in the report quoted above for 1892 Alabama held a better rank than South Carolina, which I believe she is not entitled to. I have availed myself so largely of the statistics of the Knights of Honor because no others so recent, so pertinent, and so carefully prepared have fallen under my observation.

In the Royal Arcanum it has been the uniform result for one year after another that the farther south we go for members the greater is our death-rate, Arkansas, Georgia, North Carolina, and Virginia being pretty uniformly among the states that have had a high mortality. In the year just past the same fact holds true, and Arkansas, Virginia, North Carolina, and Georgia head the list in the order given.

In the list of deaths by consumption also of this past year Georgia appears first with the highest death-rate of this disease, and North Carolina and Virginia do not rank very far below.

If we compare the relative advantages of these two sections of country, one being the part of South Carolina lying northwest of a straight line extending from Augusta, Ga., through Columbia, S. C., to Fayetteville, N. C., and the other being that part of Alabama lying north of the Tennessee river, we shall find that the former is made up entirely of hilly or mountainous regions, through which small rapidly flowing mountain streams run; on the other hand, in the part of Alabama described the lower boundary is a navigable river, which is two hundred miles in length in the State, and has a valley twenty miles wide, of a rich, fertile, and agricultural value. The river itself is navigable for the largest steamers as far as Florence, and, by means of a canal around the Muscles Shoals, for the rest of its way through the State. This alluvial strip, ten miles wide along the northern bank, extending to Huntsville, must not be forgotten, for it is the presence of this river and its valley, together with the similar valley of the Mississippi river, that have determined the unfavorable character for health of Western Tennessee. The additional fact that the river is navigable for the largest steamboats as far as Florence makes it quite as possible for the diseases of the Gulf of Mexico (yellow fever, for instance) to be brought there as to Memphis. The only part of this section of Alabama that is mountainous is the extreme northeast, where the Alleghanies enter the state.

My carefully formed opinion on the extension of our Order to the states of South Carolina and Alabama, or to any other states south of our present limits, is that it is unwise, and that our growth in other directions should be favored in preference. There is no doubt that all the Southern states have portions of territory quite free from deleterious climatic or terrestrial influences, yet that in all of them there are at least large portions, like the river bottoms and sea coasts, where disease is very prevalent, and where pneumonia or fevers carry off many victims, much more than does consumption in the North, as is shown by the increased total death-rates in said states; and it seems that whilst in temperate zones a few more die of phthisis than in the torrid zone, yet that more than this difference is made up by the increase in the acute respiratory diseases and the malarial and congestive fevers of the latter.

JOEL SEAVERNS, M. D.,

Medical Examiner-in-Chief, R. A.

ROXBURY, MASS., May 5, 1893.

