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DIPHTHERIA ANTITOXIN

A Résumé of Its
History, Statistics,
Immunizing Value,
Dosage, Method of
Administration, Etc.



Press of PARKE, DAVIS & CO.
DETROIT, MICH., U. S. A.

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THE ANTITOXIN TREATMENT OF DIPHTHERIA.

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An editorial in the January (1900) issue of the *Canada Lancet* defines the status of antidiphtheritic serum in therapeutics as follows:

“The efficacy of the antitoxin treatment of diphtheria, according to the statements of those having the widest experience with it, has been so thoroughly established that further discussion of the subject might seem unnecessary. Special scientific commissions appointed by various medical societies to inquire into the matter, dealing with statistics of the results obtained in both hospital and private practice in all parts of the world, have reported so overwhelmingly in its favor that there can no longer be doubt as to its therapeutic value. So much is this the case that most journals have for some time refrained from attempting to prove the utility of a method of treatment that is established on as firm a basis as that of vaccination in the prophylaxis of smallpox.”

The *Journal of the American Medical Association*, in a recent editorial, also calls particular attention to the fact that there is now but little diversity of opinion as to the utility of the antitoxin treatment of diphtheria among those who have had the largest experience and are thus entitled to a hearing.

There is, however, not an inconsiderable body of the profession who, for one reason or another, think the subject still surrounded by doubt, and thus refrain from using a therapeutic agent whose claim to confidence has been incontestably

established by the results of extensive clinical experience. To this class of physicians this monograph on antitoxin is particularly addressed.

There is now no doubt in the minds of most competent observers that the original claims made for the antitoxin treatment have been verified to a large extent.

Before adducing a number of recent statistics to prove that the above assertions with reference to antitoxin are well founded, it may prove interesting as well as profitable to take a brief retrospective glance at the history of diphtheria.

Diphtheria was known and dreaded centuries ago, even during the middle ages, and the disease was one of the first to make havoc among the early settlers of New England, many serious epidemics having occurred during the seventeenth and eighteenth centuries. The disease is endemic in the larger cities and liable to become epidemic at certain seasons of the year. It is not as liable to become epidemic away from large cities.

Contrary to what might be expected, diphtheria has increased during the past ten or fifteen years, while other contagious diseases have shown a marked decrease.

During all of these many years that diphtheria has been one of the slayers of mankind, very many remedies have been used. Nearly all of them have been supplanted from time to time by others thought or hoped to be better. Antitoxin is the only remedy of the whole number that has not been superseded. It has enabled physicians to dispense with local treatment to a great extent. Some, in fact, rely on it altogether, and only resort to auxiliary treatment in the most severe cases.

After a careful consideration of the therapeutics of antitoxin, Dr. L. D. Rand, of Fairfield, Me., says truly: "A remedy that keeps the mortality below five per cent. in a disease hitherto so fatal can safely be said to be a specific."

The history of antitoxin forms an interesting part of the therapeutics of diphtheria, showing how the knowledge we possess of the serum treatment of this malignant disease was gained step by step and how one discovery led to another until the chain of evidence was complete.

The term *antitoxin* was introduced by Behring, in 1893, for the specifically antipoisonous substances of tetanus and diphtheria serums. He called them blood antitoxins, to distinguish them from antitoxins derived from other sources.

Inasmuch as each antitoxin cures or protects only against the disease produced by the micro-organism corresponding to it, antitoxin therapy is eminently a specific therapy.

What is antitoxin? This is a very difficult question to answer. Behring believes that it is a proteid, and that the "antitoxic proteid bodies are carried into the blood from such cells as, during immunization from tetanus or diphtheria toxin, undergo alterations of their actual and potential qualities." Others, however, hold different views. All we know at present is, that it is a soluble substance and that it renders the toxin inert.

By experimenting on animals with the blood serum of diphtheritic patients, Loas has demonstrated that in severe cases of diphtheria the blood contains toxin. He has also shown that antitoxin is present in the blood at some period after an attack of diphtheria, or after the use of a curative dose of antitoxin. This is not the case, however, immediately after the attack of diphtheria, nor after the use of an immunizing dose of antitoxin.

It is true of antitoxin as of every important discovery in medicine, that it is not the sole product of the researches of any one man, but is due to the combined efforts of preceding and contemporaneous workers, each one forging a link of the chain, the last one combining all the preceding efforts into a grand harmonious whole.

Without going very far back, and limiting myself only to those workers more intimately connected with the bacteriology and serum therapy of diphtheria, I will mention that in 1883 Klebs discovered, and in 1884 Loeffler succeeded in cultivating, the micro-organism which is now practically accepted by all observers as the causative element of diphtheria. Roux and Yersin demonstrated, in 1887, that the lower animals developed all the symptoms of diphtheria when injected with the poisons resulting from the diphtheria bacillus in artificial

cultures. Also that the general symptoms accompanying the disease in man were due to the absorption of this poison or toxin. Loeffler, in 1888, inoculated a guinea pig with diphtheria. It sickened and recovered, and subsequently failed to be affected by repeated inoculations of virulent cultures, thus showing that it was entirely immune.

In 1890, Behring and Kitasato published their reports on the immunization against diphtheria and tetanus, showing "that the blood of an animal which has an acquired immunity against tetanus or diphtheria, when added to a virulent culture of one or the other of these bacilli, neutralizes the pathogenic powers of such cultures, as shown by inoculations into susceptible animals; and also that cultures from which bacilli have been removed by filtration, and which kill susceptible animals when injected in very small amounts, have their potency destroyed by adding to them the blood of an immune animal."

In 1891, Kitasato discovered that the blood serum of animals immunized against tetanus had not only prophylactic but also curative properties. He found that an injection of serum could cure mice inoculated with tetanus germs after tetanic symptoms had appeared.

Further experimentation has, with an unflinching regularity, confirmed the above observations, so that they have been universally accepted as truth by all bacteriologists. On the above facts rests the foundation for the treatment of human diphtheria by antitoxin.

Roux and Yersin showed that different cultures of diphtheria germs varied greatly in virulence. This accounts for the fact that cases with a small amount of membrane formation often require more antitoxin than others with a great deal more. The extent of membrane formed is dependent solely upon the vegetative powers of the bacillus, and bears no relation to its virulence.

It soon became evident that if antitoxin was ever to become a practical treatment for diphtheria some other animal than the guinea pig would have to be used for its production. Different observers began to employ larger animals, such as the

cow, the sheep, etc., but finally agreed upon the horse as the most suitable. By nature he is immune to diphtheria, and this immunity is greatly increased by the treatment to which he is subjected. He stands the injection of diphtheria toxin without any apparent discomfort, and furnishes us with great amounts of serum from time to time. This serum is harmless to human beings, even when injected in large amounts.

In 1892, Aronson reported to the Berlin Medical Society on the immunization of human beings against diphtheria. In the following year he reported that he had so increased the power of the serum that protective inoculation of children exposed to diphtheria was then a practical fact. In February, 1894, Roux's serum was used in the Hospital des Enfants Malades, of Paris, France, with a mortality in 448 cases of only 24.33 per cent., against a mortality of 51.71 per cent. in 3971 cases treated in the same hospital during the preceding four years. At the same time the mortality in the Hospital Trousseau, where no antitoxin was used, was 60 per cent.; thus showing very evidently that the diminished mortality was due to antitoxin. This was the first time that antitoxin was used against human diphtheria. In March, 1894, Aronson's serum began to be used in the Children's Hospital of Berlin.

In September, 1894, Behring and Roux read papers on the treatment of human diphtheria with antitoxin at the International Congress of Hygiene that met at Buda-Pesth. The reputation of the authors making the report, and the very favorable clinical results they presented, at once obtained for antitoxin the universal attention not only of the profession, but also of the world at large. Different observers began to confirm with their own statistics the brilliant results reported, and the fame of antitoxin extended far and wide, until now it is no exaggeration to say that it is recognized all over the world as the sovereign remedy for diphtheria.

We now come to what Virchow has not inaptly called the brute force of figures. It may be accepted as the deliberate judgment of the medical profession that the discovery of the antitoxin of diphtheria must rank with that of anesthesia and that of vaccination as among the most beneficent in the history

of medicine. Statistical evidence to this effect has been forthcoming in overwhelmingly convincing amount.

The severest test to which antitoxin could be put was its use in laryngeal diphtheria. This was the rock on which antitoxin was expected to founder; but that it has stood the test successfully will be seen by the report of the Committee of the American Pediatric Society, appointed to investigate the value of antitoxin in laryngeal diphtheria. In 1704 cases collected, the mortality was 21 per cent. Before the use of antitoxin it was estimated that 90 per cent. of laryngeal diphtheria cases required operation, whereas now, with the use of antitoxin, only 39.21 per cent. require it. The percentage figures have also been reversed, formerly 27 per cent. approximately representing the recoveries, while now, under antitoxin treatment, 27 per cent. represents the mortality.

The cases of diphtheria treated with antitoxin analyzed by the Pediatric Society occurred in the practice of 422 physicians, in private practice in the United States and Canada. The committee making the report was composed of Drs. Northrup, O'Dwyer, Holt, and Adams. Including all cases treated, the death rate was about 12 per cent. Excluding the cases moribund or dying within twenty-four hours the percentage was less than nine per cent. Of 4120 cases, not moribund and living twenty-four hours, there was a death-rate of 4.8 per cent. Of these many thousand cases no sudden death immediately following the injection occurred.

The statistics of the Metropolitan Asylums Board, of London, are important and instructive. They treated 71.3 per cent. of all the cases admitted with the diphtheritic antitoxin. The cases which were admitted in a moribund condition and the very mild cases were not so treated.

The cases in 1896 numbered 2674. There were 717 deaths, a percentage of 25.9. The percentage varied from 32.3 in those under five to 4.2 in those over twenty. The deaths in 1894, when no antitoxin was used, were 30.8 per cent. As the proportion of cases treated with antitoxin became greater each year, so the death-rate lessened. The following table shows this well:

	Antitoxin- treated cases, percentage of all cases.	Mortality per cent. of all cases.
1888-95		28.5
1894		29.6
1895	61.8	22.5
1896	71.3	20.8
1897	80.2	17.5
1898	81.4	15.5

During 1896, in the serum-treated cases, 48.6 per cent. were under five years old, 13 per cent. above ten; whereas in the cases treated without serum there were only 31.1 per cent. of children under five, and 36.7 were above ten. The proportion of laryngeal cases was greater, too, in the antitoxin-treated cases than in those treated without.

A report of the committee of the Clinical Society of London, on the antitoxin treatment, published in the *Archives of Pediatrics*, was made upon 633 consecutive cases (not specially selected), with the necessary requirements that there must be satisfactory evidence of the existence of true diphtheria, and statement of the number of units of antitoxin used. Of the 633 cases, 124 were fatal, *i. e.*, 19.5 per cent., and if fifteen cases dying within twenty-four hours are excluded the mortality is reduced to 15.6 per cent. With this result was compared 448 unselected cases not treated with antitoxin, amongst which 150 proved fatal, giving a mortality of 33.4 per cent.

Rachfuss presented at the Twelfth International Medical Congress statistics of 44,631 cases from various sources treated with antitoxin, with a mortality of 14.6 per cent., and 6597 cases treated without antitoxin with a mortality of 31.1 per cent.

Dr. Bayoux presented at the meeting of the Wisconsin State Medical Society, in 1901, statistics based upon 200,000 cases, collected from numerous sources, showing a mortality of 55 per cent. before the use of antitoxin, and 16 per cent. since its use.

No feature so conspicuously proves the specific character of antitoxin as a remedy in diphtheria as its influence on

the mortality records of a city. The *Berliner Medicinische Wochenschrift* was the first to attempt a collective investigation in this direction, and the table so collected and published showed such remarkable results as to become the most potent factor in an argument.

Whatever has been the source, the result in the study of the statistics in the antitoxin treatment of diphtheria has been the same, and whether it be from hospital practice or the collective investigation of different medical bodies the surprising diminution in the death rate has been so uniform that this truth remains unquestioned.

On October 5, 1895, the Chicago Board of Health began the use of antitoxin. From that date up to February 28, 1899, a period of nearly three and a half years, a total of 6342 reported cases of diphtheria were visited by the department inspectors. Of this number 4311 were verified bacteriologically as true diphtheria, and 4076 cases were treated with antitoxin; the remaining 235 cases refusing antitoxin, or being treated by other physicians, the results are not known. There were 3795 recoveries, 276 deaths, and 5 cases were still under treatment at the close of February, 1899, giving a mortality of only 6.77 per cent. The results for the four months previous to the publication of the report were even more favorable. During November and December, 1898, and January and February, 1899, 423 cases were treated. There were 398 recoveries, 20 deaths, and 5 remaining under treatment February 28. The mortality-rate was only 4.73 per cent.

A study of diphtheria statistics in New York will show that the actual number of deaths from diphtheria before 1895 did not vary much for a number of years. The influence of the increase in population was counteracted by our better knowledge of how to handle the disease. About every sixth year the deaths would amount to 3000, and then diminish gradually to about 2000. Thus for fifteen years previous to the introduction of the use of antitoxin, the average number of deaths per year from diphtheria and croup was 2373; highest number 3287 (1881), lowest 1653 (1883). In the year previous to the beginning of the use of antitoxin (1894) the deaths were 2870.

In the four years 1896 to 1899, during which antitoxin was quite generally used, the deaths averaged 1341 a year, more than 1000 less than the average of the previous fifteen years. In 1898-99 the average deaths numbered 1005, or 600 less than the smallest number in any year since 1880.

In Boston (according to Dr. John H. McCollom, who read an interesting paper on Diphtheria Antitoxin before the Massachusetts Medical Society in June, 1899) previous to 1894 there died yearly, from diphtheria, from 15 to 18 persons in every 10,000 inhabitants. From 1896 to 1899 the average number was 7, and in 1898-99 less than 4 (3.6).

The results of the antitoxin treatment at Denver, Col., during the four years 1896-1899 are given by William P. Munn, M.D. The pre-antitoxin period 1889-1894, inclusive, gave 2272 cases with 827 deaths, or a mortality of 36.4 per cent. During the four succeeding years there were 1177 cases with 136 deaths, a mortality of 11.56 per cent. Dr. Munn further divides the antitoxin period by giving cases treated with and without antitoxin, with the result of 607 cases treated and 30 deaths, a mortality of 4.96 per cent.—against 570 cases untreated and 106 deaths, or 18.6 per cent. In other words, four times as many died when antitoxin was omitted from the treatment as when it was used.

To sum up the above, in the four years 1896-99 Denver had almost half as many cases of diphtheria as it had during the six preceding years, with but one-sixth as many deaths from the disease.

The official report of the Board of Health of the city of Baltimore for 1900 contains the following interesting statement with reference to the use of antitoxin:

“One of the most important functions of the Board of Health is the distribution of antitoxin for indigent cases of diphtheria. Where circumstances render the complete isolation of the case impossible, antitoxin is used in order to immunize all those exposed to the disease. The results of the immunization and the results of the curative value of antitoxin are very gratifying, since, in addition to saving the lives of many that would otherwise have died of diphtheria, the spread of the disease has been restricted. As an immunizing dose

1000 units have been used, and in treating a case of diphtheria 2000 units. This has been followed by an injection of 2000 or 4000 units if the case does not show decided improvement, and in some instances from 7000 to 10,000 units have been used in treating one case; in one case 15,000 units were injected, 2000 units being administered every eight hours."

This report states that the mortality from diphtheria during the year

1899 was.....	4.61	per cent.
1898.....	5.73	"
1897 (the first year antitoxin was used).....	23.27	"
1896 (without antitoxin).....	51.87	"
1895 (without antitoxin).....	71.42	"
1894 (without antitoxin).....	74.15	"

There are few reports that show more conclusively the tremendous influence antitoxin has had on the mortality of diphtheria. Although in 1897 but comparatively few physicians had started to use antitoxin, and the city was not furnishing it for the indigent cases, the percentage of deaths was reduced from 51 to 23 per cent., and in 1898, the first year that antitoxin was freely used, the percentage of mortality resulting from diphtheria was but 5.73 per cent.; in 1899, when practically all physicians were using it, 4.61.

The following statistics of Washington, D. C., collected by Dr. John E. Walsh, of the health office of the national capital, also offer indisputable evidence of the value of antitoxin in the treatment of diphtheria:

	Cases.	Deaths.	Mortality per cent.
1890.....	397	137	34
1891.....	475	164	34.5
1892.....	553	182	32.9
1893.....	377	128	33.9
1894..	422	172	40.7
1895*.....	418	124	29.6
1896.....	326	76	23.3
1897.....	620	110	17.7
1898.....	700	131	18.7

* Antitoxin began to be used.

The report of the State Board of Health of Massachusetts for the year ended March 31, 1899, shows that diphtheria antitoxin has grown in favor to an enormous extent during the period reported upon. During the year under review 12,491 bottles of serum were issued by the State laboratories, as compared with 4668, 3219, and 1724 during the preceding three years, each bottle representing approximately 1000 antitoxic units. This extended use of the antitoxin has been accompanied by a marked and steady fall in the general fatality from diphtheria, the fatality in the pre-antitoxin period being on an average 28.3 per cent. during four years, while during the antitoxin period the general fatality from diphtheria throughout the State was only 15.6 per cent., and for those cases treated with antitoxin it was only 10.7 per cent. In judging of the results of antitoxin treatment it is important to separate those cases in which a bacteriological examination was made from those in which there was no such examination made. It appears that in 1412 cases diagnostic cultures were made, and of these 1195 proved to be genuine diphtheria and 217 gave a negative result. Of the 1195 positive cases there were 1100 recoveries and 95 deaths, or a fatality of 7.9 per cent., as compared with 13.7, 11.6, and 8.2 during the previous three years.

The experience of Dr. Frank W. Wright, health officer of New Haven, Conn., with antitoxin in the treatment of diphtheria in private practice, during five years, was not as favorable as the results recorded above. Of 268 persons he treated with the diphtheria antitoxin 209 recovered and 59 died, a mortality of 22 per cent. Yet Dr. Wright, in his presidential address to the New Haven Medical Association, January 17, 1900, says: "A number of years ago, in reporting 50 cases of diphtheria treated by this remedy, I stated that I believed we had a remedy of great value, and I am still of that opinion. Its benefits to mankind are second to no other remedy except, possibly, vaccination. My conclusions are that diphtheritic antitoxin serum usually cures favorable cases and often unfavorable ones, it prolongs life, lessens the severity of the disease, tends to prevent stenosis and the need of intubation

in laryngeal cases, and when intubation is necessary it lessens the mortality; it prevents complications and sequelæ and materially shortens the course of the disease."

Statistics prepared by Dr. Goodall show that the mortality from diphtheria in London has fallen, since the introduction of the antitoxin treatment in 1894, from 24.7 per cent. to 17.4 per cent. The reduction was greater in the hospitals under the control of the Asylums Board, where formerly the mortality had been greater, than in the city at large. Besides, laryngeal and pulmonary complications were less common in cases treated with the antitoxin than otherwise.

The statistics of Austria for 1898 are given in the *Bull. Gén. de Thérap.* of March 15, 1901, as follows: Of 16,963 patients treated without antitoxin, 6697 died, a mortality of 39.3 per cent; of 15,333 treated with antitoxin, 2428 died, a mortality of 15.8 per cent. In Vienna the mortality following the introduction of antitoxin was one third of what it was before.

Dr. J. J. Kinyoun, of the United States Marine Hospital Service, in charge of the Bacteriological Laboratory at Washington, in an article published in the *Forum* for August, 1900, gave a lucid historical sketch of the progress of the antitoxin treatment of diphtheria in the principal countries of Europe.

The treatment began to be used in the Berlin hospitals in 1894, and the first full year of the antitoxin period was 1895. The following is the hospital record at Berlin for the years specified in cases of diphtheria and membranous croup, which latter disease has been found to be generally due to the diphtheria bacillus, and which consequently yields as readily to the antitoxin treatment as diphtheria: 1892, 3683 cases with 1342 deaths; 1893, 4315 cases with 1637 deaths; 1894, 5220 cases with 1416 deaths; 1895, 6106 cases with 987 deaths; 1895, 4345 cases with 559 deaths; 1897, 3723 cases with 546 deaths. The antitoxin was used for three months only in two of the hospitals in 1894, and the death rate fell from 37.7 per cent. in 1893 to 27.1 per cent. In 1897 the death rate had fallen to 14.6 per cent.

In the Kaiserin Friedrich Hospital, in 1894, the new treatment

was used from March to September, and the mortality in all cases of diphtheria and croup was 15.6 per cent. From September to November no further supply of the serum could be obtained, and in that period the mortality rose to 48.8 per cent. Then a supply of the serum came to hand, and on a resumption of the new treatment the mortality rate at once fell to the former percentage. This was a demonstration of its effectiveness which could not be explained away.

At the Charité, the average death-rate of all cases of diphtheria for the eight years preceding the commencement of serum treatment was 54 per 100; for the four years after the serum treatment was commenced the mortality-rate was 16 per 100, a saving of 36 lives for every 100 cases of diphtheria treated.

Taking all the cases treated in all the hospitals of Berlin together, we find that in the three years 1890-1893, pre-antitoxin days, the death-rate was 38.4 per cent.; in the three years 1894-1897, post-antitoxin days, the mortality-rate was 18.2 per cent.—*i. e.*, less than half.

In Prague the death-rate of cases treated with antitoxin was 12.7 per cent. By an unfortunate accident the serum became unobtainable, and the death rate at once ran up to 53 per cent. In Vienna the same thing occurred, and the mortality-rate rose from 22 per cent. to 65.6 per cent.; and again in Trieste, and the rate rose from 18.7 to 50 per cent. These three cities afford a striking comparison. In the same hospital, and to all intents and purposes at the same time, by the same doctors, cases were treated with and without antitoxin, and the death-rate in the latter case, in all three, becomes three or four times as great as in the former.

The results of a study of the cases of diphtheria treated in the municipal hospital of Mühlhausen, a small manufacturing city of Germany, both before and since the introduction of antitoxin, are not without interest. Thus, the percentage of mortality from diphtheria was, in 1892, 53.4; in 1893, 55.3; in 1894, 51.7; in 1895, 38.5; in 1896, 28.8; in 1897, 16; in 1898, 20; in 1899, 15.1; in 1900, 18.7. Among the cases of pharyngeal diphtheria the mortality percentage was, in 1892, 20; in

1893, 35; in 1894, 37.1; in 1895, 19.4; in 1896, 26.2; in 1897, 8.6; in 1898, 14.8; in 1899, 7.1; in 1900, 8.1. Of the cases of laryngeal diphtheria the percentage was, among those not operated on: in 1892, 33.3; in 1893, 81.8; in 1894, 58.3; in 1895, 100; in 1896, 0; in 1897, 10; in 1898, 12.5; in 1899, 7.1; in 1900, 8.3; while among those operated on the percentage was, in 1892, 67.5; in 1893, 67.7; in 1894, 70.9; in 1895, 70.7; in 1896, 33.3; in 1897, 29.4; in 1898, 35.3; in 1899, 34.4; in 1900, 37. At the same time a large reduction in the number of cases of laryngeal diphtheria requiring operation was noted after the institution of antitoxin treatment. That the favorable results, which correspond closely with those observed elsewhere, are not due to the character of the disease, is shown by the fact that the cases during the years 1899 and 1900 were more severe than at any time in twenty years.

Cuno, in the *Muenchener Medicinische Wochenschrift* for May, 1901, gives the statistics obtained in the course of 18 years' service in Christ's Children's Hospital, at Frankfort. The diphtheritic serum was commenced on the 1st of October, 1894. Up to that time 1928 children had been treated for diphtheria by him; 708 died—that is, 36.7 per cent. Of the total number, 561 were operated upon for stenosis of the larynx, and 363 died—a mortality of 64.7 per cent. Since the antitoxic serum was introduced, 1257 children have been treated by him; 118 died—that is, 9.4 per cent.; 164 were operated upon for stenosis of the larynx, with 55 deaths, a percentage of 33.5. The most striking features of these figures are, first, the extraordinary reduction in mortality, from 36 per cent. to 9 per cent., and secondly, the very marked reduction in the number of cases requiring operation. Statistics such as these are more impressive than any amount of animal experimentation.

The mortality from diphtheria has been halved in a large number of German cities from which statistics have been collected. Thus, among 44,631 cases of diphtheria treated with antitoxin during 1895, 1896, and the first three months of 1897, the mortality was 14.6 per cent., while among 6507 treated without the antitoxin the mortality was 34 per cent.

The Paris statistics do not give the whole number of cases of diphtheria treated, and we must judge from the number of reported deaths. From 1886 to 1893 the number of deaths averaged about 1500 a year. In 1895, the first year in which antitoxin was generally used, the number fell to 993; in the next year to 411; in 1897 it was 444, and in 1898 274.

Dr. Roux treated all his cases of diphtheria in the Hôpital des Enfants Malades, from February to July, 1894, with antitoxin, with a mortality-rate of 24.5 per cent. The death-rate in the previous five years was 51.7 per cent. At the same time, in the Hôpital Trousseau, where it may reasonably be concluded the same class of cases was treated, no antitoxin was used, and the death-rate was 60 per cent.

In the Zurich Children's Hospital, from 1874-1894, 839 cases of diphtheria were treated, with a death-rate of 41 per 100; 483 of these were operated on, with a death-rate of 64 per per cent. After the serum treatment was commenced, from 1894 to 1898, 385 cases were treated. Of these 9.8 per 100—*i. e.*, less than one-quarter as many—died, and the percentage of those who required an operation was only 19.4—less than one-third.

Some additional statistics of an interesting character are presented in a recent monograph by Dr. Turner, who reports the study of the mortality in diphtheria in the three principal Australian colonies, Queensland, New South Wales, and Victoria, for fifteen years, with especial reference to the influence of the antitoxin on the death-rate. In the eleven years preceding the introduction of antitoxin—from 1884 to 1894—the number of deaths from diphtheria and croup per hundred thousand in Queensland varied between 65.3 in 1885 and 35.8 in 1894, the mean annual death-rate per hundred thousand being, from 1884 to 1889, 49.2, and from 1890 to 1894, 44.1; while during the four years of antitoxin treatment, from 1895 to 1898, the number of deaths from the same diseases per hundred thousand varied from 21.2 in 1895 to 12.9 in 1896, the mean annual death-rate per hundred thousand from 1895 to 1898 being 16.4. In New South Wales the number of deaths from diphtheria and croup per hundred thousand between 1884

and 1894 varied from 62.8 in 1885 to 27.8 in 1886, the mean annual death-rate per hundred thousand being, from 1884 to 1889, 43.2; from 1889 to 1894, 47.7; and from 1895 to 1898, 18.4. In Victoria the number of deaths from diphtheria and croup per hundred thousand varied, between 1884 and 1894, from 92.2 in 1890 to 15.6 in 1893, the mean annual death-rate per hundred thousand being, from 1884 to 1889, 45.4; from 1890 to 1894, 39.8; and from 1895 to 1898, 19.7. In all three colonies the number of deaths per hundred thousand between 1884 and 1894 fluctuated between 72.6 in 1890 and 29.7 in 1894, the mean for the eleven years being 44.4, while the number of deaths per hundred thousand between 1895 and 1899 varied between 19.9 in 1898 and 16.4 in 1896, the mean for the four years being 18.7.

Burrows, in an admirable clinical study of the cases treated in the Boston City Hospital from August 7, 1899, to August 6, 1900 (*American Journal of the Medical Sciences*, February, 1901), gives a table of 1963 cases with 249 deaths, a mortality rate of 12.23 per cent. Deducting 69 cases which were moribund at the time of admission, the death-rate would be only 9 per cent. He also gives a table of 557 laryngeal cases with a mortality of 31.4 per cent. (32 of these cases were intubated, with a mortality of 45 per cent.).

Dr. Burt Russel Shurly, of Detroit, whose experience with intubation in diphtheria has been extensive, claims that antitoxin administered twelve hours or more prior to operative interference will reduce the mortality of intubated cases at least 50 per cent.

THE IMMUNIZING VALUE OF ANTITOXIN.

Antitoxin has been shown to possess also distinct immunizing value, as has been demonstrated in the suppression of numerous epidemics. The prophylactic employment of the antitoxin has not yet received the general application that its utility deserves, and an earnest plea for the more extended use of the antitoxin for immunizing purposes is made by Dr. J. S. Billings, Jr., who points out that since the introduction of the antitoxin treatment of diphtheria in New

York in 1896 there has been a steady reduction in both the number of cases and the number of deaths from diphtheria each year to Jan. 1, 1899. During the latter year, however, both the number of cases and the number of deaths increased. The records of the New York Department of Health show further that the antitoxin was used in a larger number of cases in 1899 than in 1898 and with as good or even better results. On the other hand, there has been a reduction in the number of cases in which immunizing injections of the antitoxin were made. Dr. H. M. Biggs, director of the bacteriologic laboratories of the New York Department of Health, has reported that of 3100 individuals immunized with antitoxin, but nine contracted diphtheria and these in mild form. In the latter a minimum dose of antitoxin—150 units—was employed, and it was thought probable if a larger amount—from 300 to 500 units—had been used the immunization would have been perfect. There were reported during 1899, in the boroughs of Manhattan and the Bronx, 682 secondary cases of diphtheria in which the disease was contracted after twenty-four hours from an original case in the same family. It is computed that if the antitoxin had been employed to immunize these cases the total number of cases of diphtheria for 1899 would have been 7558 instead of 8240, and thus actually a smaller number than in 1898, and the number of deaths would likewise have been reduced from 1087 to 1026. Further, many secondary cases developed a week or more after the primary ones, so that if immunization were practiced with the desired thoroughness many additional cases and deaths would have been prevented.

AFTER-EFFECTS OF ANTITOXIN.

Besides its curative effects the use of antitoxin is sometimes followed by certain disagreeable and unpleasant after-effects. They are rare, and probably due to the serum and not to the antitoxin, but nevertheless they do occur. The commonest one is an inflammation of the skin, often in the form of erythema or urticaria, at other times simulating scarlatina or

measles. Occasionally there is a rise of temperature. Again, joints may become swollen and painful.

Dr. A. Stanley studied a series of five hundred cases of diphtheria, with reference to the occurrence of antitoxin rashes, and reported his experience in the *British Medical Journal* of Feb. 15, 1902. All the patients were treated with antitoxin, the total number of deaths being 80, a death-rate of 16 per cent. Antitoxin eruptions occurred in 112 cases, about one-fourth. They were classified as follows: Erythematous, 58; erythemato-urticarial, 15; urticarial, 30; scarlatiniform, 6; morbilliform, 3; and transient early erythema and urticaria (usually at seat of injection), 17.

Average day of onset of eruption: Erythemata, 12.2; urticaria, 9.2.

The typical diphtheria-antitoxin eruption is a marginate erythema on the psoriasitic regions tending to run into arcs of a circle, lasting about three days, and accompanied by a slight rise of temperature with malaise. The occurrence of an antitoxin eruption during the course of a case of diphtheria does not appear to influence the prognosis seriously, though it cannot but be held that any febrile disturbance of the heart would tend to have a harmful effect. No case, however, was observed where fatal heart failure was precipitated by the occurrence of an antitoxin eruption.

J. Richard Armstrong (*Lancet*, March 4, 1899) reported 122 cases treated in 1897 and 1898. There were no bad effects. One child developed scarlatinal eruption, accompanied by acute pains in the joints, ten days after the injection, disappearing in two days.

The *Archives of Pediatrics*, June, 1899, reported on 422 children admitted to Children's Hospital, Washington, D. C., suffering from various diseases. They were given immunizing doses of 100 to 500 units, according to age; only two developed urticaria.

The committee of the Clinical Society of London (*Practitioner*, June, 1899) reported on 633 cases treated with antitoxin. Rashes were produced in about one-third of the cases. Pain, and occasionally swelling about the joints, were pronounced

in a few cases. Even when used in large doses, no serious effects were observed.

W. P. Northrup (*Medical Record*, March 4, 1899) reported on 91 cases treated in the New York Foundling Asylum in 1898. "No joint complications. . . . No pains, . . . and rashes but rarely observed."

To the *Lancet* of April 1, 1898, Dr. Charles Bolton contributed an able article, entitled "Complications of Serum Treatment of Diphtheria." He has carefully examined 100 cases, observing rashes, pains in and around joints, fever, transient albuminuria, abrasions, abscesses, and sloughing at the seat of injection. The last three he very properly attributes to careless use, the others entirely to the serum, and says these symptoms may vary in degree with serum from different horses. Onset occurred in from 1 to 18 days, and the duration was 2 to 3 days. Rashes were in four forms of erythema, simple, multiform, scarlatinaform, or morbilliform. "On the whole," he says, "the complications caused by the serum, while at times very painful and inconvenient, are quite harmless."

Opponents of antitoxin have accused it of producing post-diphtheritic paralysis, heart-failure, and albuminuria. The evidence they bring forth to substantiate their charges is very deficient. Dr. Joseph McFarland, in a very able paper on "Post-diphtheritic Palsy and Antitoxin," written for the *New York Medical Record*, and published by that journal in January, 1898, proves conclusively that all the cases of palsy occurring after the use of antitoxin are due to this agent only in so far as it has saved the patient from death. He shows, by a series of experiments on guinea-pigs, that they develop palsy when the amount of antitoxin injected is not enough to counteract all the toxin given. The same thing holds good in human diphtheria, and the paralysis, etc., are due to the fact that we have injected just enough to save life, and not sufficient to overcome all the toxins in the system.

Albuminuria of a mild and transient nature appears in few cases, about the time of the appearance of the antitoxin rashes, but it is of no serious consequence. In an interesting paper

in the *Boston Medical and Surgical Journal* Dr. John H. McCollom contends that antitoxin does not cause albuminuria and has no effect in producing heart complications in diphtheria. He arrived at this conclusion after a clinical study of 4200 cases of the disease.

The production of abscesses at the point of injection is from lack of cleanliness and proper antiseptic precautions.

Another favorite argument of those who oppose antitoxin is that it has not diminished the mortality of diphtheria, and that the favorable results reported are due to the fact that only cases with Klebs-Loeffler bacilli are included, and that these cases would have done as well under any of the old plans of treatment; also, that it is not fair to compare hospital cases, with good management and best possible surroundings, with cases treated outside of those institutions. To test all these questions, Clubbe treated two parallel series of cases of diphtheria at the Sidney Children's Hospital, and reported his results in the *British Medical Journal*. Three hundred cases were treated with and 300 without antitoxin. In all the cases the diagnosis was confirmed by the presence of the Klebs-Loeffler bacillus. All the cases were treated in the same hospital, by the same physicians, and general management was in all cases essentially the same. Of the 300 cases treated without serum, 158 died, a mortality of 52.7 per cent.; 101 were cases of simple diphtheria and 23 of them died, a mortality of 22.7 per cent.; 199 cases required tracheotomy and 135 of them died, a mortality of 67.8 per cent. Of the 300 cases treated with serum, 60 died, a mortality of 20 per cent.; 171 cases were of simple diphtheria, with 11 deaths, a mortality of 6.4 per cent. Tracheotomy was required in 129 cases, and of these 49 died, a mortality of 37.9 per cent. We see, then, that in the 300 cases treated without antitoxin the mortality was 52.7 per cent., while in those treated with antitoxin it was only 20 per cent. The cases of simple diphtheria treated without antitoxin give a mortality of 22.7 per cent., and those treated with antitoxin a mortality of only 6.4 per cent. The cases requiring tracheotomy, treated without antitoxin, give a mortality of 67.8 per cent., and of those treated with antitoxin the mortality was only 37.9 per cent.

The above was certainly a fair test, and antitoxin has once more disappointed its enemies.

DOSAGE OF ANTITOXIN.

As stated in the *British Medical Journal*, November 10, 1900, it may be pointed out, in the first place, that it is impossible to give a fatal overdose, as might be the case with strychnine or opium.

In his excellent paper on "The Present Status of Serum Treatment," which was read before the Academy of Medicine of Cincinnati on the 14th of October, 1901, and subsequently published in the *Cincinnati Lancet Clinic*, Dr. E. W. Mitchell says: "The absolute harmlessness of the sera, when properly administered, is now fully established. Enormous doses have repeatedly been given with only good effects. In the Boston City Hospital one case, an adult, was given doses of 3000 units up to a total of 110,000 units, with recovery from an apparently hopeless condition. Another, a child seven months old, had a patch of diphtheria membrane on a denuded area of skin two and a half inches by one inch in area, in addition to large patches on both tonsils and soft palate. He recovered, but it took 40,000 units of antitoxin to save his life."

For immunizing purposes from 500 to 1500, and for curative purposes from 1500 to 4000 antitoxin-units should be injected, in accordance with the age of the patients and other circumstances. The employment of the larger dosages is no longer attended with difficulty, as concentrated serum is now readily obtainable. The injection should be made into the subcutaneous connective tissue with a properly sterilized syringe, suitable care being taken to avoid a blood-vessel. The surface of the abdomen, the lumbar region, and the external aspect of the thighs are good situations for the injection. Administration by the mouth has also been proposed, but absorption by this route is slower, and the results are necessarily less speedy and less trustworthy.

A dosage of 2000 units is sufficient for an ordinary mild case on the first day, but when seen later, or when it is progressing

rapidly, a larger amount is needed. In very severe cases from 8000 to 12,000 units is given when the patient is first seen, followed by another 2000 to 8000 units every twelve hours, for the next twenty-four or forty-eight hours or longer, according to the gravity of the case.

The antitoxin should be used as early as possible and in sufficient amount to produce a distinct reaction in twelve hours; if such reaction be not apparent, a second or third dose must be given, till the effect is observed. It seems to be pretty well established that one full dose is more effective than smaller doses repeated at intervals.

In the presence of suspicious symptoms no time should be lost—even to secure a bacteriological diagnosis—before making the injection.

With each day's delay the mortality about doubles, as shown in the following table:

Author and Reference.	Day of disease when antitoxin was begun.	Mortality—Per cent.
Rachfuss (<i>Cent. f. Bact.</i> , 1898).... ..	First	3.7
	Second	8.2
	Third	16.2
	Fourth	25.2
Waldeck-Rousseau (<i>Jour. Am. Med. Association</i> , July 6, 1901).....	First	2.
	Second	6.
	Third	30.
	Fourth	50 to 60
Committee of American Pediatric Society (<i>Archives of Pediatrics</i>).....	First	6.6
	Second	8.3
	Third	12.
	Fourth	17.
	Fifth	23.2
Jelnick (<i>American Medicine</i> , Sept. 21, 1901).....	First.....	7.6
	Second.....	7.6
	Third	15.36

While these tables vary somewhat in their figures, they agree in showing the very rapid increase in death-rate from day to day.

The report of the Metropolitan Asylums Board (of London) affords further evidence in this respect. When antitoxin was administered on the

First day of disease, the death-rate was 5.2 per cent.
 Second day 15. per cent.
 Third day 21.9 per cent.
 Fourth day 27.8 per cent.
 Fifth day and upwards 31.7 per cent.

On taking all cases—mild, severe and moribund—according to the day they came under treatment:

	1894. No Antitoxin.	1896. Antitoxin in 71.3 per cent. of cases.
First day	22.5 per cent. died.	4.7 per cent. died
Second day 27.	“ “	12.8 “ “
Third day 29.	“ “	17.7 “ “
Fourth day 31.6	“ “	22.5 “ “
Fifth day and upwards . 30.8	“ “	24.6 “ “

That is to say, on whatever day the case came under treatment there was a saving of life by the use of serum, more marked the earlier the case was seen.

In some cases when the clinical symptoms do not yet point to diphtheria, the microscope reveals the presence of the bacillus, and then an injection of the antitoxin literally nips the disease in the bud. From this it is apparent that the early bacteriological diagnosis of the disease, when practicable, is important.

It is advisable to make a culture in every case of sore throat among children. During the catarrhal period toxins are being elaborated, as is often shown by their action on the heart, although no membrane has yet made its appearance.

The effects to be expected are that the local disease should not extend, that the swelling and hyperemia should lessen and the constitutional symptoms abate. The extent of the disease rather than the size of the patient guides the dosage: still, size should be considered somewhat. As Dr. B. H. Portuondo, of Belleville, Ill., very properly says: “Our aim should be rather

to give too much than too little, and this is a safe rule to follow. In the hundreds of thousands of cases where it has been used, in only four instances has it been accused of producing death, and even those cases could be explained under different hypotheses."

An unusually interesting case was reported in the *Archiv für Kinderheilkunde*, of an infant 19 days old who presented the clinical and bacteriological evidences of Klebs-Loeffler infection, evidently contracted from a member of the family suffering from the disease at the time of the babe's birth. Eight hundred units were at once injected, and, after thirty days of high temperature, convalescence ensued.

ANTITOXIN UNITS.

The dose of antitoxin is expressed in terms of units, meaning by unit ten times the amount of antitoxin required to protect a guinea pig against ten times the minimum fatal dose of diphtheria toxin.

In experimental diphtheria, investigators know beforehand the amount of poison injected, and therefore know how much antitoxin is needed to neutralize it. In the nature of things a physician cannot ascertain how much or how virulent is the poison a given case of human diphtheria has absorbed before he is called in. It is better to be on the safe side, therefore, and to inject a large enough initial dose to overcome the toxemia.

When diphtheria-toxin and antitoxin are mixed together in a test tube the amount of the latter required to neutralize the former is minute. When a guinea-pig is injected with a lethal dose of diphtheria toxin he will survive if a small dose of antitoxin be administered within twenty-four hours. After two days it will take many times this amount of antitoxin to neutralize the toxin introduced. Dr. A. J. Turner, of Brisbane, thinks this is because the toxin has left the blood and has entered into some sort of combination with the tissues of the body.

Various theories have been advanced to account for the action of antidiphtheritic serum. It is claimed that the toxin of

diphtheria is a chemical product of the bacteria, having definite properties and chemical composition. Antitoxin is also supposed to be a chemical product of cells, and is practically an antidote to the toxin. "One molecule of toxin," says Ehrlich, "combines with a definite and constant quantity of antitoxin."

Having gone over the whole subject, I leave it to the reader to draw his own conclusions. After a careful perusal he may join Dr. John H. McCollom, of Boston, in the opinion that a physician who does not use antitoxin in the treatment of diphtheria fails to do his whole duty to his patient.

In commending antitoxin in general, I want to say a word in particular with reference to Parke, Davis & Co.'s antidiphtheritic serum, a product in which the practitioner may place absolute reliance. It is manufactured under the supervision of experts, by the most approved methods, and, in my opinion, is superior to any other diphtheria antitoxin. One has but to visit the antitoxin stables of the firm and to note the scrupulous care that is observed, to be convinced that every precaution is taken to render the serum as pure and active as it is possible to make it.

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MODERN VACCINATION

The Prophylaxis of Variola by Means of Aseptic Vaccine—Revaccination a Test of Immunity.

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DOES VACCINATION PROTECT AGAINST VARIOLA?

The truth of the value of vaccination in preventing smallpox has long ago passed beyond the stage of argument. Current history continuously furnishes evidence of its indisputable efficacy.

Following the World's Fair the city of Chicago had an epidemic of smallpox in which over 1000 lives were lost. During the month of May there were 253 deaths from smallpox. The city council became aroused, and made a special appropriation. Five hundred and eighty-six thousand vaccinations were made in one month. In the month of July the deaths from smallpox dropped to fifty-one, and the epidemic was under control.

The following quotations are from the health report of the city of Chicago for the year 1894, and show what was accomplished and the difficulties under which the health board labored:

“Recognizing the necessity of prompt and active defense, the commissioner at once increased the number of medical inspectors and established a corps of five hundred vaccinators, a number amply sufficient to cover the territory in which they had to labor, and so thoroughly was this work done that the most unsanitary and overcrowded districts were finally rendered the most free from smallpox. As an example: In one

of the West Side districts, with a population of 70,000, within two months 63,000 were successfully vaccinated, and although this district was almost completely saturated with contagion, and although numerous cases had occurred within its limits, yet after the vaccinators had once gone over the field five months of perfect freedom from the disease ensued, and the only case which then appeared was that of a babe nineteen days old, which had not yet been vaccinated.

"From the beginning of the epidemic to the present time vaccination has been pushed intelligently, systematically, persistently, and with a relentlessness that never failed of its object. Vaccination in the latter part of the year required tact, courage, and a high sense of duty on the part of the vaccinator. Up to that time all who were willing to be vaccinated were vaccinated; those remaining were mostly those who 'know it all'—the anti-vaccinists and those who are not afraid of smallpox—the ignorant, the prejudiced, and the reckless.

"This winter nearly every patient taken to the smallpox hospital was either some one who was not afraid of smallpox and would not be vaccinated, or some one who did not believe in vaccination as a preventive for smallpox. To meet this class and overcome their prejudices and ignorance upon the subject of vaccination, and to attempt to arouse in them a sense of duty to themselves and their helpless children, was a task the difficulties of which no one can appreciate who has not been compelled to invade the homes of the ignorant, the vicious, and the wealthy, the dignified, 'know it all' anti-vaccinists, and receive their abuse and insults while the officer kindly but firmly wins his way to their hearts and against their protests protects them from the most dreaded of all diseases—smallpox. Nothing but a high sense of duty and the thought that they are doing good to human beings who are less fortunate in their knowledge of facts than themselves will keep men persistently and effectively at work at so disagreeable a task."

Few realize the cost of the Chicago smallpox epidemic of 1893-94. The 3076 cases and 1033 deaths of that epidemic represent, according to the eminent authority Dr. Benjamin Dee, a money loss of \$2,581,000, to which must be added the

enormous losses from damage to business, interruption to travel and traffic, suspension of business, and injury to commercial reputation.

More recent instances of the protection afforded by vaccination occurred at Puerto Rico and Manila. At the former, what promised to be a serious epidemic of variola was stamped out by the prompt intervention of army medical officers who instituted a rigorous system of vaccination.

According to Dr. Charles Rooker, the first case of smallpox at Manila was brought into camp by a Pennsylvania soldier who had probably contracted it at Cavite. This was on September 2, 1899, and from then until February 10, 1900, 1181 cases were treated. Dr. Rooker was vaccinated every week during that time. He says that no soldier who had been vaccinated within two years took the disease.

The London *Lancet* for October 7, 1899, says: "The argument upon which the antivaccinationists chiefly rely is that the wonderful decrease in smallpox is not due to vaccination but to improved sanitation. A letter recently received from a surgeon of the Thirteenth Minnesota Volunteers, now in Manila, notoriously one of the most insanitary towns in the world, affords further proof of the fallacy of this reasoning, and, at the same time, once again demonstrates the efficacy of vaccination. Dr. Ritchie, the surgeon in question, says: 'April and May are the smallpox months in Manila. Two hundred and fifty deaths a month was not considered an excessive number nor esteemed an epidemic. Since our occupation no such number has occurred, and owing to the untiring efforts of Major Bourne, health inspector of the city, the mortality is almost *nil*. Over fifty thousand persons have been vaccinated, and the good work goes on. . . . Our vaccine is now almost entirely used, with the effect that the disease is not only under control but almost "stamped out."' The foregoing statement is most valuable testimony in favor of vaccination. The sanitary conditions in Manila were as defective as possible, and yet vaccination alone was sufficient to abolish smallpox."

Dr. Charles L. Webster, of Cleveland, O., points to an instance in his practice that proves conclusively how great the protective power of vaccine against the most loathsome dis-

ease known to man really is. It occurred in his practice during the winter of 1899-1900. He was called to attend a child suffering from smallpox in a large family, where none had ever been vaccinated. The child died in the pest house. The doctor vaccinated all the rest of the family. Vaccination did not take on the mother, and two weeks later she came down with the smallpox. The husband threatened to shoot the health officers if they attempted to remove his wife, so they decided to leave her at home. A child was born during the first part of her illness; he was vaccinated when he was two days old. Here in a family of eight, all who were successfully vaccinated were protected, although they were exposed by a child who came down with the smallpox before they were vaccinated, and re-exposed by the mother, who was kept at home during all stages of the disease. Also a child, born of the mother suffering with smallpox, was so thoroughly protected by vaccination that he did not contract the disease.

The British Royal Commission appointed to inquire into the subject of vaccination, after having made what was probably the most thorough study of the question that was ever undertaken, submitted the following conclusions in its report of 1896:

1. That it diminishes the liability to be attacked by the disease.
2. That it modifies the character of the disease, and renders it (*a*) less fatal and (*b*) of a milder or less severe type.
3. That the protection it affords against attacks of the disease is greatest during the years immediately succeeding the operation of vaccination. It is impossible to fix with precision the length of this period of highest protection. Though not in all cases the same, if a period is to be fixed it might, we think, fairly be said to cover in general a period of nine or ten years.
4. That after the lapse of the period of highest protective potency, the efficacy of vaccination to protect against attack rapidly diminishes, but that it is still considerable in the next quinquennium, and possibly never altogether ceases.
5. That its power to modify the character of the disease is also greatest in the period in which its power to protect from attack is greatest, but that its power thus to modify the disease does not diminish as rapidly as its protective influence

against attacks, and its efficacy during the later periods of life to modify the disease is still very considerable.

6. That re-vaccination restores the protection which lapse of time has diminished, but the evidence shows that this protection again diminishes and that, to insure the highest degree of protection which vaccination can give, the operation should be at intervals repeated.

7. That the beneficial effects of vaccination are most experienced by those in whose case it has been most thorough.

This Commission, it must be remembered, included such men as Sir James Paget, the eminent surgeon, Baron Herschell, the great scientist, and John Bright, undeniably one of the best social economists that ever lived. It may be taken for granted that these individuals were imbued with the importance of their task, and gave the matter the serious attention it demanded.

Dr. Bizzozero, of Rome, states: "Germany stands alone in fulfilling in a great measure the demands of hygiene, having, in consequence of the calamitous smallpox epidemic of 1870-71, enacted the law of 1874, which makes vaccination obligatory in the first year of life, and revaccination also obligatory at the tenth year. What was the result? With a population of 50,000,000, having in 1871 lost 143,000 lives by smallpox, she found by her law of 1874 the mortality diminished so rapidly that to-day the disease numbers only 116 victims a year. These cases, moreover, occur almost exclusively in towns on her frontier. If it were true that a good vaccination does not protect from smallpox, we ought to find in smallpox epidemics that the disease diffuses itself in the well vaccinated no less than in the non-vaccinated countries. But it is not so. In 1870-71, during the Franco-German war the two peoples interpenetrated each other, the German having its civil population vaccinated optionally, but its army completely revaccinated, while the French (population and army alike) were vaccinated perfunctorily. Both were attacked by smallpox; but the French army numbered 23,000 deaths by it, while the German army only had 278; and in the same tent, breathing the same air, the French wounded were heavily visited by the disease, while the German wounded, having been revaccinated, had not a single case."

According to the twenty-ninth Annual Report of the State Board of Health of Massachusetts, 330 cases of smallpox occurred in that State in ten years, 1888 to 1897. Of these cases 143 of the persons had been vaccinated, 149 had not been vaccinated; and 38 were returned as doubtful.

Among the vaccinated the fatality was 6.3 per cent. No vaccinated child under one year was attacked with smallpox, while 18 unvaccinated infants were attacked, and 9 of these, or 50 per cent., died of the disease. Among the vaccinated children under fifteen years of age there were 20 attacks and no deaths. Among unvaccinated children under fifteen years of age there were 77 attacks and 15 deaths, or 19.5 per cent.

Among vaccinated adults, or persons over fifteen years old, there were 120 cases and 9 deaths, or 7.5 per cent. Among unvaccinated adults there were 71 cases and 23 deaths, 32.4 per cent.

Comment on the above is unnecessary.

ASEPTIC VACCINATION.

The advent of Aseptic Vaccine, in the form of glycerinated virus, has worked a complete revolution in the practice of vaccination. It does away with the possibility of septic infection by means of vaccine. It may now be safely asserted that whenever septicemia follows the use of Aseptic Vaccine it is due either to the personal uncleanliness of the patient or the fact that the surgeon neglected to sterilize his scarifier. The sore arms that used to result from the employment of the old-fashioned points are now extremely rare, and, as already indicated, cannot be charged to the use of aseptic virus.

Dr. S. M. Copeman, in his excellent work on vaccination, published at London by Macmillan & Co. in 1899, refers to the advantages of glycerinated lymph as follows: "Glycerinated lymph can be produced absolutely free from the various streptococci and staphylococci which are usually to be found in untreated calf lymph, and which are, under certain circumstances, liable to occasion suppuration. In like manner the streptococcus of erysipelas, in the event of its having been originally present in the lymph material, is rapidly killed out by the germicidal action of the glycerin. The tubercle bacillus is effectually destroyed, even when large quantities of

virulent culture have been purposely added to the lymph. The possibility of inoculation of syphilis is eliminated, as the calf is not subject to this disease."

That glycerinated virus is superior to all other forms of bovine lymph is attested by the fact that it has been officially adopted by the governments of the United States, England, Germany, France, Belgium, and Russia. The special commission appointed by the British Government endorsed it in the following language, in its report of July, 1897, after an investigation of various vaccines: "Glycerinated lymph is the most reliable of all the products. This should be supplied in air-tight receptacles."

It is the emphatic opinion of Surgeon-General Wyman, of the U. S. Marine Hospital Service, that only glycerinated bovine lymph should be employed in vaccination, and the surgeons under his command have been instructed to that effect.

In an address delivered before the Pan-American Medical Congress at Havana, Cuba, Feb. 7, 1901, this gentleman said: "Nothing seems easier to me than the prevention or suppression of smallpox. In vaccination we have an absolute preventive, and in the glycerinated lymph we have a safe inoculating material, absolutely devoid of the danger of exciting undue inflammation. Thus a mere scratch or a needle puncture insures, without discomfort, protection from one of the most loathsome and disfiguring diseases known."

In England a mixture of vaccine virus and glycerin was used by Dr. Cheyne as early as 1850, so glycerinated virus cannot exactly be called a new discovery, but like many another good thing it was lost in the sea of oblivion and only rediscovered within a comparatively short time.

To Copeman and to Chambon and St. Yves Menard, working independently, apparently belongs the credit of determining that the addition of glycerin to vaccine lymph not only puts a stop to any multiplication of "extraneous" bacteria, but actually in time kills non-spore-bearing organisms, the vaccinal organism being but slightly and slowly affected.

In this country modern glycerinated lymph was first used by a surgeon of the Missouri Pacific Railroad, whose name, I believe, has been lost to fame. Dr. F. W. Reilly, of Chi-

cago, used glycerin instead of water to moisten vaccine as early as 1860, but without a thought that it had an effect in purifying the lymph by destroying the bacteria.

THE PRODUCTION OF ASEPTIC VACCINE.

The greatest care is taken in the production and manipulation of Aseptic Vaccine. Parke, Davis & Co. use only healthy heifers, about eighteen months old, every one of which is carefully inspected by their veterinarian before being admitted to their stables. The slightest evidence of disease, even only a ringworm, is enough to condemn one of them. *The tuberculin test is applied in every case*, and any heifer that exhibits a suspicious rise of temperature is rejected.

When the animal is finally pronounced to be in perfect health, it is scrubbed from head to foot and taken into the operating room (a large, high chamber, with cement floor and varnished walls susceptible of ready cleansing and disinfection), where it is inoculated under strictly aseptic conditions.

The inoculated animals are kept in a propagating room, where the most scrupulous cleanliness is observed, for about five days, whereupon they are returned to the operating room for the collection of the virus. The same carefulness and asepsis is observed there that characterized the previous operations. The pulp of the vaccine vesicles with exuding serum is carefully collected with sterilized spoon cures and placed in sterilized containers.

The vaccine is now brought to the Biological Laboratory of the establishment and run through sterilized grinders until a homogeneous mixture is obtained, the requisite amount of glycerin being added during the process.

The vaccine is next examined bacteriologically and physiologically. Every parcel of this virus is tested on animals and on the human subject before it is marketed. Unless a typical reaction is produced in every instance, the entire lot is discarded.

While engaged in the production and manipulation of this bovine lymph, the employees are provided with apparel that has been thoroughly sterilized and is changed daily.

The finished product is placed in a refrigerator, especially designed for this purpose, and kept there until wanted for

orders. Parke, Davis & Co. aim to send out only strictly fresh vaccine.

METHOD OF OPERATING.

In performing a vaccination, the site of inoculation should be carefully cleansed with pure soap and water and dried with a clean towel. It is then scraped with a sterile lancet until serum begins to exude. The ends of the capillary glass tube are then broken off, and the vaccine is ejected upon the site of scarification by means of the rubber bulb placed upon one end of the tube. The vaccine is then thoroughly rubbed into the abraded area with the lancet and permitted to dry. The clothing should never be replaced until the site presents a glazed or varnished appearance. No dressing is required except in cases where very rough or dirty under-garments are worn, and then a piece of clean soft linen or cotton is the most suitable. The physician may use a shield to save time immediately after inoculation, but should instruct his patient to remove it as soon as the vaccine is dry.

Too much stress cannot be laid upon the perfect sterility of the lancet employed. A good method to render it absolutely aseptic is to dip it in alcohol, and apply a match to burn off the alcohol. This process should be repeated before the knife is used.

NORMAL VACCINIA.

The period of incubation is subject to great variations. Its normal duration, with the points, is three or four days, but Hervieux says he has often noticed a little red circle announcing the appearance of the papule by the second day. In other cases, for some unknown reason, instead of being shortened the period of incubation is unduly protracted, instances being recorded in which the papule did not begin to show itself until the thirtieth day. In certain cases the physician has been led to believe that the vaccination has failed and on making a second inoculation has seen the eruption of both vaccinations develop simultaneously. These irregularities are not of great importance, however, for they do not in any way compromise the success of the vaccination.

Drs. Wm. M. Welch and J. F. Schamberg, of Philadelphia, in a paper read before the Philadelphia County Medical So-

ciety, Nov. 13, 1901, described the characteristics of genuine vaccinia as follows:

"On the third or fourth day after vaccination a very faint redness may be seen at the point of inoculation. This redness gradually increases, while at the same time a distinct and reddish papule is formed, which varies in size according to the extent of the abrasion. On the fifth day the lesion begins to assume a vesicular condition. This is usually seen first at the margin of the site of inoculation. The vesicle gradually increases in size, the contained lymph being at first thin and perfectly transparent. On the eighth day the vesicle reaches its greatest perfection; it is then considerably elevated above the level of the skin and presents a pearly or yellowish appearance. When examined closely it will be found to have, even at an early stage of its development, an umbilicated form similar to that seen in vesicles of variola. About this time there appears around the vesicle an inflammatory circle, which is called the areola. During the ninth or tenth day the redness increases, the inflamed skin becomes tense and painful, and streaks of redness often extend a considerable distance from the lesion. The neighboring lymphatic glands become enlarged and painful.

"At the same time mild constitutional symptoms appear—slight rigors, a rise of temperature of one or two degrees, malaise, anorexia, disturbed sleep, etc. Many children, however, pass through the regular course of vaccinia without any apparent systemic disturbance. Occasionally in severe primary vaccinations a macular eruption, designated as roseola vaccinosa, and bearing considerable resemblance to that of measles, may appear.

"On the eleventh or twelfth day the pock begins to fade, its contents become opaque, and desiccation appears in the centre. By the fifteenth day desiccation is usually completed, although the crust does not fall off until the end of the third or frequently the fourth week. The completed crust is of a mahogany color, rough on its exterior, thin at its centre and periphery, with a thick circular ridge between. The scar is at first red, but in the course of a few months becomes paler than the surrounding skin. It is pitted or foveolated, and not infrequently presents radiating bands or striæ of cicatricial tissue."

The physician should in every instance examine the case himself, and if he finds a typical vesicle—or the remains of one or more that may have been ruptured—he may assure the patient that he enjoys the immunity afforded by one inoculation. In order to ensure absolute immunity, an individual must be revaccinated repeatedly.

I reiterate, the vesicle is the only reliable indication that the vaccination has “taken.” There is absolutely no other proof for or against the vaccine. A hole in a man’s arm half an inch deep—a scar two inches long—proves nothing (except that infection more or less serious has occurred), and neither one affords any guarantee of protection against smallpox. On the other hand, Jenner himself declared that a full measure of such protection is imparted by a single vesicle.

In the early part of 1900 the London *Lancet* appointed a commission of eminent medical men to investigate the various glycerinated vaccine lymphs then in use. In an editorial, published in the *Lancet* of April 28, 1900, the report of this commission is summarized, in part, as follows:

“The objection to the practice of vaccination on the score that there is risk of concurrent septic inoculation is one which can have absolutely no *locus standi* while lymph properly prepared is capable of passing the strictest bacteriological test. Nor is the efficacy of the vaccine itself at all impaired by the glycerinizing process; indeed, it sometimes even seems to be rendered more marked. At the same time, the freer the lymph is from extraneous pyogenic organisms the less marked will be those inflammatory concomitants which are so familiar to all vaccinators. Without entering into the question as to how far the ‘areola’ is an essential part of the vaccine vesicle or not, it does certainly appear as if much that has often been regarded as essential is not so much due to the action of the vaccinal organism itself as to organisms acting as irritants upon the cutaneous tissues. The purer the lymph apparently the longer is the time taken for the formation of the vesicle and the less marked the stage of so-called ‘maturity’ or pustulation. Indeed, there is reason to believe that the immunity conferred by vaccination is just as marked when the local effects practically stop short at the characteristic vesiculation. For as our report says: ‘One statement

that may be accepted without reserve is that if the lymph be free from bacteria (especially streptococci and staphylococci) and typical vesicles slow of development with little inflammatory areola and late in coming to maturity be obtained, there need be no fear that the patient is not properly vaccinated."

A few individuals are refractory to vaccination, but in the large majority of cases due skill and care in the use of Aseptic Vaccine will be rewarded by the characteristic reaction, unattended by septic complications of any kind.

According to d'Espine, vaccinal immunity, that is to say, insusceptibility to the action of vaccine virus, is met with in less than one per cent. of all cases. Engelhardt doubts the existence of natural immunity.

PARTIAL PROTECTION.

When a vaccination does not get beyond the papule stage, the result is doubtful. A scab that dries up and falls off within a short time shows that inoculation is unsuccessful.

There is also a state of incomplete vaccination known as vaccinoid. This is generally characterized by the appearance of a pink papule, without areola, which shows itself after a period of incubation varying in length, and disappears in a short time. Sometimes this papule takes on an appearance that has been aptly styled a strawberry excrescence.

Dr. F. Forchheimer, of Cincinnati, who has made a special study of vaccinoid, arrives at the following conclusions:

1. Vaccinoid is always modified vaccinia.
2. Vaccinoid protects against variola.
3. This protection is less than vaccination.
4. Vaccinoid in the majority of instances is due to faulty method, rarely to increased resistance or immunity.
5. In primary vaccinations vaccinoid should always be followed by repeated attempts until either the true vaccinia is produced, or until positive evidences of immunity exist.
6. In the presence of an epidemic of variola, vaccinoid should be followed by revaccination both in primary vaccinations as well as in revaccinations.

IMMUNITY.

How soon after vaccination does immunity appear? Bryce,

the Bousquet vaccine commission, Vetter and Trousseau have determined this very exactly. They made fresh inoculations every day after the primary vaccination, and found that immunization was definite by the tenth day.

Sacco made a similar investigation with reference to small-pox immunity and came to the conclusion that it is acquired in almost the same time as is that against vaccinia.

It is a curious fact that immunity may be inherited or temporary. Children will sometimes respond two or three weeks after the first inoculation proves unsuccessful, although the same virus is used in both instances.

Dr. A. M. Handshaw, in a paper on vaccination, read before the Chicago Medical Society, Nov. 1, 1899, states that the course of revaccination, in her experience, has been irregular, especially in the adolescent. She says the history of an abnormal or a typical course of vaccinia is varied, even when using aseptic lymph.

In regard to immunity to vaccinia, she found a few persistently resistant to a successful operation, the greatest number of times that the operation has been performed on a patient to her knowledge being nine, four by the family physician, and five times by herself, the ninth operation resulting in a typical cicatrix. Dr. H. Spaulding, of the Chicago Health Department, has reported a case in which ten attempts were necessary to obtain one success.

Vaccination in the negro is more difficult on account of the epidermis being thicker and harder to scarify, and less frequently results in a typical vaccination, it being necessary to repeat the operation in many instances.

The duration of vaccinal immunity is not absolutely fixed, but varies with the individual.

REVACCINATION.

Revaccination is recommended by many authorities, because the extent of the protection received from vaccination depends upon circumstances; it may last a life-time or only a year or two. During an epidemic of variola, it is advisable to revaccinate shortly after the first inoculation proves unsuccessful, to ensure the immunity of the individual operated upon.

Saint-Yves Menard (*Revue Mensuelle Maladies de l'Enfance*, March, 1899) gives a table showing the importance of revaccination. There is a popular notion that the entire body is renewed every seven years in the young, but that this is not true of elderly people. According to Menard's table, revaccination in from six to ten years gave 17.6 per cent. of positive results; at ten years, 15 to 18 per cent.; at twenty years, 50 per cent.; at twenty to forty years, 60 per cent.; from forty to sixty years, 82.9 per cent.; and from eighty to 100 years, 88.5 per cent. These figures show that vaccination immunity gradually disappears—that at the end of the first decade nearly one-fifth have lost their acquired immunity, and that this proportion rapidly increases with advancing years. These statistics clearly show that the view that revaccination is unnecessary in the aged is incorrect.

In an interesting paper on "Immunization Through Vaccination" (*Medicine*, February, 1900), Dr. D. P. Austin, of New York City, says: "If I wished to ascertain to a certainty, for your personal satisfaction, whether any one of you brother doctors could possibly have smallpox, I should vaccinate you with the best obtainable lymph, and see if in eight to twelve days a genuine vaccine vesicle could be produced. If it could, I should know that you were not immune on the day vaccinated, and might under certain conditions of exposure contract the disease. In a month I should try again, and keep trying till no vesicle resulted; and then once or twice more, to be absolutely sure. When no further vesicle can possibly be produced by a carefully made vaccination with fresh, good lymph, it is impossible for that individual to contract smallpox."

Statistics reveal the importance of revaccination. In Prussia the mortality from smallpox in the year 1835 was 27 per 100,000; in 1872 it was 262. In 1874 vaccination and revaccination became obligatory, and the mortality fell at once to 3.6, and in 1886 it was only 0.39 per 100,000.

DETERIORATION OF VACCINE.

Aseptic Vaccine is a delicate product that is liable to deterioration from causes that are utterly beyond the control of the propagator, as, for instance, exposure to extremes of

temperature while in transit or storage. During the summer it deteriorates very fast, unless it is kept in a cool dark place. Exposure to a temperature above 70° F. or below 40° F. should be avoided. In Europe, according to the London *Lancet*, vaccine establishments refrain from shipping vaccine during the hot season altogether, unless it is intended for immediate use. Even in the winter time vaccine is liable to undergo deterioration from heat during transportation by being placed in too close proximity to the heating pipes of the mail cars.

Like analogous physiological products, vaccine is liable to deteriorate after a certain period of time. So many proofs have been afforded, however, that Aseptic Vaccine is efficient for at least three months after collection, that exchanges should not be sought for that length of time. Parke, Davis & Co. authorize the drug trade to give fresh Aseptic Vaccine in exchange for any quantity of virus bearing their label which is three months old, as indicated by the date stamped on the package, or which has deteriorated from any cause not within the control of the purchaser. Recently this firm has placed an Aseptic Vaccine Point upon the market that may commend itself to some physicians on the score of convenience. Bacteriological and clinical investigation has proved that this point is perfectly germ-free and may be safely used for inoculation without fear of septic infection.

CAUSES OF FAILURE.

Of course, if vaccine has deteriorated from age or exposure to extremes of temperature, it will prove inert. But aside from this there are various other causes that may be responsible for failures experienced by physicians. The scarification or abrasion may be either too deep or not deep enough. It should pass through the epidermis and bring serum to the surface, but the drawing of blood should be avoided. Occasionally, despite the greatest of care, a flow of blood will occur, in which case the vaccine should be applied immediately before the serum has had time to dry and form an impervious coating.

Sometimes failure ensues because the virus is not thoroughly worked into the scarification. The simple application of it will not answer.

I know of cases in which physicians of an economical turn of mind used the contents of one tube of glycerinated virus to perform several vaccinations and afterwards complained of non-success. Each tube only containing sufficient for one vaccination, adverse results under the circumstances were, of course, inevitable.

The clothing should not be replaced until the vaccine is thoroughly dry. Owing to its hygroscopic nature glycerinated virus dries very slowly, but the difference in results will well repay the additional care. If the sleeve is pulled down before the virus has sufficient time to dry, most of it is wiped off and a negative result is the consequence.

Antiseptic dressings are unnecessary. Most of our successful vaccinators never use any dressing except in cases where there is danger of infection from the environment or uncleanness of the patient. If the appearance of the vaccine sore indicates that septic infection has occurred, or the local reaction is unusually severe owing to the accidental removal of the scab, the arm should be dressed antiseptically with a bichloride of mercury solution and iodoform gauze. In this case the dressing should be renewed daily.

Climatic conditions seem to play an important part in the development of vaccinia.

When the form of smallpox prevailing is of a mild character, vaccinations, as a rule, will be mild also, a fact to which competent observers have recently called attention.

Simple as the operation of vaccinating seems to be, as a matter of fact it requires considerable technical skill in its performance, and an amount of theoretical and practical knowledge of the subject which is rarely appreciated.

"If," declares Mr. Marson (*Reynold's System of Med.*, p. 150, Am. Edit.), "a little operation—little apparently in practice, but very important in its results,—well performed, can save many lives, as most certainly it can, and prevent much suffering and sorrow, it should surely always be done with the greatest care and in the best known way."

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A Résumé of the Organotherapy of Exophthalmic Goitre.

BY HUGO ERICHSEN, M.D., L.R.C.P.&S.

Although but a comparatively short time has elapsed since Moebius first brought his theory, anent the causation of Basedow's disease by a hypersecretion of the thyroid gland, to the attention of the medical world, the literature on the subject has already become voluminous, as will be seen by a reference to the bibliography recently compiled by Professor Robert Bing, of Basle, and published in the *Centralblatt für die Gesamte Physiologie und Pathologie des Stoffwechsels mit Einschluss der Experimentellen Therapie*. It will be the author's endeavor to give an epitome of the practical results achieved, and to avoid, as far as possible, any extended reference to theories that are of but little importance to the general practitioner, no matter how interesting they may prove to scientific investigators.

Curiously enough, the correctness of Moebius's deductions was first confirmed by chance. A myxedematous patient of Beclere accidentally swallowed about 12 grammes of the thyroid gland of a sheep. Immediately thereafter the pulse and temperature were temporarily increased above normal, but subsequently became normal and remained so. Moreover, in the following days a decided retrogression of the myxedema was also observed—psychic and facial changes, decrease in weight, and an increase in the quantity of urine and its content of urea, phosphates, and chlorides.

Under the administration of large doses of the thyroid gland substance there was a gradual decrease of the myxedematous symptoms, but when this treatment was

unduly prolonged new evidences of disease took the place of the disappearing myxedematous manifestations. These were regarded by Beclere as evidences of thyreoidism, due to the excessive doses of the gland product. In addition to tachycardia, there were: fever, insomnia, excitement, polyuria, albuminuria, partial paraplegia, a feeling of heat, hyperhidrosis, and tachypnea. A tremor was also temporarily present.

Beclere, whose contribution to the literature of the subject Bing very properly characterizes as exceedingly important, called attention to the analogy between this artificial pathological condition and Graves's disease, but did not assert that it is complete. His experience was not only confirmed by clinical evidence, but by a large number of experiments on mammals. Among those who demonstrated conclusively that many of the symptoms of Morbus Basedowii can be produced artificially were Ballet, Enriquez, Lanz, and others. These experiments led to a conclusion that forms the basis for the serotherapy of Graves's disease, namely, that the human body normally produces a toxin that is neutralized by the secretion of the thyreoid gland. When this glandular function is gradually impaired, myxedema or cretinism results; if, on the other hand, it is greatly augmented, the excess of the thyreoid secretion becomes a poison and produces Basedow's disease.

In a communication to the *Münchener Medicinische Wochenschrift* (Jan. 27, 1903) Prof. Otto Lanz, M.D., then of the University Surgical Clinic at Amsterdam, lays claim to priority in the discovery of the serotherapy of exophthalmic goitre, and calls attention to the fact that he made some researches in this direction as early as 1894, and exhibited thyreoidectomized goats at the Third International Congress of Physiologists in 1895. But it appears that the researches of this gentleman were made simultaneously with those of Ballet and Enriquez. A note to that effect will be found in *La Semaine Médicale*, 1895, p.

330. At the Congress of French Neurologists, 1895, Ballet and Enriquez injected the serum of thyroidectomized dogs into patients afflicted with Basedow's disease, with very good results.

Before I take up the results obtained by means of this dog-serum, it might be well to state that the title of Moebius as the originator of the theory of the origin of Graves's disease has not been disputed. Even Lanz, who annihilates the claims of Burghardt and Blumenthal, refers to him as "the energetic pioneer of the thyreoid gland theory of Morbus Basedowii."

On the whole the results of the treatment with the serum of thyroidectomized dogs proved rather disappointing, and it was therefore discontinued.

The suggestion of Lanz (*Corr.-Bl. f. Schweiz. Aerzte*, Bd. xxiv, No. 23, 1899) that the milk of thyroidectomized animals might exert a therapeutic effect upon the toxin of Graves's disease, constitutes an important episode in the organotherapy of exophthalmic goitre. He gave the preference to goats, as they most easily survived the removal of the gland and soon gave a liter of milk after the operation. In the publication above referred to, Lanz reported three cases. One patient left the hospital two weeks after the treatment was begun, with her pulse much improved and the goitre decreased in size; she also slept much better. In the second case decided improvement occurred after nine weeks' treatment. In the third the patient seemed decidedly better, though the treatment had been carried out for a week only.

In a later report (*Münchener Med. Wochenschr.*, Jan. 27, 1903) Professor Lanz made a more extended reference to Case 3, which was of an aggravated nature, complicated by some dementia. The author states that the patient had been much improved by the milk treatment when she was discharged from the Lindenhof Hospital at Berne. She was much stronger, could walk again, no longer had weeping spells, slept well, and insisted that her eyes had re-

ceded. A three-year-old milk-goat was thyroidectomized and forwarded to her. After drinking the milk for about a year the patient presented herself again in the month of January, 1901, and stated that she considered herself entirely cured. The subjective symptoms no longer troubled her and the exophthalmos was much diminished, to such an extent in fact that the eyes could be entirely closed. Only the goitre had not undergone any material change. The patient talked quickly and sensibly, looked well, and weighed 63 kilogrammes.

In his second paper Lanz reports three additional cases, in which very favorable results were secured. In one of these the almost complete disappearance of the goitre was a notable feature.

W. Goebel (*Münch. Med. Wochenschr.*, 1902, No. 20) assumed that the milk of thyroidectomized animals does not contain any iodine in organic combination, and by the administration of this lacteal fluid aimed to prevent the production of an excess of iodothylin and a consequent toxemia of the body. Goebel particularly recommended the milk on the score of economy, but considered it less potent than the Moebius serum, since it only represents a filtrate of the latter. Although a favorable result was obtained, Goebel's case is not conclusive, because he employed arsenic in addition to the milk.

Christensen (1903), Ballet-Enriquez (1903), and Stein (1905) also had recourse to the fresh milk of thyroidectomized animals, with satisfactory results in every case. Burghardt and Blumenthal expressed their preference for Lanz's milk therapy over the Moebius serum treatment, because the former preserved the animal as a continual source of antitoxin and was just as effective.

An interesting case of Basedow's disease, in which the milk treatment advocated by Lanz was employed with excellent results, in this country, was reported by O. E. Lademann in *American Medicine* of November 19, 1904. The case was an unusually severe one, and surgical inter-

ference had proved out of the question. Therefore the author believed the result obtained was all the more remarkable. He expressed the conviction that the severer the disease the more milk is required to neutralize the toxin circulating in the economy in consequence of the thyroid cachexia.

It occurred to Sorgo, in 1902, that the flesh of thyroidectomized animals might be of service. Consequently he administered the powdered meat, but failed to obtain any therapeutic effect. Moebius (1903) was equally unsuccessful with the same product, thus discrediting it altogether.

Before I pass on to the consideration of antithyroidin, it may be well to make a brief reference to the so-called rodagen, a powder prepared from the milk of thyroidectomized goats according to the method of Lanz. Moebius (1903) states that it is unquestionably effective, but does not seem to be as potent as the serum. But he considers it objectionable, because after a while it acquires a disagreeable smell and taste. The report of Reydel (1903) was particularly unfavorable. Kirnberger (1903), Fai (1904), and Kuhnemann (1904), on the other hand, commended the product. But, as Bing points out, the favorable experiences of these authors are not of importance, because the first named administered the rodagen in very small doses, in addition to other medication, and Fai and Kuhnemann conducted their investigations in climatic sanatoria that had a reputation for the cure of Basedow's disease. However, von Leyden (1904) commented favorably on the good results that had been obtained with rodagen in his clinic by Burghardt and Blumenthal. Bing explains the divergence of the clinical evidence in regard to rodagen by the limited keeping quality of the remedy, and strongly advises the employment of only fresh and relatively odorless powder.

At the suggestion of Dr. P. J. Moebius, a curative serum for the treatment of Basedow's disease was prepared from the blood of thyroidectomized sheep and marketed

under the name of antithyroidin in the spring of 1901. In the following October Moebius reported his experiences with the new serum to the Jena Convention of Neurologists. He referred more extensively to two of the cases presented on that occasion, in the *Münchener Medicinische Wochenschrift* of January 27, 1903, and arrived at the conclusion that the internal administration of the serum proved of benefit to the patients and did not produce any adverse after-effects. He doubted the possibility of effecting a cure. He attributed the horrible taste of the remedy to the carbolic acid it contained, and deprecated its high price, which practically rendered it prohibitive except in the case of the very rich.

The favorable results obtained by Moebius with this sheep serum were corroborated in the same year by Schultes, Adam, and Rosenfeld. Of these reports, that of Schultes (*Münch. Med. Wochenschr.*, 1902, No. 20) is by far the most important, because in his case the factor of suggestion was entirely excluded, the therapeutic effect of the serum being exerted at a time when the patient was completely demented. The case is also particularly instructive because the circumference of the neck and the pulse-rate increased after the administration of the serum had been discontinued, and an improvement promptly took place when the treatment was resumed. Moreover, nothing but the serum, given in sherry or raspberry juice, was employed as a remedy. Favorable results with antithyroidin were also obtained by many other European investigators.

In our own country an interesting report of a case of exophthalmic goitre that was treated with a thyroidec-tomized goat serum, prepared by Parke, Davis & Co., was published in the *Boston Medical and Surgical Journal* (vol. 152, p. 492) in 1905 by James M. Jackson. The goitre involved both lobes and the isthmus, and the exophthalmos was marked. Four months after the beginning of treatment the patient was practically well, the goitre and

exophthalmos had nearly disappeared, the tremor and perspiration were very slight, and the pulse-rate had been reduced to 100 or a little under. The patient was able to return to work and expressed the greatest satisfaction at the result of her treatment.

At a joint meeting of the Chicago Neurological and Chicago Medical Societies, held March 29, 1905, Dr. Sydney Kuh reported eleven cases of exophthalmic goitre that had been treated with the serum of a thyroidectomized animal. Among the eleven there was one in which the effect of the treatment was temporary only, and another in which there was no effect at all; in the remaining cases the improvement was very pronounced. Dr. Charles L. Mix also reported his experience with the serum in two severe cases of Graves's disease. In both of these cases the condition of the patient was materially improved. Kuh referred to the serum treatment as an excellent palliative, and expressed a doubt whether the improvement would be permanent unless the treatment is resumed from time to time. Mix spoke of it as affording great possibilities.

The latest phase assumed by the organotherapy of Graves's disease dates from a suggestion made by Hallion at the Brussels Medical Congress in 1903. He proposed the internal administration of a sanguineous extract made as follows: The blood of a sheep that had been thyroidectomized for several weeks was added to equal parts of glycerin. After it had been allowed to macerate for several days, being thoroughly shaken several times during this period, it was filtered through paper, under aseptic precautions. However, no bacteria are likely to appear, on account of the glycerin. The finished product is bottled, like wine, and is said to keep very well.

Ballet, Enriquez, Sainton, Breton, Carrion, Pisante, Rigoulet, and Hallion tested the new preparation therapeutically and reported their experiences in the course of 1904-1905. The results obtained were similar to those produced by the administration of antithyroidin. In one of

the cases reported by Sauton and Pisante (*Revue Neurologique*, Dec. 1, 1905) a relapse occurred when treatment was suspended, but there was a continuance of the improvement when it was resumed.

A very interesting report of an aggravated case of exophthalmic goitre that was successfully treated with thyroidectin (a reddish-brown powder prepared from the blood of thyroidectomized animals) by Dr. Emil Ries, of Chicago, appeared in the *Illinois Medical Journal* for March, 1906. In January, 1905, the patient was brought to the doctor from a distant town, on a stretcher. She was unable to walk any distance. She was greatly emaciated. She had exophthalmos and Graefe's sign, a pulse of 112 to 120, and a goitre. She was salivated; she vomited; she looked sallow, and she was sent to Dr. Ries for operation. The patient weighed at that time seventy-three pounds. She was put on thyroidectin, which only a short time before had been recommended, and which is the dried blood of the thyroidectomized goat or sheep. She took as much as she could. She was put to bed and took the thyroidectin for nearly a month. During the first month under thyroidectin she gained twelve pounds. Her pulse went down to about 96. The salivation disappeared completely. Her color improved somewhat, although the goitre did not shrink very much. Exophthalmos was slightly less, but her general condition improved considerably. She could take food.

In conclusion the doctor says: "The patient continued to take thyroidectin off and on until September of last year, but since then she has not had any. She now weighs 141 pounds, a gain of almost seventy pounds. She has received no other medication except this. Her pulse, when I examined her two days ago, was 120. The goitre has shrunk considerably, and the exophthalmos is not at all marked now. She can eat, as you may gather from the fact that she has gained seventy pounds. She does not vomit any more. She is not salivated. Menstruation

had been absent for a considerable time before she came to me, and she did not menstruate until some time in the summer of 1905. But for the last three months she has menstruated regularly without any local treatment. The most important feature is the remarkable improvement in the patient's general condition. I simply show this case as an example of what thyreoidectin may do."

Thyreoidectin is readily soluble in water, non-toxic, does not produce gastric irritation, and is rapidly absorbed from the stomach. It is put up in 5-grain capsules, which are given by the mouth, the dose being gradually increased from 15 to 60 grains a day, the 60-grain daily portion being divided into three doses.

Lately efforts have been made to produce an antithyroid serum, but the results have thus far proved far less satisfactory than they promised to be. According to Bing the immunization of large herbivora (such as horses) for the purpose is a tedious and complicated process that would probably never be of practical importance, even if the therapeutic effects should prove more uniform than those hitherto obtained.

APNŒA INFANTUM.

By HUGO ERICHSEN,
Detroit, Mich.

REPRINT FROM "OBSTETRIC GAZETTE," SEPTEMBER, 1881.

APNŒA INFANTUM.

By HUGO ERICHSEN, Detroit, Michigan.

APNŒA infantum, or asphyxia of the new born, as it is sometimes called, belongs to the many cares of the obstetrician. It is especially troublesome to the young practitioner. Imagine the feeling of a young doctor, who has just begun to practice, when losing a child through asphyxia, it being, perhaps, his first or second case of midwifery. How true is the saying of Boer: "Nature has done all in one thousand different labors; but if *one* delivery terminates fatal (either mother or child dying) *all* the blame is laid to the physician in attendance. Again, imagine the feeling of a family awaiting a new addition to their number, or of husband and wife awaiting an heir, who will rescue their name from oblivion, on hearing that their child is dead. Joy gives way to sorrow.

The term "asphyxia" should be abandoned. Asphyxia is derived from two Greek words, "sphuxis," the pulse, and "a" privative, the literal meaning of which is, without pulse.¹ The term is restricted to the loss of the heart's action from one cause alone; that of interruption of respiration, or, in the case of new born children, to an entire absence of the exercise of this function.² Pulsation may go on, unregardful of respiration for some time, but if the latter function does not set in, i. e., is not established, death of the child takes place. A new born infant should not be regarded as dead because its heart has ceased to beat. It has been demonstrated by Brachet of Lyons, Josat, and others, that life may be restored after the pulsations of the heart have ceased for more than five minutes.³ If pulsation is absent in the cord, the child is dead.⁴

Prof. Mendé, of Goettingen, divides asphyxia into three classes: I. Asphyxia livida, s. apoplectica. II. Asphyxia pallida, s. syncoptica. III. Asphyxia suffocatoria, s. pulmonalis.

1. Prof. G. S. Bedford: Principles and Practice of Obstetrics.

2. Stewart: Diseases of Children. New York, 1845.

3. Prof. G. S. Bedford: Principles and Practice of Obstetrics.

4. Stewart: Diseases of Children. New York, 1845.

ETIOLOGY.

Prof. Mendé gives three causes for asphyxia: 1. The whole nervous system of the fetus not yet being fully capable of receiving impressions, the child consequently occupies a much lower grade than usual. 2. Arises solely from the brain, caused either by a sudden or protracted pressure. 3. Depends on imperfect development of certain organs, as the respiratory and circulatory organs.¹

To the first class belong feeble children, the offspring of feeble parents.² The so-called asphyxia apoplectica is generally caused by tedious labors, the head of the child remaining fixed in the pelvis for days. Ignorant midwives are often to blame for this. I do not see why the public should rather employ an old woman not having an idea of the first principles of obstetrics in preference to a scientific, educated and courteous physician.

Pressure of the uterus on the infant's head and compression by instruments, are causes of the above named form of asphyxia. It may be also due to encircling of the child's neck by the umbilical cord. Asphyxia pallida is caused by cessation of the circulation in the placenta, or by sudden detachment of the placenta with hemorrhage, or by placenta prævia.³ The third form, or asphyxia suffocatoria, is due to obstruction of the air passages by mucus or the discharges of the mother.

Disease of the umbilical cord is a cause of apnoea infantum. Baudelocque reports a case in which the cord was varicose. The child lived.⁴

Mauriceau has seen many cases in which the cord was tied in knots, thus causing asphyxia.⁵ Twisting of the cord is another cause. It may also be caused by malformation of the trachea, thorax and lungs, and by debility of the muscles of respiration.

TREATMENT.

Before any efforts are made to resuscitate the child, it should be washed with tepid water to remove the vernix caseosa or cheese coat. Thereafter the child will be more prepared for treatment; the skin, being clean, will receive impressions better. The remote cause of the trouble must be removed. First of all, the air passages should be examined and freed from all mucus that they might contain. For this purpose the little finger of the right hand is introduced into the mouth of the infant, and the mucus removed while the face of the little one is turned

1. Analekten ueber Kinderkrankheiten. Stuttgart, 1834.
 2. Stewart: Diseases of Children.
 3. Spiegelberg: Ueber Placenta Praevia. Leipzig, 1876.
 4. Baudelocque: Lart des Accouchemens. Paris, 1781.
 5. Mauriceau: Traite des Maladies des Femmes.

APNŒA INFANTUM.

downward. The thick mucus adhering to the fauces and larynx should be removed. Next, the cold air bath may be tried.

The immersion of the infant into a hot and cold bath alternately is one of the most familiar means adopted for the treatment of apnœa infantum. M. Goyroud recommends the use of a bath heated from 113° F. to 122° F.¹ If the pulsation in the cord is gone, the child is placed in a hot bath, and the cord is cut.² The little patient should not be left in the bath too long. Benefit is derived from the shock only. Cold water sprinkled on the face and chest is often very efficient. An effect is produced first on the medulla oblongata, and then on the respiratory nerves. Cold water sprinkled on the pit of the stomach is often followed by success. Its action is chiefly on the solar plexus. Chailly advises friction on the chest with a piece of flannel soaked in vinegar, water or brandy.

Flagellation generally does more harm than good. Excitation of the spinal nerves may be produced by a gentle slap on the nates, limbs or thorax, or by tickling with the finger-tips slowly up and down the spinal column.

Various other means have been offered for the relief of asphyxia.

The introduction of tobacco smoke into the rectum, through an elastic gum catheter, has been recommended. Hildebrandt advised inunction of the body with tobacco juice.³ Other irritants have been employed, but they should not be used, because they often cause shivering, convulsions and death. Ammonia was applied to the nostrils for its irritant effect, but in most cases without success.

Asphyxia is not syncope.

Dieffenbach, the great German surgeon, has practiced transfusion in asphyxia due to anæmia, but it was not followed by such success as would render the operation justifiable. A few drops of wine or peppermint water, given per orem, is an old and tried means for the resuscitation of children born still—a means employed by no one less than Henry of Navarra, at the birth of his son, Henry IV. If the child is feeble, harts-horn and brandy should be given at once. The practitioner may also rinse his mouth with brandy and breathe into the mouth of the child. Enemata of castor oil are said to do good. If asphyxia is due to congestion of the brain, it will be remedied by cutting the cord. Acupuncture of the heart has been performed by Carraro, and later on by Bernstein, but was not followed by good results. Wigand recommends the use of the actual cautery in pressing cases, but it is not necessary to employ such cruel means when we have milder ones. Inflation of the lungs of the infant has been objected to on account of its unpleasantness to the practitioner. I cannot conceive why it should be more disgusting to lay one's

1. Med. and Surg. Reporter. Mich. Med. News, May, 1881.

2. Stewart: Diseases of Children.

3. Hufeland's Journal, Vol. XIII.

mouth on that of the new-born babe than to operate about the rectum. The prize for this "disgusting work" is—a life!

Some writers have stated that inflation is impractical, because the air of the physician, with which he fills the lungs of the infant, is air which has already been consumed, and which has lost all oxygen. These gentlemen are gravely mistaken, for it has been proven by Herholdt, that the expired air contains only one per cent. less oxygen than the atmospheric air. Before beginning inflation all mucus should be removed from the air passages. The nose of the infant should be closed carefully. Pressure is to be made on the œsophagus, to prevent the air from entering the stomach. Some authors are of the opinion that the pressure should be made on the stomach to prevent dilatation of that organ. Before inflating the lungs of the little patient, the physician must take several full inspirations. Artificial respiration must be performed after inflation. The inflation should be made slow and careful. Dr. Eberle, of Philadelphia, has reported a case in which the lung was ruptured by forcible inflation, and air escaped into the subclavian space. In former times, so-called aryngæal tubes were used for the purpose of inflation. It seems that the one known as Chaussier's laryngeal tube was preferred to all others. Much harm, undoubtedly, has been done with these instruments, laceration and rupture of the trachea and lungs having occurred from their use.

Artificial respiration is probably the best of all means employed for the relief of apnœa infantum. It is performed in various ways. I will describe a method, which I think to be very efficient: Place the infant on the bed or floor, so that the face is turned downwards, and lay a pillow under the abdomen. Then have somebody draw the hands of the little patient upwards and backwards; this will tend to bring on inspiration. At the same time that your assistant brings the hands down, you should make pressure on the chest upwards and inwards with both hands. The head and face of the child being placed downwards, all mucus, that might be contained in the air passages, will easily make its escape.

Dr. Marshall Hall's "ready method" may be tried: Placing the child in the prone position and alternately, but rapidly changing it from this position to the side, and vice versa.

Prof. Harvey L. Byrd, of Baltimore, Md., has discovered and introduced what he calls the "Speedy Method." It is as follows: "Bring the *ulnar* sides of the hands near together, with the palmar surfaces looking vertically, and place them beneath the back of the infant, so that the extended thumbs may aid, as far as possible, in sustaining the vertex and inferior extremities; then, keeping the *ulnar borders* near together, so as to form a fulcrum, the radial borders or sides are simultaneously depressed to as great extent as practical—say forty-five degrees—*below* the horizontal line, and then gradually pronated or elevated to as many degrees *above* that line, thus facilitating the escape of air drawn into the lungs during

APNŒA INFANTUM.

the downward movement of the head and chest. Or the hands are placed as at first, and passed *beneath* the body of the child—on its back—and the superior and inferior extremities furthest from the operator seized, one by each hand, near the trunk—the *ulnar borders* of the hands and wrists forming the fulcrum—the head of the child being kept at a proper axis with the movements of the chest by the hands of an assistant; and the depression and elevation of the head and lower extremities proceeded with as already described." These alternate depressions and elevations of the two extremities, performed in a regular and gentle manner, and repeated at proper intervals, seldom fail in establishing respiration where it is possible of accomplishment.¹

During efforts at respiration the body of the child should be kept warm, as loss of caloric will carry off the remnant of vitality.²

1. The Practitioner, Jan. 1880.

2. Stewart, Diseases of Children.

**A New Therapeutic Agent of Value in the
Treatment of Epilepsy, with the
Report of a Case**

By HUGO ERICHSEN, M.D., L.R.C.P. & S.



**Reprinted from
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E. G. Swift, Publisher
Detroit, Mich.**

A NEW THERAPEUTIC AGENT OF VALUE IN THE TREATMENT OF EPILEPSY, WITH THE REPORT OF A CASE.

BY HUGO ERICHSEN, M.D., L.R.C.P. & S.

In the spring of the past year H. G. L——, aged forty-four, applied to me for treatment. Seeing him shortly after an attack, I was able to diagnose his disease as epilepsy, a diagnosis that was corroborated by Dr. George G. Roberson, a very able general practitioner of Utica, Mich.

The etiology in this case is obscure. The family history is good, and, so far as known, neither parent of the patient was afflicted with any disease of the brain or nervous system or with syphilis.

During his childhood the patient was considered delicate, but grew fast in size and strength without being conspicuously different from other boys of his age. When full-grown his height was 5 feet 11¼ inches, and he weighed 145 pounds. Though rather spare in body and limbs and not very well proportioned, he was able at all times to do a man's work, physical or mental, but felt the need of regular nourishment and a plenitude of sleep.

In 1885, at the age of twenty-five, he began the practice of dentistry, marrying four years later.

No other event of importance occurred in his life until early in 1892, when he suddenly came down with a disease pronounced rheumatism by his attending physician. The patient states that he did not consider the attack serious, although several months elapsed before he was enabled to resume his practice. At the time he noticed, however, that the growth of his finger-nails was arrested, as indicated by sharply defined furrows, where the nails had grown thin. This would show, of course, a lack of nutrition, partly due to some subtle change of metabolism, accounting for much that followed.

At the same time he experienced what he characterized as a "fainting spell" coming on after eating a rather indigestible supper. It was accompanied by a stertorous breathing, but not preceded by an outcry or any convulsive movement.

During the following summer he repeatedly had what he called "a very slight though well defined mental sensation," without dizziness, except on one occasion.

In the spring of 1894 the patient was suddenly taken ill with

what he termed "a nervous weakness," while he was at work, and obliged to quit for the day. The "weakness" passed off before the next morning, but recurred at intervals, and finally became permanent and compelled him to give up his practice. It was accompanied by a rapid pulse, and did not manifest itself except when patient became excited or exerted himself. After spending three or four months in the country, however, the patient returned decidedly improved.

But the same trouble occurred in the winter of 1895, and was followed by a bilious attack, producing extreme weakness and emaciation. After a while the patient recovered from the biliousness, but the "nervous weakness" remained.

From 1895 until 1900 the patient often made very rapid gains and became apparently well, so long as no demands were made on his strength, but a small amount of work, worry, or excitement was enough to produce a relapse. With reference to this period he says: "Medical examinations revealed nothing, and treatment seemed to be useless."

According to his description he experienced a few attacks of petit mal at this time, but they were so light in character that they scarcely attracted notice.

Later, when the convulsions became more severe, they were almost always preceded by an outcry. Sometimes the tongue was bitten, the shins scratched, and the head bumped, and in every instance, the patient states, "the muscles were left strained and sore." Convulsions were invariably followed by a heavy sleep of several hours. The patient remained in a dazed state for several days after the attack, and recovered his normal mental condition but slowly.

Altogether, so far as I can ascertain, the patient had nineteen well defined attacks of epilepsy since the summer of 1900. Shortly after the occurrence of the last, on April 17, 1903, I took charge of his case. Up to that time he had been taking the bromides at irregular intervals, owing to the fact that his stomach was easily deranged.

Right here it might be well for me to state that the greatest difficulty that confronted me in the management of this case was the condition of the patient's gastrointestinal tract, and from what I have observed in this instance I have come to the conclusion that a regulation of a patient's bowels and digestion is of supreme importance, if we would effect a cure in any case of epilepsy.

The patient was particularly liable to occasional attacks of biliousness, which yielded promptly, however, to the administration of $\frac{1}{8}$ grain of podophyllum.

One of the very first things I did, under the circumstances, was to arrange a dietary. It was compiled from American and English sources, and is not reproduced here because it is not essentially different from similar directions published heretofore. In the hands of an intelligent patient, who is imbued with the necessity of care in the selection of food, such a list is of the greatest importance.

The choice of a suitable remedy proved more difficult. The bromides had to be rejected, because they deranged the stomach in a short time. Even bromide of sodium proved objectionable for this reason. My attention having been called to bromipin by Dr. Wm. P. Spratling, of the Craig Colony, I determined to give that agent a trial. I considered it especially indicated in this case, because the patient was asthenic. But even when yolks of eggs and brandy were added to it the patient experienced distress after taking it, in consequence of the sesame oil in which the bromine is incorporated. In suitable cases I have no doubt it may prove of benefit, as it combines a nutritive with the specific action of the bromine, but in this particular instance it was clearly contraindicated.

At about this time my attention was directed to "brometone." It proved to be the very thing I was looking for, as the patient had no difficulty in retaining it on his stomach and it did not give rise to any untoward after-effects. I found it necessary, however, to cut down the dose that was recommended. After taking what was evidently an overdose the patient experienced drowsiness during the day, but when the dose was reduced to 5 grains (in capsules) three or four times a day he experienced no further trouble in this respect.

As the drug is not well known, a few words with reference to its composition will not be out of place. Chemically it is designated as tri-brom-tertiary-butyl-alcohol. In a preliminary report on its pharmacological and chemical properties, in the *American Journal of Physiology*, vol. 8, No. 5, 1903, Drs. E. M. Houghton and T. B. Aldrich refer to it as follows:

"Willgerodt, in a paper dealing with tri-chlor-tertiary-butyl-alcohol, or aceton chloroform, mentioned having obtained a similar product containing bromine in place of chlorine, which he called tri-brom-tertiary-butyl-alcohol, but he did not make a

careful examination of its chemical and physical properties, and seems not to have considered at all its pharmacological properties. The bromine compound is produced by the action of caustic alkalis upon mixtures of bromoform and acetone. The excess of acetone and bromoform having been distilled off, the new bromine compound is removed from the residue by distillation with steam, the product being finally purified by recrystallization from alcohol or other suitable solvent. The purified substance is a white crystalline body having a camphoraceous odor and taste. The melting point is about 167° C. It is soluble in most of the organic solvents, as alcohol, ether, benzene, etc., slightly soluble in cold and more soluble in hot water.

"This compound, since it is a derivative of the fatty acid series, when administered in various ways to animals possesses decided anesthetic properties; recovery from small quantities takes place without any apparent untoward results. The drug appears to have very little influence upon the heart or circulation, as shown by myocardiographic and blood-pressure tracings taken from curarized animals."

Brometone contains about 77 per cent of bromine and possesses the sedative and characteristic action of that agent. It is preferable to the bromides, because it does not give rise to nausea, vomiting, or any other alimentary disturbance. Moreover, it does not seem to produce the undesirable systemic depression often resulting from the commoner bromides. And although my patient has been taking brometone day after day for over a year, he has not been afflicted with skin rashes or any other indications of bromism.

On the contrary, he has not had an attack for sixteen months, has gained in weight, improved in appearance, and takes a more cheerful view of the future.

From my experience with it I am inclined to believe that brometone will prove of service in the treatment of other nervous conditions, particularly insomnia, headache, and delirium tremens. It may also prove of benefit in some cases of asthma and coughs of reflex nervous origin.

VOLUME XXII, No. 7.

ONE DOLLAR A YEAR.

The Medical Age.

APRIL 10, 1904.

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The Plague in India

BY

HUGO ERICHSEN, M.D.



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THE PLAGUE IN INDIA.

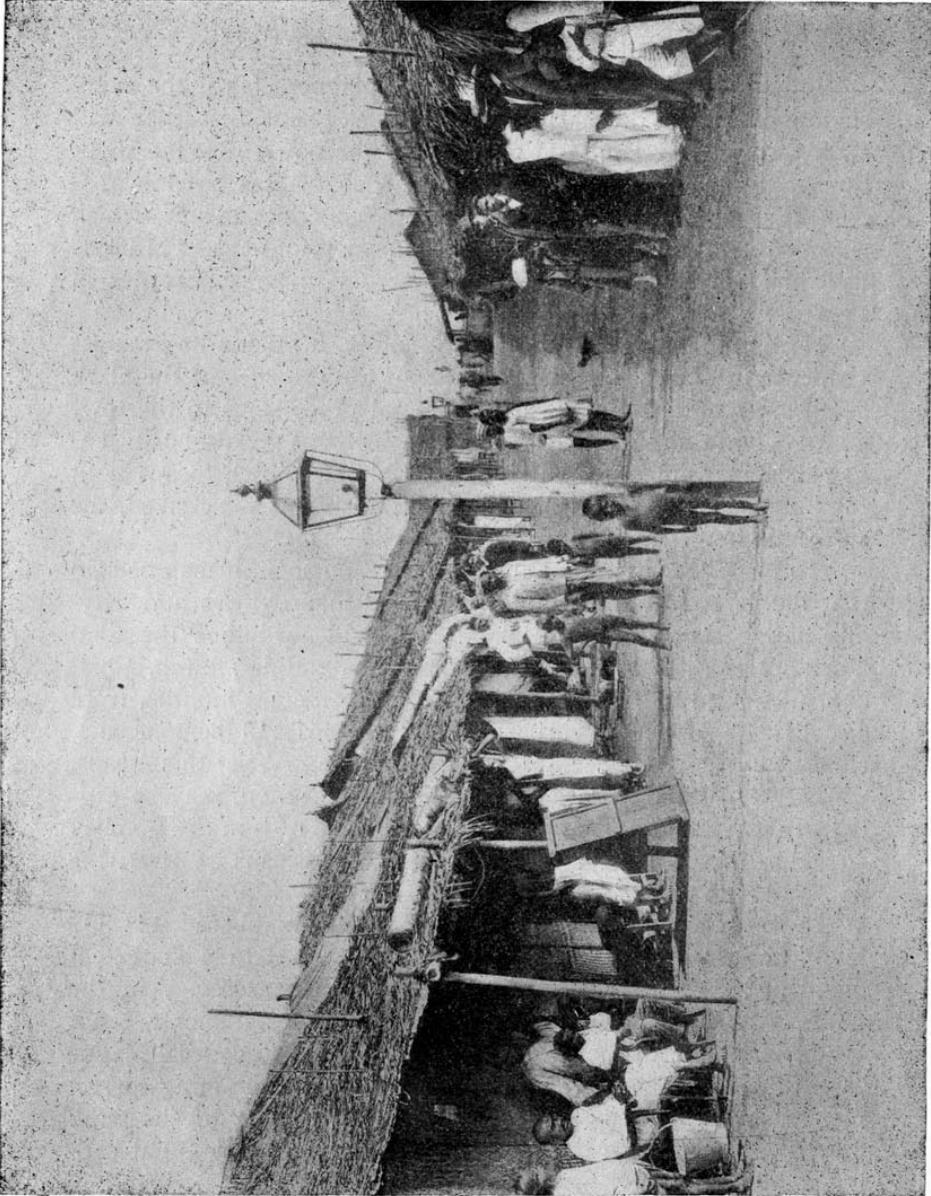
BY HUGO ERICHSEN, M.D.

India is again in the throes of the plague. Until the rainy season begins in the early part of June, gaunt pestilence will stalk through the land and mow down the natives by the thousands. Statistics show that 33,000 perish of this bubonic disease in India every month. Europeans generally escape, which is probably due to superior hygienic surroundings. Millions have died of the plague, since it first put in an appearance in 1896.

While the plague is deadly at all times, it attains its greatest virulence in March. Then evidences of the presence of the black death are met with everywhere—funeral processions to the towers of silence and the burning-ghats, British officials busily engaged in marking infected houses U. H. H., which means unfit for human habitation, the wailing of the suddenly bereaved, the suffocating smell of disinfecting materials, etc.

To place the situation before you in a nutshell, it may be said that the infected area includes nine British provinces and fifty-one native states. In the Bombay Presidency alone the total mortality from plague, for the ten months ending March, 1904, almost equaled that of the preceding year. In eight months, from June 1, 1903, until February 28, 1904, 251,415 persons succumbed to the pestilence in this part of India. What this means, in the way of an increase of the dreadful affliction, may be estimated from the fact that 281,269 persons died of it in the Bombay Presidency during 1903. According to the census of 1901, the population of this part of the empire is 21,539,199.

In the Punjab the deaths from plague numbered 141,897 from January 1 until May 2, 1903, according to a statement made by Lord George Hamilton, the Indian secretary in the House of Commons. Unfortunately accurate statistics are not available, owing to the tendency of the natives to conceal plague cases whenever possible and the impossibility of obtaining correct reports from the remote interior. But an inkling of the truth may be gleaned from the statement that in one week—that ending March 19, 1903—40,526 deaths from plague occurred in all parts of India. Imagine, if you can, the horrors of such a state of affairs. The report of a medical missionary, lying before me as I write, contains the following sentence: "There



A SEGREGATION CAMP.

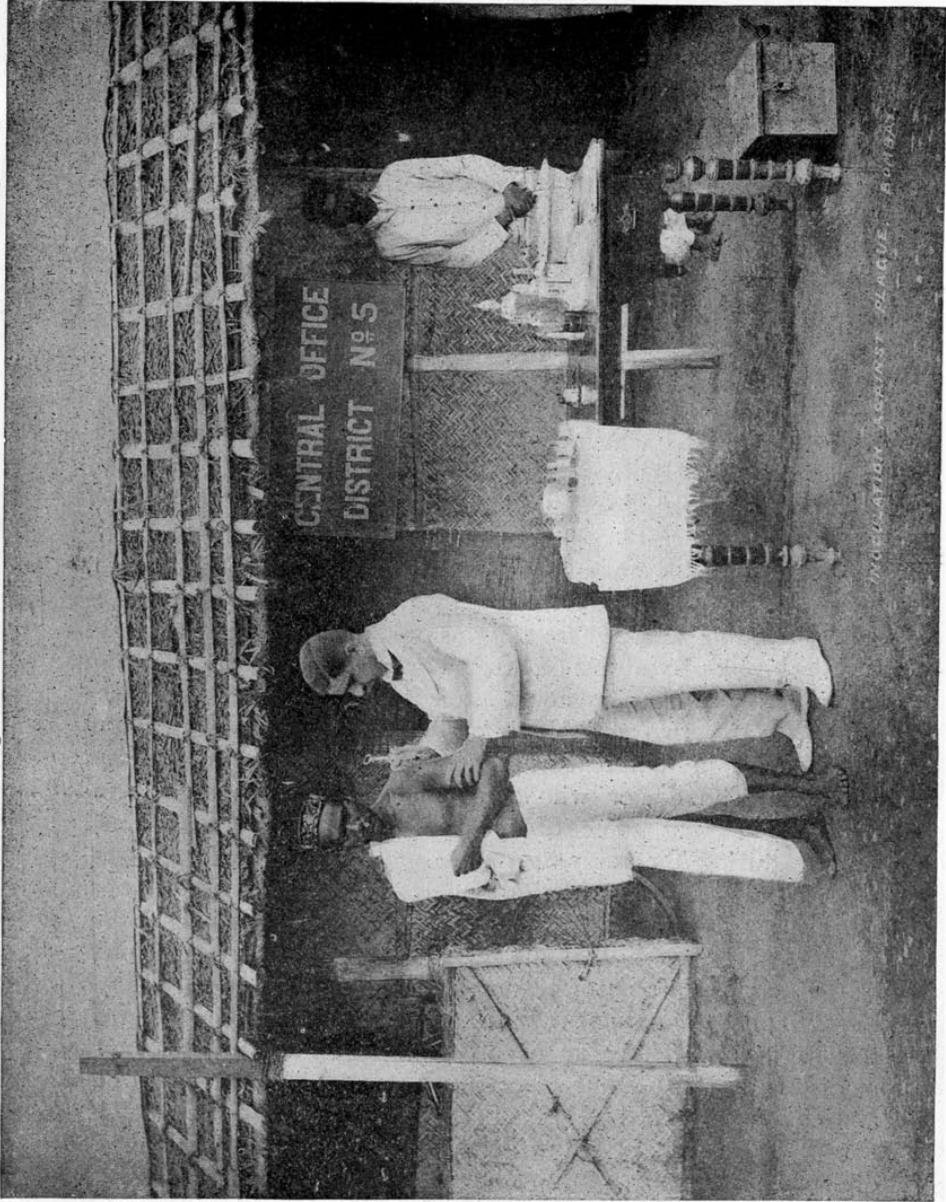
are villages near here in which a third of the population has died of the disease within a few weeks."

Some towns are deserted, but in most cities the people rush out of their homes at the height of the epidemic and return again when the panic has subsided. However, familiarity breeds contempt, and soon even a disease that is almost universally fatal fails to make an impression on the stolid Hindu. Business goes on as usual, though many accounts may be wiped out in a single day by the decease of whole families. The indifference of the natives, their manner of living, and their opposition to the enforcement of sanitary rules, contribute to disseminate the pestilence from one end of the empire to the other.

Generally the plague originates in the native quarters, where men, women, and children are herded together as we would not herd dogs in a kennel. For example, a delegate commissioned to inquire into the plague haunts at Bombay reports: "In a room, the floor-space of which was 8x10 feet, there were four fires burning, one in each corner, for four separate families occupied this spacious room, one family living, sleeping, and cooking in each of the several corners." Thinking that surely here the maximum possible amount of overcrowding had been reached, the commissioner was shown, to his amazement, a room of exactly the same area where he was told by his guide that six families lived. By means of bamboo framework, suspended from the beams and hanging about three feet from the floor, space was made for two additional families, and in this way many other rooms in that tenement were made to accommodate six families. The doctor who accompanied the commissioner informed him that some of the families at times entertained visitors during the rainy season.

Not only are the natives absolutely careless as to precautions, but they seldom come to the dispensaries when they have the disease. Presumably they are afraid of being put in the sequestration camps. Some of the more benighted have been known to say that the government just puts them in those camps so that the officials may have an opportunity of killing them off with medicine. And in some places they even go farther than this, and directly accuse the English of being the cause of the plague.

As regards the origin of the dreaded pestilence, opinions are divided. Personally, I am inclined to believe in Captain Tucker's theory. That gentleman maintains that the plague bacillus gains access to man from the soil. He calls attention to the fact that in India, as in China, the soil is saturated with human and animal



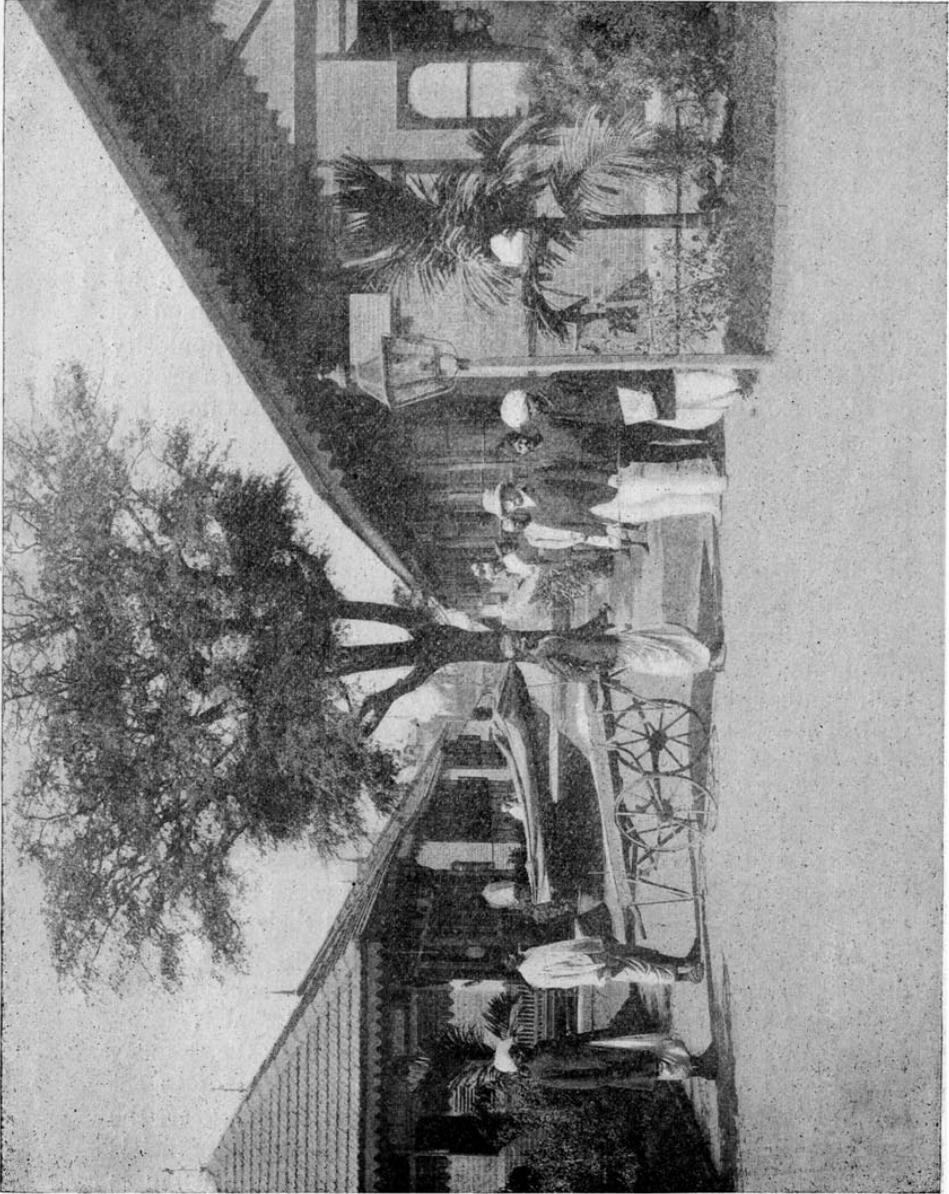
INJECTING PLAGUE SERUM.

excreta, the subsoil poorly drained, a congested population living in close contact with the soil, their standard of health being lowered by insufficient and innutritious food, and their dwellings having poor light and ventilation.

Three elements combine to facilitate the spread of the disease—the distrust felt by Indian peoples toward the British government, failure to destroy creatures conveying the germ of the pestilence on account of veneration of life, and the prevailing custom of attending religious festivals. At the last mentioned, people come from all parts of India and give and take all kinds of diseases; hence they are veritable foci of pestilence, whence the plague is widely distributed. The care taken by Hindus not to destroy some of the lower forms of animal or insect life illustrates the absurdity into which overscrupulosity of conscience may lead its votaries. Although it has been proven conclusively that fleas, bedbugs, cockroaches, and other domestic parasites found in infected homes may convey the plague to man, the natives of India refrain from exterminating any of them, claiming that they have as much of a right to live as we have. They also flatly refuse to destroy the plague-infected rats, but have been induced to catch these rodents alive and to take them to a sort of public rat-pound on condition that the creatures be not killed. Mr. Jonathan Hutchinson, of London, investigated one of these places in Bombay. He called it a “rats’ hell,” and wisely concluded not to prolong his visit, for he regarded the risk of contagion by means of fleas in such a place as not slight.

The problem before the British government in India is the old one of striking the happy mean between rigorous sanitary measures and a revolt because of offended religious sensibilities. In the case of the plague, probably not much more can be done than to attempt to isolate and follow cases and their contacts.

As regards remedial and preventive measures, opinions are divided, as usual. Some authorities claim that inoculation with Haffkine’s prophylactic has proven a failure, and that Yersin’s and Lustig’s serums are ineffective; others, including the Bombay Chamber of Commerce, have petitioned the government to encourage inoculation, but nothing has been done. Moreover, the situation is aggravated by the fact that some British officials are openly hostile to inoculation. Under such circumstances nothing but sporadic inoculation could be looked for, and, in fact, nothing more was achieved. So far as I am aware, no really sustained effort on an adequate scale has been made to



THE BOMBAY PLAGUE HOSPITAL.
(Doctor, Nurses, and "Ambulance" in Foreground.)

familiarize the people with the benefits of inoculation and to acquaint them with the slightness of the physical inconvenience attending it.

The Bombay Plague Research Laboratory supplied 5,252,259 doses of Haffkine's prophylactic to the various districts of India, in consequence of which, it is claimed, the death-rate of the plague cases was reduced to less than one-sixth of what it is among the non-inoculated. Captain S. B. Smith studied plague cases occurring in 102 villages of the Amritsar district. In these villages, he states, 1706 lives were saved by inoculation, the comparative mortality being 6.02 per cent for the uninoculated and only .49 per cent for the inoculated.

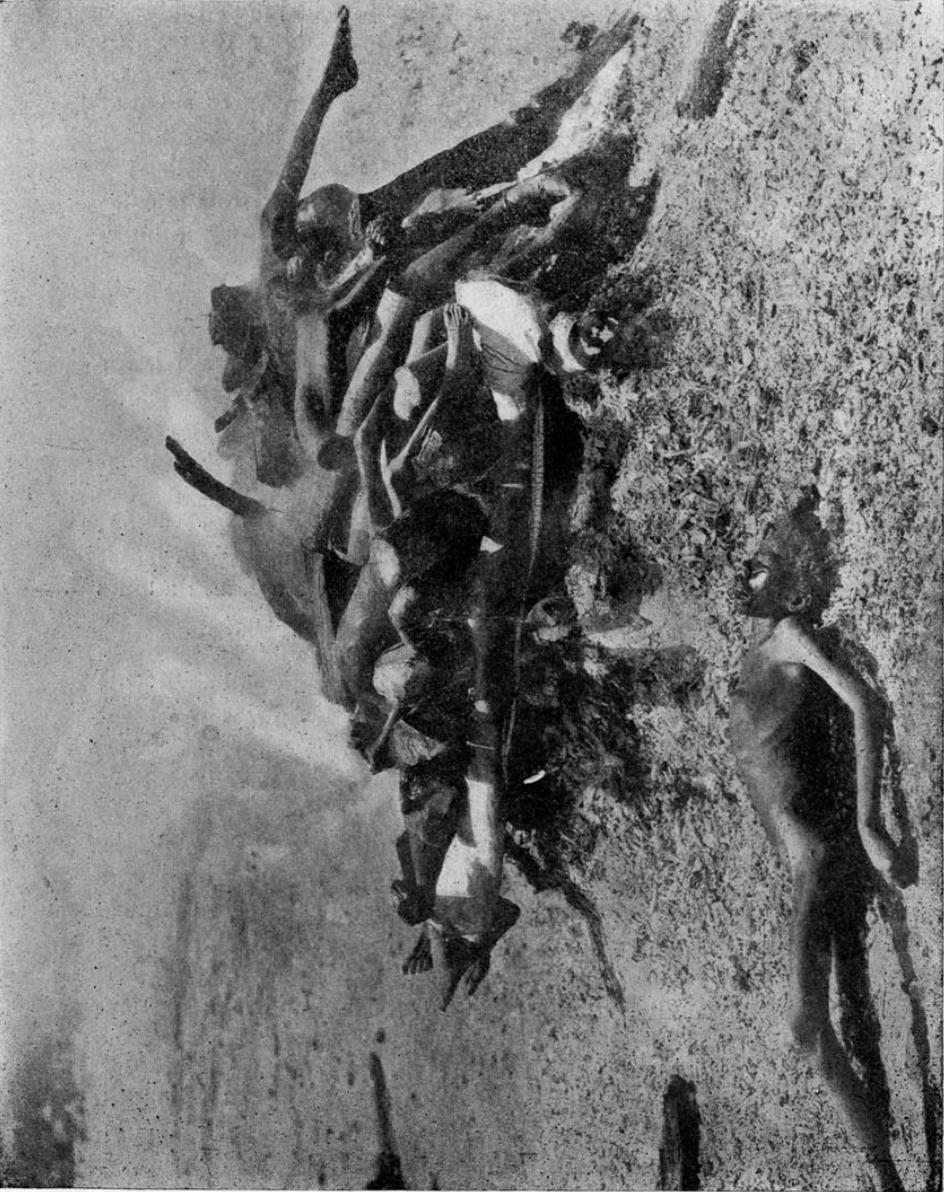
A careful study of the available statistics leads to the conclusion that while the Haffkine prophylactic undoubtedly confers some immunity, it is not an ideal preventive, compared, for instance, to vaccine virus. Moreover, the immunity is of short duration, and on an average does not last longer than six months.

Dessy, who had considerable experience with both preventives during the plague epidemic at S. Nicola (La Plata), expresses a preference for Lustig's vaccine, claiming that it confers greater immunity, may be kept in a dry state, and admits of a more accurate dosage.

The only remedy that has thus far proved of marked benefit in the treatment of the plague in India is adrenalin chloride solution. Kailos Chunder Bose, L.M.S., C.I.E., late president of the Calcutta Medical Society, says of it in *Therapeutic Notes*, Simla, India, vol. v, No. 1: "In many cases it has saved the lives of plague patients under conditions in which death appeared to be inevitable. . . . Adrenalin, given in all stages of the pestis, maintained the pulse admirably and steadily brought down the temperature. . . . In bubonic plague, uncomplicated with trouble of the lungs and intestine, adrenalin is a sovereign remedy, and often succeeds better than any other hitherto known drug."

When the plague is complicated by pneumonia it is particularly dangerous, so far as infection is concerned, because the bacilli are excreted in large numbers in the sputum.

As the disease may suddenly extend to the lungs in ordinary cases, a strict isolation of every plague patient and a thorough disinfection of his excreta are imperative. Relatives of the diseased should be kept in quarantine and under inspection during the entire period of incubation—seven days. Great care should be exercised, too, in the disinfection of the dwelling, which must



HUMAN FUEL.

be extended to every part of the habitation, from roof to cellar. Any rat-holes that may be found should be filled with broken glass and permanently closed with cement.

If the plague were confined to man we could reasonably hope for its extinction, but as it is primarily a disease of rats its eventual extermination is questionable, unless some epizootic may be discovered that is harmless to humans but fatal to the rodents.

It is interesting to note the variation in the mortality-rate produced by race. The Caucasians come first with the lowest death-rate. The Parsis, being the cleanest of the native races, have the next lowest, whereas the Jains, worshipers of life in every form, have the highest. From the beginning the Jains have been more affected by the plague than any other race in India, which may be explained by the fact that the disease is conveyed by ants that abound in their homes, and for whom they are known to provide artificial food.

One alarming symptom of the evil produced by the ravages of the plague has been the growing deficiency of labor in Bombay and other large cities. This is probably due, to a large extent, to the reluctance of people to come to a city notoriously and obstinately infected by a deadly disease.

The duration of the disease is generally short. A man is taken ill at one of the human beehives he calls his home. After being taken to a camp, variously called isolation, detention, or sequestration camp, he is found to be plague-stricken and carted to a hospital, where he is shown every attention. If he dies he is consigned to a primitive funeral pyre, with a callousness that strikes us Americans as almost inhuman, and can only be explained by the indifference born of overpopulation.

As soon as the intense heat sets in, at the beginning of the rainy season, the plague will be checked.

In conclusion I wish to express my indebtedness to the reports of the United States Marine Hospital Service, *Indian Lancet*, and the "Hand-buch der Pathogenen Mikroorganismen," Bd. iv, Jena, 1904, for material that has been incorporated in this dissertation.

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KREMACIO
KONTRAŮ
ENTERIGADO



KREMACIO KONTRAŬ ENTERIGADO

Parolado farita en la kremaciejo de Indianapolis, je la 27-a de
Septembro 1913, kaj en la Instituto de Carnegie,
Pitsburgh, je la 13-a de Decembro 1913.

De

D-o. HUGO ERICHSON,

Eks-Prezidanto de la Kremacio Asocio de Ameriko;
Sekretario de la Michigana Kremacia Asocio; Honora
Membro de la kremaciaj societoj de Genevo, Milano kaj
Holando; Fremdlanda Asocio de la Higiena Societo
de Francujo, ktp.

Esperantigis

D-o. TOBIAS SIGEL,

Konsulo de U. E. A., Prezidanto de la Detroyta
Esperanta Societo.

RIMARKO DE LA AŬTORO.

Tiu-ĉi libreto estas eldonata sub la aŭspicioj de la Kremacia Asocio de Ameriko, kaj estos disdonata senpage, ĝis kiam la provizo elĉerpiĝas. Se vi kredas je kremacio, vi estas kore invitata, aniĝi a la Kremacia Asocio, kaj por tio bonvolu sendi kotizon da unu dolaro a la sekretario, S-o. A. T. Roever, 519 Union Central Bldg., Cincinnati, Ohio.

Tio rajtigos al vi, ricevi artistikan membrodiplomon, kaj tiajn presajojn, kiajn la asocio eldonas de tempo al tempo.

RIMARKO DE LA TRADUKINTO.

Oni bonvolu pardoni la preserarojn. La presisto ne sciis esperanton, kaj faris ilin post la korektigo de la specimenaj folioj.

Sinjorinoj kaj Sinjoroj:

Vivu longe kaj feliĉe. Sed kiam neevitebla fino venas, kio devas esti—Enterigo aŭ Kremacio?

Mia parolado en tiu-ĉi vespero havas la celon helpi al vi solvi problemon, kiun la tempo donas al ni ĉiuj, sed kiu, feliĉe, estas plej ofte prokrastata ĝis la momento, kiam la vivo perdis sian ĉarmon, kiam ni estas kadukaj kaj lacaj de la longa pilgrimado, kaj sopiras je meritita ripozo. Kvankam kutime ni timas la morton, tamen estas por ni senutile, plendi pri ĝi en mondo, kie ĉio mortas—ĉiu videbla objekto ĉirkaŭ ni aliformiĝas—ruino sekvas konstruon, kaj konstruo ruinon. Nenio estas eterna en la ekonomio de la naturo, escepte de la spaco, atomoj kaj energio; ĉio, kion ni vidas, estas preteriranta kaj devas forpasi, nur la universo, konsiderata kiel tutaĵo, estas neŝanĝa.

Koncerne tiun-ĉi demandon, mi scias(ke ni kremacianoj devas esti tre toleremaj rilate al tiuj personoj, kiuj ne konsentas kun ni, ĉar ni batalas kontraŭ profunde enradikigitaj moroj kaj sentimentoj. Ni ne povas preni ian novan vojon, nek forlasi la malnovan, ne skuante la pensojn de multaj, kiuj akutimiĝis al la malnovaj vivmanieroj. Ni estu do, mi ripetas, malseveraj kaj paciencaj al tiuj, kiuj ne deziras tuj transdoni ĉion karan al la flamoj, anstataŭ al la tombo. Alia afero estas, kiam ni rigardas la problemon de alia flanko, nome, koncerne la komunan sanon. Tie-ĉi ni efektive ne devas ŝanseliĝi, ĉar ne povas esti ia dubo pri la danĝero por la sano kaŭze de la malrapida, longedaŭra procedo de enterigo, kaj la tute higiena maniero de kremacio.

Se, malgraŭ ĉio ĵus dirita, kremacio ankoraŭ prezentas al iu turmentajn trajtojn, li memoru, ke nek scienco, filozofio, nek religio povas elpensi metodon, per kiu la disigo de delonge amata moro povus esti ne doloriga; Li memoru, ke kvankam la penso pri kremacio povus elvoki malagrablajn emociojn, la tuta procedo kompletigas tamen an la daŭro de unu horo, dum ĉe enterigo la malplaĉaj fazoj daŭras jarojn, kaj kelkfoje eĉ tutaj jarcentojn.

Oni miras, kial ni kremacianoj tion multe dediĉas nian vivon por disvastigi la ideon de cindrigado. Tio estas facile klarigebla. Ni ĉiuj penas fari ion bonan laŭ nia propra vojo, eĉ se tio estas malhelpata. Ni kremacianoj tie-ĉi en Ameriko penas fari bonon al niaj propraj epoko kaj generacio kaj al tiuj, kiuj venos post ni, forte celante haltigi la terurajn procedojn de enterigado en la densegaj partoj de Eŭropo, kaj enkonduki la multe pli humanan, pli santindan kaj pli estetikan praktikon de cindrigado, anstataŭ la kruela, sed tradicia moro de entombigo. Se oni deziras aŭtoritatan ateston, oni povos ĝin trovi en la jenaj senmortaj vortoj de la mortinta Frances E. Willard, kiu estis unu el la plej konsekvencaj kremacianoj, kiuj iam vivis: "Mi celas helpi al progresemaĵoj movadoj eĉ en mia plej malfrua aĝo, kaj tial mi nun ordonas, ke mia tera vestaĵo, de kiu mi baldaŭ liberigis, kiam mia vera estaĵo transiros al la mondo nekonata, estu rapide envolvota en flamoj, por forpreni de ĝi la venenan potencon, infekti la sanajn vivantojn. Neniu el miaj amikoj diru ion por malhelpi la cindrigon de mia forĵetota korpo. La fakto, ke la populara opinio ankoraŭ ne venis al tiu-ĉi decido, des pli

multobligas la devon por mi, kiu ja vidis la lumon, insisti al ĝi post la morto, ĉar mi sincere intencis helpi dum mia vivo al la granda afero de la mizera, subpremita homaro.”

LA HISTORIO DE KREMACIO.

Antaŭ ol ni konsideras la ideon de kremacio de ĉiu vidpunkto, estas interese, ĵeti rapidan retrospektivan rigardon al ĝia historio. Kremacio tute ne estas nova; fakte ĝi venas de profunda antikveco. En la komenco de la epoko de kritanismo ĝi estis ofta moro de la civilizita mondo, kun la escepto de Egipto, kie kadavroj estis enbalzamataj, la regno de Judeo, kie oni metis la kadavrojn en ĉerkojn, kaj Ĥinuĵo, kie oni metis ilin en la teron. La Grekoj, kvindek jarcentojn antaŭ Kristo, ĉiam entombigis siajn mortintojn, sed baldaŭ ili spertis la plibonecon de kremacio, kaj la lasta kutimo fariĝis universala. Senrajtigitaj por tio estis nur memmortigintoj, suĉinfanoj kaj personoj, mortigitaj de fulmotondro.

La Romanoj, kiuj komence enterigadis siajn mortintojn, prenis la higienan moron de la Grekoj, kaj de la ĉeso de la republiko ĝis la fino de la kvara jarcento de nia epoko, la cindrigado sur la korpobruŝiga lignaro estis rigardata kiel la plej honorinda, plej bona kaj plej taŭga. En la komenco ne estas kredeble, ke la funebraj moroj de la kristanoj multe diferencis de la moroj de tiuj, kiuj apartenis al la antikvaj religioj. La kristanoj enterigadis en la samaj lokoj, kaj ili donas al ni en tiu-ĉi periodo strangan, ilustraĵan de kunmikso de la nova kredo kun la malnova per tio, ke super la ĉerkoj en la katakomboj de Romo ili pentras kaj gravuras bildojn de la idolanaj dioj kaj diinaj, kaj eĉ la kutimajn adorvokojn al la diaĵoj de la submondo. Kun la tempo la diferenco, pligrandiĝis, kaj kiam la kristanismo fariĝis potenca, ĝiaj adeptoj, ĉiam malamiko de kremacio, rapidis forigi ĝian uzadon. Tion ili faris, ne estante influitaj de la Sankta Skribo, ĉar la Malnova Testamento same kiel la Nova silentas pri tiu-ĉi afero.

La kaŭzoj, kiel estas, jam rimarkite, estas antaŭjuĝo de superstiĉo. Forte malamante la malnovan mitologion, estas facile kompreneble, ke la kristanoj malŝatis ankaŭ ĝiajn adeptojn kaj iliajn morojn. La idolanoj forbruligadis siajn mortintojn, kaj tial la kristanoj stampis la forbruligadon kiel idolanan moron. Havante antaŭjuĝon, ili rifuzis akcepti bonan moron, kiu estis kutimo ĉe iliaj malamikoj. Estante senlogikaj, ili tute ignoris la fakton, ke dum kelkaj idolnacioj uzadis la torĉon, aliaj uzadis la fosilon, kaj tial kremacio ne devus esti rigardata pli idolmora, ol entombigado.

Sed la prefero al enterigado ĉe la unuaj kristanoj estas facile komprenebla per motivoj tute sendependaj de religia konvinko. Enterigo povis esti plenumata sekrete, cindrigo tiel ne povis, kaj en sia longa konstruaŭstarado kontraŭ persekutoj la tiamaj kristanoj certe eltrovis, ke sekreteco estas necesa, por eviti malhelpon en la plenumado de tiuj religiaj ritoj, kiujn ĉiu kredo kunigas kun la traktado al la mortintoj.

En 1869 la profesoroj Coletti kaj Castiglioni, “en la nomo de la komuna sano kaj civilizacio”, prezentis la demandon pri kremacio al la Tutmonda Medicina Kongreso en Florenco. Rezolucio estis akceptata ĉe tiu kongreso, postulante, ke oni uzu ĉiujn eblajn rimedojn, por akceli anstataŭigon de la enterigado per kremacio. Tio-ĉi estis la komenco de la moderna movado. De Italujo ĝi faris ĝian vojaĝon al

landoj, Angla, Germana, Franca, Svisa, Dana, al Usono kaj fine al Aŭstralio, kaj ĝia propagando estas nun disvastigata tra la tuta mondo.

LA SENTIMENTALA VIDPUNKTO.

La sentimentala vidpunkto de la konsiderata demando certe estas tre grava. Se oni ne komplikas la problemon per tradicio kaj religiaj kredoj, ĝi estas tre simpla. La animo, la ĉefajo, la vivo, la "Mi", aŭ kiel ajn via speciala filozofio ĝin nomu, forflugis de ĝia tera loĝejo, kaj ni simple devas atenti, ke la forlasita korpo disigi en siajn diversajn kemiajn elementojn sen malutilo al la vivantoj. Estas nenio sankta kaj sakramenta en enterigado, escepte de tio, kion homa sagaco eltrovis. La tombo estas nur mallerta elpensajo por malpezigi la sentojn de la vive-restantoj, forigante de la okuloj dolorigan spektaklon. Mi citas jenon de la verkoj de D-o. Jakob Bigelow, estinta profesoro en la medicina fakto de la Universitato de Harvard: "Ĉu estas pli multe da saĝo aŭ filozofio, gefila pieco aŭ humaneco, komuna aŭ privata utilo aŭ religio en tio, ke oni enŝlosas en feron, ŝtonon aŭ graniton la putreman korpon de homo, kvazaŭ ĝi restus tie eterne samforma, ol en tio ke oni traktu same similan amason da besta ŝtofo? Ĉu ne estas pli multe same kiel agi kontraŭ natura principo, kvazaŭ ni estus pli saĝaj ol ĝia kreinto."

Ni daŭre aŭdas, ke homoj aludas altesprime al la "verda herbaro, kiu kovras la tombojn de iliaj prapatroj," tute ne sciante aŭ ignorante la disiĝintan amason da putraĵo, kiu kuŝas sube. La vero pri tiu afero devas esti dissemota, kio rezultigos decidon ĉe pensemaj personoj, gvidi siajn sentimentojn pli konforme al la faktoj.

Nun kiuj estas la faktoj? Mi citos nur du atestojn, ne tedante vin per detaloj. Ni scias de la lipoj de S-o. Roland Litchfield, respektinda kaj ŝatata funebrajisto en Cambridge, Massachusetts, ke, "se la ĝenerala publiko povus scii aŭ vidi, kion li estas devigata scii aŭ vidi, neniam plu korpo estus metota en teron." Kaj Lia Pastra Moŝto, C. Voysey, de la Preĝejo de Anglujo, diris: "Se tombaro povis esti malkovrata tiel, ke parto de ĝi estu videbla, neniam iu ĝin vidinta permesus, entombigi korpon de persono, kiun li amis."

Kremacio prezentas lertan solvon de problemo, kiu ĉiam kaj ĉiel estas teruriga kaj ofte korrumpanta.

La jena ĉefartikolo de la Brita Medicina Ĵurnalo de la 14-a de Junio de 1913, ankaŭ pritraktas tiun-ĉi temon: "Medicinaj praktikantoj devus uzi ĉiun okazon, kiun ili renkontas survoje, por urĝi la akcepton de kramacio. Estas certe, ke estonte ĝi estos en ĉiuj civilizitaj landoj, kaj enterigado estos rigardata kiel metodo de barbareco. Neniu persono kun deca sentemo, kiu iam vidis en Bargello apud Florenco la famajn modelojn de Gaetano Julio Zumbo, faritajn de kolora vakso, kiuj prezentas kadavrojn putrantajn en la ĉerko, povus elpensi, ke li povus fordoni la korpojn de siaj amataj al tia malrapida kaj teruriga putriĝo. La enterigado estas danĝero por la vivantoj same kiel malhonoro por la mortintoj."

Sed la demando estas: Kion ni kremacioj proponas kiel anstataŭon de tiu teruriga stato? Ni proponas returnigi la homan korpon a ĝiaj kemiaj elementoj, en tiom da minutoj kiom da jaroj ĝi daŭras ĉe enterigado, simple per procedo de rapida forbruligo, sen iaj apudaj teruroj, sen danĝero por la vivantoj, kaj kun minimumo da kosto.

Mi opinias, ke la kontataĵo de D-o. Knox, mortinta episkopo

de Manchester, rilate al tiu-ĉi afero, tute pravas, dirante la jenon: "Mi estas tute certa, ke malgraŭ fortaj sentimentaj kontraŭdiroj, kio estas tre natura, ni devos ekscii, ke kremacio sub la kondiĉoj de moderna vivo ne estas nur preferinda, SED KE ĜI ESTAS ANKAŬ LA PLEJ DEKA KAJ LA PLEJ HONORIGA TRAKTADO DE LA KORPOJ DE LA MORTINTOJ, kaj tute konforma al la kristana kredo.

KREMACIO DE LA HIGIENA VIDPUNTO

Sed kial, vi povus demandi, ni kremacianoj tiome insistas, ke oni enkonduku nian metodon de traktado de la mortintoj? Super ĉio pro tio, ke ĝi estas pli higiena. Tombaroj malpurigas la teron kaj same akvoarangojn, kaj ofte la atmosferon de la apudeco. Estas pro la fizika sano-danĝero por la vivantoj, ke entombigo estas ĝenerale malpermesita interne de la urblimoj. Fakte la urbestraro de St. Gall en Svisujo estas tiom saĝa, ke ĝi ne permesas enterigadon interne de la distrikto de sia aŭtoritato. Kremacio estas deviga en tiu senso, ke oni devas preni la korpon alilokon, se la amikoj de la mortinto deziras, ke liaj restaĵoj estu enterigataj.

George Elliot faris la gloran preĝon, ke post la morto ŝi estu "la dolĉa aspektaĵo de difuzita bono, kaj difuzita eĉ pli efektiva." Multaj personoj tamen per enterigado fariĝas la abomena aspektaĵo de difuzita malbono, kaj tiel pligrandigas la malsanon kaj la suferon en la mondo.

Kremacio, kontraŭe, garantias rapidan malkomponon, kaj konsumas ĉiujn malbonodorajn malpurajojn, detruante ĉian infekton. Vere, kiel Sir Spencer Wells, tre prave nomis ĝin, ĝi estas "Purigado kontraŭ Putrado."

Jen la aŭtoritato de Sir Henry Thompson, estinta profesoro de la klinika operaciejo de la universitata kolegio en Londono: "En la teron estas metata nenia korpo, kiu ne malpurigas la teron, la aeron, kaj la akvon super kaj ĉirkaŭ si." Tio estas kaŭzo, ke li rekomendas cindrigadon, dirante: "Senlima malutilo povas rezulti de enterigado, sed nenia malbono de kremacio."

En ĉefartikolo pri "Kremacio dum epidemioj," de la 6-a de Februaro 1897, la Brita Medicina Ĵurnalo deklaras: "Certe estas jam la tempo, ke oni realigu la konsilon, donitan de Sir Henry Thompson, antaŭ pli ol du-dek jaroj, kaj poste ofte ripetitan, ke la korpo de ĉiu persono, kiu mortis kaŭze de infekta malsano, estu forbruligata . . . Kremacio estas saĝa kaj singardema aranĝo kaj justa prizorgo de la intereso de la vivantoj."

"Sen argumentoj estas simple kompreneble," diras D-o. R. S. Tracy, en la lasta eldono de la Ziemssena Ciklopedio de Medicino, "ke kompleta detruo de korpo laŭ tiuj modernaj metodoj, estas de higiena vidpunkto, multe pli preferinda ol enterigo."

D-o. Edmund Parkes, profesoro de la milita higieno en la Medicina Lernejo de la Brita militistaro, en sia verko pri Higiena Scienco, severe kondamnas enterigadon. "Enigo en la teron," li patose deklaras, "estas la plej malhigiena el ĉiuj planoj pri la dispono de la mortintoj."

"Ke mortintoj mortigas la vivantojn," diras D-o. W. H. Curtis, "estas bedaŭrinda fakto; kaj ke ĥolero, flava febro, kaj la tuta listo de zumotikaj kaj infektemaj malsanoj povas disvastiĝi per la malpurigo de la akvo kaj la aero, tio estas pli facile pruvebla ol ke kloaka elvaporigo aŭ kloaka akvo povas dissemi malsanon."

La profesoro de la medicina fako en la universitato en Michigan, Victor C. Vaughan, kontraŭbatalas la popularan supozon, ke akvo puriĝas, filtrigante tra sablo, kaj li citas nombrojn da eksperimentoj, faritaj de li mem, kaj multajn ekzemplojn, kiuj pravigas lian kontraŭopinion.

En gazeto pri "Akvoprovizo", kiu estis legata en sanitara kunveno, okazinta en Ypsilanti, la 1-an de Julio, kaj kiu estis kopiata en la raportoj de la sanooficistaro de Michigan, li citis faktojn, kiuj certe terurigas per la menciitaj eblaĵoj.

Unu el ili estas fama ekzemplo, kiu ilustras, kiom malproksimen organika substanco estas transigebla tra teraĵo, kaj tamen povas enhavi siajn venenajn ecojn. "Antaŭ kelkaj jaroj tifa febro atakis malgrandan urbon en Svisujo kun la plej granda forteco, kiun oni rememoris en la monta urbeto. La demando estis, de kie venis tiu epidemio. Sur la kontraŭa flanko de la monto, kaj pli alte lokita ol la unua vilaĝo, estis dua urbeto, en kiu kelkajn semajnojn antaŭe regis la tifa febro. Kelkaj personoj estis malsaniĝintaj, kaj kelkaj mortis kaŭze de la malsano. De la montpinto tra la unua vilaĝo fluus rivereton, kiun oni deturnis de ĝia fluejo kaj uzis por akvumi herbejon. En tiun-ĉi riveron oni jetis la malpurajojn de tifa malsanulo kaj en la rivera akvo oni lavis liajn vestaĵojn. La demando tiam estis jena: Ĉu estis eble, ke la akvo, kiu de sur la herbaro trapasis la monton kaj aperis kiel fonto sur la transa flanko, ke tiu-ĉi akvo infektis la loĝantaron de la unua vilaĝo? La homoj en la tifa distrikto prenis la akvon de fonto, kaj estis konstatite, ke la tifa febro regis nur inter tiuj, kiuj uzis tiun akvon. La registaro esploris tiun problemon, kaj oni dissemis sur la herbejo kvin-dek centfuntojn da kruda salo, kaj jen montriĝis, ke la kvanto da salo en la fonta akvo sur la transa flanko rimarkeble pligrandiĝis. Evidente inter la herbaro kaj la fonto estis interkomunikigo. En tiu-ĉi ekzemplo akvo transportiĝis tra proksimume mejlo da teraĵo. La demando estis: Ĉu ekzistis subtera fluo, aŭ ĉu la akvo filtriĝis tra la grundo? Por solvi tiun-ĉi problemon, oni disŝutis kelkajn centfuntojn da faruno trans la herbejon, kaj oni ekzamenis la akvon sur la transa flanko, serĉante amelon. Oni ne trovis ĝin, kaj ĝe neniam aperis tie, montrante, ke nenia subtera fluo ekzistis, kaj ke la akvo sorbiĝis tra la grundo. Tio-ĉi estas la plej konata fakto, kiu vidigas pozitive, aŭ almenaŭ tiom kiel eble, de kie la tifa febro venas.

Alian okazon, kiun Profesoro Vaughan speciale valoras en sia gazeto, oni observis en la ŝtato Michigan: "En la graffando de Kalamazzo estas bela vilaĝeto, nomata Richland. Ĝi troviĝas en belega kampara regiono. La kamparanoj riĉiĝis pro la produktado de la tero kaj pro aliaj specialaj superecoj.

Antaŭ kelkaj jaroj la vilaĝa konsilantaro deziris elekti novan lokon por tombaro, kaj ili elektis lokon interne de la limoj de la vilaĝo kaj sufiĉe proksime al putro, kiu apartenis al maljuna kuracisto, D-o. Patchin. La maljuna doktoro protestis kontraŭ la lokigo de la tombaro tiom proksima al siaj domo kaj putro, kaj lia protesto kaŭzis proceson. Pardonu al mi, ke unue por komprenigo mi devas konigi al vi la teran staton de tiu loko kaj kelkajn eksperimentojn tie faritajn. Estis tie proksimume 18 coloj da argila tavolo, kaj poste sub tio ĉirkaŭe du aŭ tri futoj da rokaĵo; sub ĝi 18 aŭ 20 futoj da ŝtonsablo, same kiel troviĝas en la tuta suda parto de Michigan. Fosante tombojn, oni metus la mortintojn en tiun ŝtonsablon. Ĝi estis tion disiĝema kaj malseka, ke fosante oni devis enmeti tabulojn, por ke la ŝtonsablo ne

enŝutiĝu. Sub la ŝtonsablo kaj ĉirkaŭe 30 futojn sub la superaĵo estis penetrebla tavolo de argilo, kliniĝinta de la tombaro al la puto. Jen estis demando, ĉu estis eble, infekti la puton per enterigado de la mortintoj en la proponita nova tombejo. Oni vokis min, kaj esplorinte la geologian strukturon, mi konkludis, ke tia infekto estis ebla. La puton oni elpumpadis dufoje ĉiutage, kaj el ĝi ĉe ĉiu elpumpado oni prenis meznombre 15 barelojn da akvo. Por montri kiom ridindaj estas kelkaj teorioj, rilatigitaj al tiu problemo, mi rakontas, kion oni deklaris al mi en la juĝejo:

“Estus neeble, ke eĉ nur iom da akvo aŭ pluvo, falinta sur tiu tombejo, kiu troviĝis apud la puto, fluus al la puto, ĉar—tiel oni trovis en ia malnova libro—ĉiu akvo, kiu fluas en la puton, devas esti enfermebla en cerklon, kies centro estas la buŝo de la puto, kaj kies radio estas la profundeco de la puto. Tiu-ĉi raporto estis farata sen ia konsidero de la kompono de la teraĵo kaj de la geologia formacio, kaj sen iu ajn kalkulo pri la strukturo de la ĉirkaŭaĵo. Feliĉe tio estas kontraŭpruvebla tre facile: Oni pumpis tri-dek barelojn da akvo ĉiutage el la puto. Ni scias la jaran kvanton da pluvfalo en Michigan, kaj ni povas kalkuli tre facile la nombron da bareloj, kiuj falus sur tiun superaĵon, kies centro estis la buŝo de la puto, kaj kies radio estis la profundeco de la puto. Kiel rezulto de tia kalkulo ni trovas, ke la jara kvanto de pluvfalo sur tiun superaĵon ne provizas la puton eĉ du aŭ tri tagojn. Post reveno hejmen, kaj klarigo de mia vojaĝo al D-o. Langley, li proponis, ke ni faru direktan eksperimenton por vidi, ĉu ia fizika materio pasus de la proponita tombejo al la puto, aŭ ĉu ne. Li ekzamenis la akvon de la puto pro litiumo, substanco facile ekkonebla, trovis ke ĝi ne estis tie, kaj poste semigis salon de litiumo super la proponitan tombejon, kaj poste ekzamenis la akvon ĉiun sekvantan tagon. Jen, je la 18-a tago post la semo de la litiumo super la tombejon, la ĥemiaĵo estis trovebla en la puto, montrante, ke la akvo, kiu falis sur la tombejon, sendube trakuris la teraĵon, pasis malsupren al la nepenetrebla argilo, kiu kolektis ĝin, kaj kondukis ĝin al la puto. Spite de pruvo tiom pozitiva, instruita juĝisto en Michigan rifuzis nin kaj permesis, ke oni lokis la tombejon tien, kun la ebleco veneni nombron da familioj. Kiel rezulto, la familioj de la apudeco ne povis plue uzi iĥan putakvon.

Se oni postulis pli multe da pruvo,—kaj mi diru apude, ke mi ne scias pri iu pli bona aŭtoritato ol Profesoro Vaughan—vi trovos ĝin en la verkoj de Profesoro Pettenkofer de la Universitato de Munich. Liaj esploroj kaj eksperimentoj montris certe la manieron, per kiu tombejoj efektivas sian venenan influon tra aero kaj akvo.

En la raporto de la Sano-konsilantaro de Kalifornio por la jaro 1894, troviĝas tre interesa artikolo de D-o. W. F. Nutt, tiama profesoro pri la principoj kaj praktiko de medicino en la Universitato de Kalifornio, de kiu artikolo mi citas la jenon: “Du aŭ tri jarojn antaŭe okazis epidemia kaj malicema difterio ĉe la Point Lobos Strato. Mi trovis, ke la familioj infektitaj uzis akvon de superaĵa puto, nur malmultajn futojn for de la Old Fellow-Tombaro.

Laŭ diro de D-o. Henry B. Baker, en la raporto de la Sano-konsilantaro de Michigan por la jaro 1874, la kaŭzo por epidemio de cerbospina meningito, kiu dezertigis la vilaĝon Petersburg en Michigan dum la komenco de la jaro 1874, estis alskribita al fonto, kiu troviĝis 5 paŝojn de domo kaj 15 paŝojn de tombaro, kies grundo estis de 12 ĝis 15 futoj pli alta ol la fonto. Ĉirkaŭe 18 paŝojn de la fonto estis freŝa tombo.

Profesoro R. C. Kedzie de la Agrikultura Kolegio de Michigan, prezentante sian analizon de la akvo de tiu fonto, diris: "Ni trovis en tiu-ĉi akvo nekutimajn kvantojn da amoniakaj kloridoj, da nitratoj kaj nitritoj, kaj fine da fosfatoj, kiuj montras, ke tiu-ĉi akvo havas neordinaran komponon.

Ni povus supozi, ke la ĉeesto de ĉiuj tiaj substancoj ekzistas, se materioj riĉaj je nitrogeno kaj fosforo, t. e. karno, putriĝis en la apudeco de la fonto, kaj la rezulto de tiu putrado direktiĝis al tiu akvo. La fakto, ke la fonto estas proksima al, kaj ke ĝi lokas sub la superaĵo de la tombaro, plue ke la fonto troviĝas en la meza de malnova India tombaro, multe pligrandigas la pravon de tiu klarigo. La fakto, ke la unua persono, infektita de cerbospina meningito en Petersburg uzis la akvon de tiu fonto kaj ke aliaj, kiuj uzis la fontan akvon malsaniĝis same, tio faras la supozon tre kompreneblan, ke la kompono de la fonta akvo havas interrilatojn kun la terura epidemio, kiu dezertigis la vilaĝon.

Ankoraŭ unu ateston mi donos, kaj mi finos tiun-ĉi parton de mia temo. En antaŭnelonga interkorespondado kun ĉef-inĝeniero de la Sano-konsilantaro de Massachusetts, tiu sinjoro donis al mi jenan informon: "Por determi la eblan efikon de tombaroj al la ecoj de akvo, speciale al la grunda akvo sub la tombaroj, la Sano-konsilantaro faris eksperimentojn antaŭ multaj jaroj. La eksperimentoj estis plenumitaj kun tre interesaj rezultatoj, montrantaj grandan malpurigon de la grunda akvo kaŭze de enterigo de malgranda hunda kadavro en ordinara tombara teraĵo, kie ankaŭ la pluvfalo estis ordinara."

Niaj Sano-konsilantaroj, ekkoninte la danĝerojn, kuniĝintajn kun la putrigado de la urba akvoprovizo per la disiĝo de homaj restaĵoj, nun preskaŭ ĝenerale kondamnas la uzon de fonta akvo, kaj en la plej multaj el niaj grandaj urboj la akvoprovizo estas prenata de loko sufiĉe fora de la urbaj limoj, kaj la akvo estas ekzaminata de fojo al fojo, por ke oni, certiĝu pri la pureco. Tiuj-ĉi gardarangoj helpis multe, por reigi la menciitajn danĝerojn al minimumo, tamen en kelkaj urboj estas konsilinde, kuiri kaj filtri vian portrinkan akvon.

Ni vidis, ke la pruvo, demonstranta la putrigadon de nia akvo en la apudeco de tombaroj, estas treege pozitiva. Ne tiom certa estas la putrigado de la aero sub la samaj kondiĉoj. Por pruvi tion precise, oni benzonas multe da eksperimentoj, daŭrigataj dum longa tempo. — Per tio, ke oni forigis la tombarojn al la antaŭurbaj lokoj, tiu danĝero ankaŭ plimalgrandiĝis.

Jen interesa fakto, donita de la urbdistrikto de Newtown, en Long Island, ĉirkauita per tombejoj, kiuj enhavas la putrantajn restaĵojn de 1, 250,000 homaj kadavroj. Newtown havas la plej altan mortprocenton en la ŝtato de Novjorko. Tiu-ĉi fakto certe devus efiki pripensadon, kaj same la fakto, ke ĉiuj okazoj de tifa febro en Carmansville, dum la maltrankviliga epidemio en marto 1883, ekĝermiĝis ĉe tri flankoj de la Triunuo-Tombaro kaj en ĝia proksimeco."

Preter tio bonvolu konsideri la jenajn raportojn, prenitajn de la pago 2542 en la Ziemssen-a Ciklopedio pri la praktiko de medicino (Novjorko, 1879): "D-o. Allen mencias ekzemplon montrantan, ke malsano estis kaŭzata per la enspiro de putra aero, veninta de tombejo. En 1814, soldatoj, kiuj bivakis ĉe la Potters' Field en Novjorko, tiam la plej blaminda loko, estas atakitaj per lakso kaj febro. Post translokiĝo tuj post la ekkomenco de la malsano, unu el la malsanuloj mortis kaj la aliaj resaniĝis. D-o. Barton estas aŭtoritato por la

raporto, ke la flava febro estas tree pligrandigita dum la epidemio en New Orleans, 1858, kaŭze de la elspiraĉo de la troprenigitaj tomboj interne de la urbaj limoj. Norfolk kaj Portsmouth suferis same en 1855 dum la memorinda epidemio de flava febro, kiu preskaŭ senhomigis tiujn urbojn. Multe da enterigoj estis farataj interne de la urbo kaj sub la plej malbonaj kondiĉoj de la teraĵo. La akva ebena estis nur ses futojn sub la superaĵo, kaj la tomboj estis profundaj ĉirkaŭ kvar futojn, enhavantaj ofte du aŭ tri kadavrojn.

D-o. Rauch trovis, ke la kaŭzo de ĥolera disvastiĝo ĉe la najbareco de tombejo en Burlington, Iowa, en 1850, estis la elspiraĉo de putrantaj kadavroj, antaŭmallonge enterigitaj. Ne okazis ekmal-saniĝo en tiu najbareco, ĝis kiam oni enterigis 20 kadavrojn, kaj tiam la direkto de la vento estis de la tombaro.”

Nun ni konsideru la eblecon, ke infektemaj malsanoj dissemiĝas kaŭze de entombigo, kaj mi donos al vi la pruvojn sen ia retorika plibeligo, same kvazaŭ vi estus juĝantaro de dekdu justaj kaj konfidindaj viroj, havante la taskon ekzameni severe laŭ la merito la aferon de kremacio kontraŭ enterigado.

La Referenca Libro de la Medicinaj Sciencoj, sur la paĝoj 358 kaj 359, Novjorko 1901, raportas jene: “La eksperimentoj de la D-oj Koch, Ewart kaj Carpenter montris ke la ŝanĝo de bestoj mortintaj kaŭze de liena febro, povas esti sekigata, rezervata jarojn, kaj pulvorigata, kaj tamen reteni la potencon, transigi infekton. Ni ĉiuj scias pri la pesto en Modena, 1828, kiu estis la konsekvenco de la elkavigo de la teraĵo, kie antaŭ tri centjaroj estis entombigitaj suferintoj de la sama pesto. Simila fakto okazis antaŭ kelkaj jaroj en Derbyshire, Anglujo; kaj oni rigardas la teruran fortecon de ĥolero en Londono, 1854, kiel rezulton de elkavaj laboroj tie kie estis entombigitaj la infektuloj de 1665.

En 1843, Minchinhampton en Anglujo estas preskaŭ senhomigita per malsano, kaŭzita per la uzo de tombeja teraĵo por fruktemigi la ĝardenojn. En 1823 furiozis pesto en Egipto, rezultita de ekreuzo de malnova tombejo en Kelioub, 14 mejlojn de Cairo. Konsekvencis, ke 2,000 mortis en Kelioub, kaj en Cairo la mortemeco estis terura. Antaŭ kelkaj jaroj, la Italaj vilaĝoj Ritondello kaj Bollita estas atakitaj de terura epidemio, kies ekĝermiĝo senerare plachavis en la najbaraj tombejoj.

Sur kampo en la Juraj Montoj oni enterigis preskaŭ 7 futojn profunde kadavron de malsana bovino. Post du jaroj, dum kiuj la tomba superaĵo ne estis tuŝata, Pasteur trovis, ke la teraĵo enhavis ĝermojn, kiuj, enigitaj en Ginea porko, kaŭzis lienan febron kaj morton. Plue, kiam oni prenis vermon de la infektita loko, la teraĵo, trovita en la diĝestilo de la vermo, montris ĝermojn de karbo, kiuj inokulitaj, plifortigis la malsanon. Bonvolu konsideri, ke la diĝestita tero, placita de la vermo sur la superaĵon, sekiĝas je polvo, kaj estas blovata trans la herbojn kaj plantojn, kie manĝas la bovaro, kaj tiel transigas la malsanon Pasteur diras, ke sur la tombejo estas eble, ke ia ĝermo kun la potenco infekti specialan malsanon, nedetruema en la tervermoj, ke tiu-ĉi ĝermo, portita per la vermo sur la superaĵon, naskas malsanon en la rajta besto. La Brita Medicina Ĵurnalo enhavas tiom da pruvegoj por la supereco de kremacio, ke—kiel Pasteur deklaras—oni ne bezonas falsi ekzemplojn.

Kiam D-o. Felix Formento skribis: “Teraĵo unufoje satigita per putremajoj povas rezervi dum nedefinita periodo ĝian infektecon,

kaj daŭre de generacioj restas dangerejo,” eble li rememoris la raporton de D-o. Domingo Freire, kiu ekzamenis la kaŭzon de la terura flavfeb-ro, furiozinta en Rio de Janeiro antaŭ kelkaj jaroj: “Mi sciigis pri la terura fakto, ke la teraĵo sur tombejoj, kie kuŝis la suferintoj de la epidemio,” tiel raportas la doktoro, “estis pozitive vivigata per mikro-baj organismoj, precize egalaj je tiuj, kiuj troviĝis en la elvomajoj kaj sango de personoj mortintaj en hospitaloj, kaŭze de la flava febro. La karaktera parazito venenas la teron eĉ ĝis la superaĵo. Mi prenis teraĵon de la superaĵo de tombo, kie antaŭ unu jaro kadavro estis enterigata unu futon profunde. Kvankam tiu sablo estis sen ia rimarkinda aspekto aŭ odoro, tamen la mikroskopa analizo montris, ke ĝi estis pleneĝa je flavfebraj ĝermoj. La tombejoj estas la nutrejoj de la flava febro, daŭraj fokuso-j de la malsano.”

Ne mirinde, ke D-o. Wolfred Nelson el Novjorko, senkondiĉe rekomendas, en sia grava verketo pri la flava febro, kremacion kiel rimedon, por detruigi tiun malsanon.”

Telegramo de Montreal, datita la 26-an de Oktobro, 1885, atestis, ke tombfosisto de St. Sulpice, nome Robitaille, elkavis tombon apud alia, kie kuŝis viro, mortinta antaŭ unu monato pro variolo. En tiu-ĉi tempo en la vilaĝo ne ekzistis variolo; sed Robitaille malsaniĝis post kelkaj tagoj kaj fine mortis pro variolo, certiganta, ke li ricevis la malsanon de la vira kadavro, enterigita antaŭ unu monato. Se vi volas ekzameni la detalojn, vi trovos la menciitan telegramon inter la rezervitaj paperoj de la Vesperaj Novaĵoj de Detroit (Detroit Evening News).

En la ĉapitro pri tuberkulozo, el la Medicina Praktiko de la 20-a Centjaro, eldonita en Novjorko, 1900, D-o. S. A. Knopf, fama aŭtoritato pri la Blanka Pesto, konfirmis, “ke ĉapitro pri la malebligado de tuberkulozo ne estus tuta, sen mencio de la danĝero, devenanta de la nuna preskaŭ universala maniero, je kiu oni pritraktas la mortintojn.” Mi jam rilatis al la eksperimentoj de Lortet kaj Despeignes”, li diras, “per kiuj estas pruvite, ke tervermoj estas kapablaj, enigi kaj eligi la tuberkulosajn bacilojn, sen depreni de ili la vivpotencon. Aliaj eksperimentistoj, ekzemple Galtier el Lyons, montris, ke la baciloj de tuberkulozo kontraŭstaris putrigan dum kelkaj monatoj. Gartner enterigis la bacilon por unu jaro, kaj ĝi retenis ĝian infektigan kapablecon, kaj Schottelis eĉ raportas, ke ĝi kontraŭstaris putrigan dum du jaroj. Konsiderinte tiujn kaj aliajn multajn pruvojn de la danĝero, kaŭze de enterigo de tiuj, kiuj mortis pro tuberkulozo, la tria Kongreso pri la studado de tuberkulozo en Parizo, 1894, akceptis rezolucion, postulantan devigan malinfektigon de la korpoj de tuberkulosaj mortintoj. Propono, rekomendita devigan kremacion de tiaj korpoj, ne estis farita. Ne tuŝante la religian kontraŭaĵon kontraŭ kremacio, mi kredas, ke la kontraŭdiro, farita de la medicin-leĝa vidpunkto, (malkapableco eltrovi venenon post kremacio), apenaŭ povas pezi, okaze de morto pro kronika tuberkulozo. Kiel unu el la remedioj por forigi tuberkuloson de la homa raso, mi certe rekomendus la kremacion de ĉiuj korpoj de personoj, mortintaj pro tuberkulozo.”

“Ĉu ni ne evitas, kaj tio estas plej saĝa,” tion D-o. Wheelhouse, de Leeds, Anglujo, volus scii, “la ĉeeston de tiuj, kiuj estas infektitaj, tiom longe kiom ili restas inter ni; kaj tamen, kiam ili estas ĵus forigitaj per morto, tiam ni konsentas kun delikata simpatio, fakte, kaj kun plej amanta zorgo, estas vere, (sed kun kiom da saĝeco?) meti ilin en la teron, por ke ili desigu kaj elvaporu malrapide iliajn

infektemajn gasojn tra la tero, kaj satigintaj ĝin, ŝargu la ĉielan pluvon, kiam ĝi filtras tra la tero, kun ĉia mortiga detruemeco kaj la potenco, multobliĝi en la korpoj de la vivantoj. Mi ne plue kredas tute kaj profunde je la malinfektiga kaj malputriga potenco de la tero, kiel mi kredis antaŭe, ĉar teruraj ekzemploj de la malpraveco de tia teorio, laŭ mia opinio, venis al mia scio.”

Konsiderinte tiujn raportojn kaj faktojn cititajn, speciale pezas la jeno, skribita de D-o. Alfred E. Regensburger el San Francisko. La citaĵon vi trovos en la Raporto de la Kalifornia Sano-Konsilantaro, 1894: “Demallonge oni postulis, ke ne plu estus necese, ke la apudeco de la tombejoj danĝerigu la restejojn de la vivantoj, ĉar modernaj trafikiloj ebligas, ke oni forigu la tombarojn tiom multe, ke ili ne povas minaci la prisanan staton de la homoj. Supozante, ke vi movu la tombarojn for de la urboj, kian rajton vi havas, planti tian minacon al vivo kaj saneco en la mezon de farma loĝantaro. Ĉu iam tiu loko ne povus esti la centro de iu urbo? Eĉ la urblimoj povus rampi trans la tombarojn, kvankam oni supozis tion neniam. Tiu aranĝo tote NE solvas la problemon.”

Finante tiun-ĉi parton de mia parolado, kiu pritraktas la prisanecon trajton de kremacio, mi deziras citi el la Libro pri Praktika Higieno de Coplin kaj Bevan, Filadelfio, 1893, diron, kiun ni kremaciistoj rigardas kiel profetan, kaj kiu rapide trabataliĝas: “Kio estas vera pri la danĝero, kaŭzita al la akvoprovizo per defluilegoj,” tiel tiuj verkistoj postulas, “kun pli multe da praveco valoras pri la dispono de la mortintoj. Estas preskaŭ neeble mezuri la danĝerojn, venantajn de malbone elektitaj kaj maltaŭge prizorgataj enterigejoj, kaj se al tio ni aldonas maltaŭge konstruitajn tombojn, tiam ni havas kuneigon de danĝeroj, kiu devas timegi nin. Ne estas malversajne, laŭ la opinio de la verkistoj, ke kun taŭga dispono de la mortintoj, kunigita kun plibonigitaj prisanecaj reguloj, tre multe el la malsanoj nun tromultnombraj, povus esti forigeblaj. La popola instruado ne ankoraŭ antaŭeniris ĝis tiu punkto, kie kremacio povas esti akceptata universale, sed des pli rapida la disvastiĝo de scienca scio, des pli versaĵna la ĝenerala akcepto de kremacio.”

Kiam la cirkanstancoj, placitaj antaŭ vi, estas konsiderataj, ĉu ne estas videblege, ke kremacio estas nenio krom postulo de la higieno pro la profito de nia propra saneco, kaj ĉu ne estas eble, ke la tago venos, kiam scienco postulas de la homaro la devigan pruvon, ke oni donu la permeson, daŭrigi ne kremacion, sed enterigadon?

LA EKONOMIA ARGUMENTO

Praviginte nian propagandon, mi menciis la eblecon de la tromultiĝo de Amerikanaj tombejoj, kaj diris, ke ni klopodos serioze, malhelpi tiajn kondiĉojn, kiaj ekzistas ekzemple en la tombejoj de Londono, urbo en kiu mortas du cent personoj ĉiutage aŭ sepdek mil dum unu jaro. Koncerne al unu loko, mi bedaŭras diri, ni jam estas tro malfruaj, sed koncerne la pli grandan parton de nia kontinento, mia klarigo valoras.

Pastoro D-o. John D. Beugles priskribas la enterigejojn de Novjorko tiel: El la grandaj publikaj tombejoj ĉirkaŭ Novjorko, ne estas unu, eĉ ne en Woodland aŭ Greenwood, kie oni ne metas tri korpojn aŭ pli multe en unu tombon. En la malriĉa, publika spaco de Calvary Tombaro multe pli malbona stato de tia afero ekzistas. Oni elkavas foston, sep futojn larĝan, de dek al dek-du futoj profunda, kaj nedifinite longa, en kiun oni amasas la ĉerkojn, vicon super vicon, farante

serion da etaĝoj, kvin aŭ eĉ da pli multaj, kaj kun ne sufiĉe da tero por kaŝi una al la alia. Kaj tia estas nia fanfaronita Krista entombigo en tiu-ĉi nova lando kun tioma amaso da kvadratmetroj. Kion devos diri niaj infanoj pri ni, kiam ili, urĝitaj per manko de spaco, fine devas konstrui siajn domojn sur tiaj litoj de la pesto?" Komentaro jen nenecesa.

Ni ĉiuj, mi kredas, konsentas pri unu punkto, tio estas, ke la tero estas farita pro la bono de la vivantoj kaj ne la mortintoj. Se tio estas vera, kiel ni povas harmoniigi ĝin kun la fakto ke centmiloj da "akroj" (akro estas laŭ decimala sistemo ĉirkaue 4046 kvadratmetroj) estas retenitaj de publika uzo per tio, ke ili estas dediĉataj al la mortintoj en la tuta Usono. En la urbo Detroit, estas 420 akroj interne de la limoj de la tombejoj: Elmwood, Mt. Elliott kaj Woodmere, kiuj fariĝis parto de la urba distrikto. Tiu-ĉi tuta spaco, oni rememoru, estas libera de impostoj, kiel same estas 4,000 akroj, okupataj per tombaroj en la senpera apudeco de Novjorko kaj Brooklyn. Anstataŭ tiom malgrandega malŝparo de multvalora spaco kiun oni povis uzi kun pli bona profito por la produkto de nutraĵo aŭ por loĝejoj, kolonkonstruaĵo aŭ urnejo, kovranta UNU "akron", enhavus la restaĵojn de ĉiuj mortintoj en tiuj tombaroj, se ili estus kremacittaj. La profito estas videblega.

Kelkfoje mi renkontas personon, kiu esprimas la opinion, ke estus la plejbonon, konservi la restaĵojn de la mortintoj en maŭsoleoj. El ĉiuj formoj de dispono pri la mortintoj, tiu-ĉi estas la plej malbona, sen iu ombro de dubo. Mi opinias, ke la amasigo de putrema materio dum centjaroj venontaj fariĝas tiom granda kvanto da putraĵo, ke tio formus al la vivantoj problemon, kies solvo estus multe pli malfacila ol la problemo, prezentata per la dispono de la kadavroj nun. Trans tion, rigardante la sekvantan fakton—kaj laŭ mia propra scio pri putra disigo—mi estas tre dubema koncerne al la ebleco, konservi homajn restaĵojn tiom bone, ke ili ne formus minacon al la vivantoj. En libro kun la titolo "Pureco kontraŭ Putro", Lord Roland Sutherland Gower rakontas la jenan iom amuzigan historieton:

"Antaŭ multaj jaroj Khedive Ismael donis al mia frato en Cairo beletan mumion en ĝia pentrata kesto, kiun mia frato kunprenis al Londono, kaj placis en la halo de la Stafford Domo. Dezirante vidi la restaĵojn de tiu-ĉi mumio, mia frato invitis kelkajn "saĝulojn," por ke ili venu kaj malfermu la keston. Tion oni faris, kaj el la ĉeestantoj mi mencias Sir Richard Owen, kiu ludis ĉefan rolon ĉe tiu enterpreno. Singardeme kaj malrapide oni malfermis la ĉerketon kaj forigis de la korpo la ligaĵojn. Dum tiu-ĉi ago, akra odoro eliĝis, kaj baldaŭ la tuta halo pleniĝis je malnovmonda aŭ mumia perfumo, kiu odoraĉis nesufereble por la ĉeestantoj. Rapidege ili forkuris, kaj la bedaŭrinda mumion, kiu laŭ opinio de Profesoro Owen estis restaĵo de egipta sinjorino, oni forveturigis rapide kaj senceremonie. Mi aŭdis, ke en la muzeo en Boulak, apud Cairo, estis necese forjeti tre ofte mumiojn kaŭze de la priskribitaj kondiĉoj, ĉar eĉ la plej bona balzamado ne povas eviti, ke homaj korpoj fariĝas tre malagablaj, post kiam miloj da jaroj pasis trans iliajn restaĵojn."

Mi estas konvinkita, ke ekzistas nur unu vojo por solvi la problemon de la dispono je la mortintoj, kaj tio estas, helpi al la naturo, sed ne kontraŭi la efektivecon de ĝiaj leĝoj. Kremacio faras dum unu aŭ du horoj la samon, kio en la tombo daŭras multajn jarojn, kaj la fina rezulto estas la sama—cindro al cindro, polvo al polvo.

Pri la procedoj per kiuj kremacio estas plenumataj, mi ne volas paroli tie-ĉi ĉar pri tiaj problemoj interesas nur meĥanikaj inĝenieroj; kiuj estus kapablaj, kompreni la teknikajn malfacilaĵojn kiujn oni renkontas. Estu sufiĉe diri, ke oni faris grandan progreson, kaj ke iamaj koaks-kaj karb-fornejoj, laŭ fermata modelo, estas vaste anstataŭitaj per aparatoj fajrigitaj per kruda petrolo aŭ gaso. La elektra cindrigilo estas ankoraŭ la revo de la estonteco, kaj ne estas farigebla, ĝis kiam la elektra varmigado de domoj estos praktike realigita. Sed kiam la procedo estas finita, nenio restas krom kelkaj pecetoj da kalkiĝintaj ostoj kaj iom da delikata griza cindro, absolute pura kaj senodora. Sincere, ĉu tio ne estas pli taŭga destino por la forjetita korpo, ol ke ĝi restu amaso abomena kaj mortigema putraĵo?

Kremacio prezentas alian profiton krom tiuj jam priparolitaj, kaj tiu-ĉi superco estas grava por personoj, kiuj intencas vojaĝi Eŭropon. Se, malfeliĉe, iu vojaĝanto mortas eksterlande, tiam la parencoj povas ricevi cindron multe pli facile kaj malkare ol la kadavron. Prepari la korpon, por sendi ĝin trans la maron, estas tiom multekoste, kaj ne kontentige, ke ordinare, se iu ajn mortas eksterlande, li tie estas ankaŭ entombigata. Kremacio ebligas,—ĉu iu travivas sian lastan tagon en Romo aŭ en la altaj Alpoj—ke liaj restaĵoj kuniĝas kun tiuj de liaj praavoj en Detroit aŭ alia Michigana urbo.

ARGUMENTOJ KONTRAŬ KREMACIO

Oni akuzu min je unuflankeco, tamen mi volas nun priparoli kelkajn el la kontraŭdiroj, kiujn oni faras kontraŭ kremacio. Homoj diras, ke cindrigado detruus la pruvon, se veneno kaŭzis la morton. Sed tiu konsidero ne multe pezas, se oni observas, la fakton, ke mineraloj venenoj estas eltroveblaj en la cindroj, kaj ke kontraŭe, escepte de la unu alkaloido striknino, ĉiuj plantaj venenoj—tiuj plej timindaj—disiĝas kune kun la korpo, kaj ke tial pri tiaj venenoj la rezulto estos la sama, ĉu la korpo estas bruligata aŭ enterigata.

Mi ne scias la statistikojn en tiu-ĉi lando, sed en Germanujo la proporcio estas unu elterigo al 600,000 enterigoj, kaj en Anglujo estas unu al miliono, ĉe okazoj kie oni suspektas mortigon. Poste oni devas rememori, ke per multaj el tiuj ekzamenoj ne rezultas certecon, kio ankoraŭ pli multe malpligrandigas la proporcion. Pro tiaj cirkonstancoj, ĉu surprizas, tiel mi demandas, ke Profeso Rudolf Virchow, de la Universitato en Berlino,—kaj oni lasu diri min, flanke, ke neniu nomo valoras pli multe en la medicina scienco de Germanujo—en sia fama parolado en la “Reichstag”, per kiu li rekomendis la universalan akcepton de kremacio, klarigis, ke la beno kaŭzata per cindrigado treege superas la duban profiton per elterigo, okaze de suspekta mortigo per veneno.

Trans tion, ni kremacianoj estas tute volemaj, kliniĝi al la plej akraj reguloj de la gubernistaroj, inkluzive ankaŭ a la aŭtopcio, se estus necese, sed ni devas insisti, ke tiuj reguloj estu aplikotaj al enterigoj ĉiam, kiam la kaŭzo de la morto ne estas perfekte klara. Uzi ilin nur koncerne al cindrigado, estus maljustego kaj videblega malpraveco.

Mi lasos al aliaj pli kompetentaj homoj ol mi, diskuti la religian flankon de cindrigado. Vere, ke ĝi havas religian flankon, neniu el ni povas malkonfesi. Ĝi enhavas unu el la plej altaj principoj de religio, la konsideron de la bonfarto de niaj homgefratoj. Kaj ĝi realigas la instruon de ĉiu pura religio, nome, ke la korpo estas nur la vestaĵo de la animo.

Tamen mi ne povas pasi, senrimarke, tiun tiel-nomitan religian kontraŭdiron al cindrigado, kiun oni mencias ree kaj ree, kvankam ĝi estas refutita depostlonge. Mi rilatas al la tiel-nomita argumento, ke cindrigado per sia tutega detruo de la korpo malhelpus la reviviĝon. Al tio la estinta episkopo Fraser respondas: "La tutpovo de Dio ne havas limon, kaj li altlevus la mortinton, ĉu li devus levi niajn korpojn de el la tombejoj, aŭ ĉu li devus voki niajn restaĵojn same kiel la restaĵoj de la malnovaj Romanoj de el la urno, en kiun ili estis metitaj du mil jarojn antaŭe."

La episkopo de Manchester ankaŭ nuligis tiun menciitan kontraŭdiron plej efike, demandeginte tiel: "Se la diro, ke la cindrigado de la korpo malebligas la reviviĝon de la animo, estas korekta, kio, tiamaniere rarigŭs koncerne al la sanktaj martiroj?" Kaj kio okazus al la fajristoj de ĉiuj specoj, kiuj pereas per brulo, kaj tute estas konsumataj.

Al ĉiu, kiu volas uzi sian grizan materion ĉiu, kiu estas akutimata, havi siajn proprajn pensojn, la malpravenco de la argumentado de niaj malamikoj devas esti videblega. Ĉar la korpo estas detruata same tute en la tombo kiel en la fornego de la bruligejo la sola diferenco estas, ke tio daŭras pli longe. La fina rezulto en ambaŭ okazoj estas la sama.

Estas tute eble, ke bruligado kondukos al la revivigo de entombigado en preĝejoj. Fakte la gubernistaro de la Westminster Abbey nun havas la regulon, ke la restaĵoj de tiuj, kiujn oni deziras trovi ripozejon en la adorinda kaj respektinda konstruaĵo, unue devas esti cindrigitaj.

Albert Parsons unufoje klarigis, ke estas tri fazoj en la evolucio de kremaciano.

Unue. Se oni unufoje mencias al li la aferon, li rifuzegas akcepti tiom radikan deturton de la jarcenta kutimo, se li ne eĉ timas la uzon de fajro.

Due. Kun la plua scio venas la volo, se ne la forta deziro, esti kremaciata, sed hezitado koncerne al bruligado de tiuj, kiujn oni amas. Multaj el ni pasas tiun-ĉi staton, antaŭ, ol ili atingas la trian—la ekkonon de la supereco de kremacio de ĉia vidpunkto, kaj la akiron de profunda kredo je cindrigado kiel devo al la estontaj generacioj, kiuj devas esti liberigitaj de la minaco kaŭze de la putrigo de tero, aero kaj akvo en la apudeco de tombaroj. Al tiu-ĉi stato jam alvenis la plej multaj el la pensemaj personoj, kaj ni opinias, ke bona konsidero kaj scio de la afero sufiĉas, por universaligi tiun-ĉi reformon.

Kiam vi atingos tian punkton, antaŭenmarŝu kvaran paŝon. Kun la kuraĝo de la konvinko, vi instruu aliajn pri la profitego de kremacio al la vivantaj kaj estontaj generacioj.

Kion super ĉio bezonas kremacio, laŭ la opinio de Pastoro Frank S. Rowland, estas edukistoj, propagandemaj misiistoj, frontekrutoj. Ĉu vi volas esti unu el tiuj?

Ekzistas konsiderinda parto de la publiko, kiu teorie kredas je kremacio, kaj kiam la morto alvenas, ili elektas la enterigon. Kaj mi volas diri ĵus nun, ke mi ŝatas pli multe absolutan kontraŭulon de cindrigado ol tiuj duone varme dediĉintaj amikoj de la reformo. Se ni volas sukcesi, ni devas praktiki tion, kion ni predikas. .

Mi bedaŭras diri, ke la Amerikana gazetaro estas tute indifereca pri kremacio. Tio reprezentas pluan pruvon, ke nia gazetaro reflektas sed ne kondukas la publikan opinionon.

La cindrigado ankaŭ forigas la danĝeron de malvarmumo ĉe tomboj dum pluva vetero, kio estas tiom evidenta, ke la nura mencio sufiĉas. Multaj personoj mortis pro malvarmumo kaŭze de ĉeesto je enterigo.

Oni demandas min ofte: "Kion faras la homoj je la cindro?" Tio dependas de ilia propra dispono. Kelkaj gardas tiujn memoraĵojn je la mortintoj en siaj privataj domoj kaj ricevas konsolon de tia ĉeesto. Aliaj enterigas la cindron sur tombejoj, kvankam tie ne plu ekzistas ia ofico por la tero. Ankoraŭ aliaj placas ĝin en niĉon de kolonkonstruaĵo aŭ urnhalo de la kremaciejo.

Mi konfidas, ke vi pardonos, se unu fojon plu mi returniĝas al la belega aspekto de kremacio, al tiu trajto de la reformo, kiu estas por mi la plej ĉarma. Sur unu flanko ni havas ĉiujn terurojn de abomena putrado, sur la alia la rapidan transiĝon al senmalutila stato.

Jam de longe ameco preĝis: "Paco al via cindro!" Poezio trovas nenion abomenan en la restaja cindro. Gerald Massey ĝemis:

"Subiĝis mia vivo-sun'—
Kaj super cindroj en malumo,
Jen mi plorante sidas nun."

Bayard Taylor skribas pri "porcindra sitelo" kaj Tennyson diras:

"De lia cindro oni faru
Viol' de lia patroland".

Fine mi ŝatas legi al vi, kiel la poeto Callimachus en Eleŭsis, apud Alexandria, 260-240 antaŭ Kristo estis tuŝata, kiam li aŭdis pri la morto kaj cindrigo de sia amiko, la poeto Heracleitus. (Kiam Callimachus parolas pri najtingaloj, li celas al la poemoj de la mortinto.)

"Mi aŭdis, Heraklajtus, ke rabis vin la mort',
Maldolĉajn larmojn kaŭzis la doloriga vort!
Mi ploris, memorante, kiel ofte ambaŭ ni,
La sunon lacigadis, ĝis malaperis ĝi.

Iom da griza cindro, de vi, ho granda hom'
Resfis sur tiu tero kun via granda nom'.
Kaj viaj najtingaloj ĉarme konsolas mia,
Kantante trans la morton pri amo kaj pri vin."

E 68

Číslo 2.

Dr. HUGO ERICHSEN

SPALOVÁNÍ MRTVÝCH a POHRBÍVÁNÍ DO ZEMĚ?

Z angličtiny přeložil

MUDr. JINDŘICH ZÁHOŘ.



Popelnice s ostatky lidumila VOJTY NÁPRSTKA.

1918.

Nákladem Společnosti pro spalování mrtvol v Praze.
Knihfiskárna František Rebec.

Cena 60 hal.

Pohřební ústav

král. hlav.

města Prahy

obstarává veškeré pohřby
a spalování v různých
krematoriích.

Pražská městská pojišťovna životní a důchodová

uzavírá pojištění pohřební
s lékařským neb bez lékař-
ského vyšetření.

SPALOVÁNÍ MRTVÝCH ČI POHŘBÍVÁNÍ DO ZEMĚ? CREMATION VERSUS EARTH-BURIAL.

Přednáška MUDra HUGONA ERICHSEN-A,
předsedy svazu spalovacích společností etc. ve
Spojených Státech Amerických konaná v kre-
matoriu v Indianopolis 27. září 1913 a v Car-
negie Institutu v Pittsburgu 15. prosince 1913.
PŘELOŽIL MUDr. JINDŘICH ZÁHOŘ.



Popelnice s ostatky lidumila VOJTY NÁPRSTKA.

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PŘEDMLUVA.

Přípisem z 18. dubna 1916 zmocnil mne Dr. Hugo Erichsen, bych přeložil tuto přednášku do češtiny.

Ve valné hromadě Společnosti 24. března 1917 bylo k návrhu prof. Zdeňka Záhoře usneseno, doporučiti výboru, by přednáška Dra. Erichsena, až vyjde úplně ve Věstníku, vydána byla také o sobě samostatně, poněvadž je v ní podán zajímavý nový materiál.

Snad mnohý ze členstva neb čtenářů se otáže, jakým způsobem se stalo, že předkládám přednášku Dra. Erichsena českému obyvatelstvu? Jest to nepřímou zásluhou MDra. Karla Heila v Darmstadtu v Hesensku; neb v literatuře spalovací,¹⁾ již vydal tento lékař, uvádí se spis Dra. Erichsena.²⁾

1) Die Feuerbestattungs-Literatur. Dr. Karl Heil in Darmstadt, 1913.

2) Č. publikace 281: Erichsen Hugo: The history of Cremation in ancient times Med. Reg. Philadelphia 1887.

Ježto pak jsem nemohl této publikace obdržeti od Dra. Heila pro překážky válečné, obrátil jsem se přímo na Dra. H. Erichsena, jenž mně ochotně zaslal novou svou přednášku, již jsem k vybídnutí autora do češtiny přeložil a českému čtenářstvu předkládám.

Dr. Erichsen vychází na počátku své přednášky ze stanoviska filosofického, uvažuje o smrti člověka a stálé změně veškerých jevů pozemských, kolem člověka se nalézajících.

Veliké množství lidstva zvyklo si na nynější způsob pohřbívání do země a nepřemýšlelo o tom, že rozklad těla v hrobě mohl by míti pro zdraví lidské škodlivé následky.

Teprve postupem péče o zdraví veřejné přišli odborníci a přátelé zdraví veřejného ke náhradě kladení mrtvých do země, zdraví lidskému škodlivého, k lidštvějšímu, uctivějšímu a estetičtějšímu pohřbívání ohněm.

Spisovatel jedná o dojmech, jimiž spalování působí na cit, o stanovisku zdravotním, jemuž věnuje největší část své zajímavé přednášky a také z toho stanoviska dokazuje nutnost a prospěšnost pohřbívání ohněm pro zdraví veřejné přesvědčivými doklady ze zkušenosti a citáty věhlasných odborníků.

Dále projednává důvody hospodářské pro spalování a konečně námitky protivníků.

Žádám pp. členy Společnosti i jich známé, by tuto přednášku věhlasného předsedy svazů amerických společností v kruzích svých přátel v zájmu této zdravotní a kulturní otázky doporučovali.

V Praze, v únoru 1918.

Dr. JINDŘICH ZÁHORĚ.

ÚVOD.

Dámy a pánové!

Přeju Vám dlouhý a příjemný život!

Avšak, když přijde nevyhnutelný konec života, tážu se, jak má býti Vaše tělo pohřbeno — v zemi nebo ohněm?

Moje přednáška má účel pomoci Vám při řešení úkolu, jenž každému nastane během času, avšak na štěstí odsunuje se tento úkol v nejčtetnějších případech na dobu, když život pro nás ztratil svůj půvab, když jsme již unavení a zemdleni po své dlouhé životní pouti a toužíme po zaslouženém odpočinku.

Třebas se přirozeně obáváme tohoto rozkladu, jest zbytečno, bychom si naříkali na smrt, když všechno kolem nás umírá, veškerý viditelný předmět se mění, rozklad následuje po zplození a po zplození opětne umírání.

Nic netrvá na tomto světě věčně v hospodářství přírody, mimo prostor, prvky a sílu, vše, co kolem sebe spatřujeme, jest přechodné a musí zmizeti, avšak vesmír jako celek jest nezměnitelný.

Zaměstnává se s touto otázkou, poznávám, že my, přátelé spalování mrtvých, musíme býti shovívaví oproti těm, kteří s námi nesouhlasí, ježto bojujeme proti hluboce zakořeněným zvykům a citům! Nemůžeme nastoupiti novou dráhu nebo odchýliti se od ustanovených předpisů, aniž bychom nenařazili na názory velikého množství, jež si uvyklo trvajícimu pořádku.

Budme tedy, opakuju, velmi shovívaví a snášenliví k těm, kdož nejsou ochotni odevzdati jednou vše, co jim jest drahé, plamenům místo do hrobu.

Jinak jest, přicházíme-li k jiné stránce této otázky, totiž oné, jež se týká **zdraví veřejného**.

Zde v pravdě není zapotřebí se rozmýšleti, neb zde není žádné pochybnosti o nebezpečí pro zdraví z plazivého, zdlouhavého postupu při rozkladu těla ani o tom, že spálení těla jest zdravotně bezzávadné.

Kdyby přes to, co bylo řečeno, spalování někomu zdálo se zarmucujícím, připomeňte mu, že ani věda, ani filosofie, ani náboženství nemohou vymyslet jiného způsobu rozloučení s tělem milované osoby, jenž by nebyl zarmucující.

Lidé se diví, proč my, přátelé spalování těla lidského, tolik času obětujeme rozšiřování evangelia o spalování. Příčinu lze snadno objasnit:

My všichni hledíme činit dobro, třeba prostředky obmezenými. My, přátelé spalování v Americe, konáme dobro svým současníkům i pro ty, již přijdou po nás a namáháme se, bychom zamezili hrozné poměry, plynoucí z pohřbívání do země ve přelidněných částech Evropy a bychom nahradili lidštějším, uctivějším a estetičtějším spolením zděděný zvyk pohřbívání do země.

Záruku nám poskytují nesmrtelná slova Fr. E. Willard-a, jenž byl jedním z nejvytrvalejších průkopníků spalování:

„Usiluju, bych do svého posledního okamžiku přispěl k postupu pokrokových snah, a ustanovuju, by moje schránka tělesná, kterou mám opustiti, když moje vlastní já odchází do neviditelného světa, byla rychle ob-

klopena plameny a nemohla poškozovati zdraví mých živoucích bližních.

Nenechte žádného přítele mluvit proti spálení mého odcházejícího těla!

Vzhledem k tomu pak, že obecnostvo nedospělo dosud k tomuto rozhodnutí, uznávám tím více za svou povinnost, ježto jsem spatřil světlo, mluvit pro spopelnování v okamžiku smrti tak, jak jsem upřímně za svého živobytí stál při velké věci utlačovaného lidstva.“



DĚJINY SPALOVÁNÍ.

Nežli přikročíme ke posuzování spalování s každého stanoviska, jest zajisté zajímavo, bychom poskytli retrospektivní krátký přehled dějin spopelňování.

Spalování mrtvých není nic nového nebo malicherného; jest to způsob velmi starořávný.

Fočátkem éry křesťanské bylo spopelňování zvykem vzdělaného světa, vyjma E g y p t, kde byla lidská těla balzamována; v J u d e i byly mrtvoly pochovávány do hrodek a v Č í n ě do země.

Ř e k o v é kladli 1500 let před Kristem své mrtvé do země; ale během doby naučili se znáti výhody spalování, jež se stalo všeobecným; pouze samovrahům, kojencům a osobám bleskem zabitým bylo toto právo odepřeno.

Ř í m a n é, již původně pochovávali, vy-

půjčili si zdravotní tento výkon od Řeků a od konce republiky až do konce 4. století naší doby bylo u nich spalování mrtvých považováno za nejčestnější a nejpřiměřenější způsob pohřbívání!

Není pravděpodobno, že by na počátku pohřební zvyky křesťanské se lišily význačně od způsobů těch národů, kteří se drželi starých náboženství. Křesťané pohřbívali na těchže místech a poskytují nám v této době zvláštní objasnění o splynutí nové víry se staroú na malbách a rytinách hrodek, jež představovaly pohanské bohy i bohyně v katakombách římských a rovněž obvyklé vzývání bohů podsvětí.

Časem teprve stal se rozdíl větší a sotva že nabylo náboženství křesťanské moci ve státě, již jeho vyznavači, vždy nepřátelští spalování, přičinili se o jeho odstranění.

Takto jednajíce, křesťané neřídili se písmem svatým, neb starý i nový zákon se o tomto předmětu nezmiňuje!

Fříčiny spočívaly v předsudku a pověře.

Křesťanům, z hloubi nenávidícím staré náboženství, bylo snadno nemilovati jeho přívrženců a jejich zvyklostí.

Pohané spalovali své mrtvé, prohlašovali tudíž křesťané spopelňování za zvyk pohanský.

Ve svém předsudku odmítali přijmouti tento dobrý zvyk, jenž byl mravem jejich nepřátel.

Jsouce nedůsledni, podceňovali skutečnost, ježto někteří pohanští národové užívali ohně, jiní zase rýče a proto nemělo spalování právě jako pohřbívání do země považováno býti za zvyk pohanský.

Oblibu pro pohřbívání mezi prvními křesťany lze snadno pochopiti z příčin nezávislých a oddělených od náboženského přesvědčení.

Pohřbívání mohlo býti prováděno tajně, spalování nikoliv a ve svém dlouhém zápasu s pronásledováním shledali křesťané, že zatajování bylo nutno, by se vyhnuli obtěžování při vykonávání obřadů náboženských, jež spojuje každá víra s přípravou pohřební.

R. 1869 prof. Coletti a Castiglioni uvedli ve jménu zdraví veřejného a vzdělanosti otázku spopelňování na lékařský mezinárodní sjezd ve Florencii.

Na tomto sjezdu byla schválena resoluce směřující k tomu, by bylo užito každého mož-

íého prostředku, jak nahraditi pohřbívání do-
země spalováním. To byl prvopočátek novo-
obého hnutí pro pohřbívání ohněm.

Toto hnutí přišlo z Italie do Německa,
Anglie, Švédska, Francie, Švýcar, Dánska,
špoj. Států a konečně do Austrálie, a jeho
postup děje se nyní vítězně po celém světě.



NAZÍRÁNÍ CITOVÉ.

Citové stanovisko k této otázce má velkou důležitost. Nehledíme-li k tradici a náboženským představám, jeví se problém velmi jednoduchým.

Duše, oživující příčina, toto naše já nebo ať jakkoliv odborná filosofie ji jmenuje, odloučila se od svého pozemského obydlí z hlíny a naší povinností prostě jest, postaratí se, aby opuštěné tělo se rozpadlo ve své různé lučebné prvky, bez poškození živoucích.

Není nic posvěceného neb svátostního při pohřbu, jen člověk tyto součástky k tomu přičinil.

Hrob jest však neobratný vynález, aby ušetřeny byly city pozůstalých a tím, že odstraněno bylo jim hrozná divadlo s oči.

Uvádím slova z děl *Jakuba Bigelowa*, býv. profesora lékařského učení na *Harvardově* universitě:

„Jest v tom nějaká moudrost nebo filosofie, pieta nebo lidumilství, veřejný nebo soukromý prospěch nebo náboženství, uložíme-li hnijící lidské tělo do železa, kamene neb olova, jako by mělo zůstatí nezměněno pro vždy?

Zacházíme s podobnou hmotou každé jiné ústrojně látky tímto způsobem?

Nezamezujeme spíše výkon přírody, jako bychom byli moudřejší nežli její původce?

Stále slyšíme, že lidé výrazy díků hovoří o zelené pokrývce, jež kryje hroby předků, jako kdyby neznali nebo odmítali věřiti, že leží zde dole páchnoucí hnilobná hmota?

Pravda o této věci musí býti šířena, tím přivedeny budou myslící osoby k tomu, by uvedly své názory v souhlas s těmi skutečnostmi!

Jaká jsou to fakta?

Chci jediné uvéstí dvě svědectví a nehodlám vnikati do hrozných podrobností.

Víme z úst Rolanda Lichtfielda, úctyhodného a váženého podnikatele pohřbů v Cambridgu, Massachusetts, že „kdyby lidé mohli znáti neb viděti, co by byli povinni věděti a znáti, nikdy by již nekladli jediného těla do země“!

A zesnulý ctihodný pán C. Voysey z církve anglické pravil:

„Kdyby hřbitov mohl býti rozkopán a jedna část byla ponechána ku prohlídce, ani jeden člověk, jenž spatřil toto divadlo, by nepřipustil, by bylo tělo lidské kohokoliv, ježž miloval, pohřbeno v zemi.“

Spálení poskytuje šťastné rozřešení otázky, jež je za všech okolností strašná a často srdcervoucí.

Brit. Med. Journ. ze 14. června 1913 uvádí článek o tomto předmětu:

„Lékařové praktičtí měli by užití každé příležitosti, jež se jim naskytne, by se zasazovali o přijetí spopelnění. To jest jisto, že se stane spalování mrtvých časem všeobecným ve vzdělaných zemích a na pohřbívání do země bude se hleděti jako na způsob barbarský. Každému jemnocitnému člověku, jenž spatřil v Bargello u Florencie pověstné modely z barevného vosku, Gaetana Julia Zumbo, ježž znázorňují lidská těla hnijící ve hrobě, bylo by nesnesitelné představit si, že by mrtví, ježž miloval, byli vydáni tak šerednému a hnilobnému rozkladu!

Pohřbívání do země jest nebezpečím pro živoucí a zneuctěním mrtvého!“

¹ Avšak klade se nám otázka: Jakou chceme my, přátelé spalování, náhradu poskytnouti za tento pobuřující stav?

Nabízíme proměnu lidského těla v jeho podstatné lučebné prvky v několika minutách, k čemu potřebuje pohřbení léta, jednoduchým postupem rychlého spálení bez provázejících hrůz, bez nebezpečí pro živoucí a s nejmenším výdajem.

Mám za to, že úsudek Dra. Knoxe, † biskupa v Manchesteru, ohledně tohoto předmětu jest neobyčejně výstižný. Zní takto:

„Jsem úplně jist, že přes silné citové námitky, jež jsou zcela pochopitelné, dojdeme přesvědčení, že za podmínek života soudobého jest spalování mrtvých nejenom lepší se stanoviska zdravotního, ale že jest též nejuctivější způsob zacházení s mrtvým tělem a v úplném souhlasu s věroukou křesťanskou.“



SPALOVÁNÍ SE STANOVISKA ZDRAVOTNÍHO.

Ale proč, otážete se, proč vy, spalovači, tolik na tom trváte, aby tento způsob pohřbívání byl prováděn?

Odpověď: Předmět jest především zdravotní, neb hřbitovy znečišťují půdu a tímto způsobem vodu a často i vzduch ve svém sousedství.

Z toho plyne, že tento způsob pohřbívání pro nebezpečí pro zdraví živoucích jest zpravidla zakázán uvnitř hranic městských. Skutečně také zastupitelstvo města s. v. Havel ve Švýcarsku jest tak osvícené, že neovoluje pohřbívání do země uvnitř hranic své samosprávy; zde platí spalování povinné v tom smyslu, že přátelé zemřelého musí tělo dopraviti jinam, chtějí-li, by bylo pohřbeno do země.

George Eliotova modlila se slavnou modlitbou, by se stala po smrti „sladce přítomným dobrem, všude rozptýleným a trvale působícím“.

Avšak mnoho lidí stává se tím, že jejich těla byla pohřbena, všude rozptýleným zlem a přispívají k šíření nemocí a k útrapám světa.

Spalování na druhé straně zajišťuje rychlý rozklad, ničí všechny škodlivé nečistoty a činí všecku nákazu neškodnou.

V pravdě nazval tento způsob Spencer Wells velmi případně „Očištěním vůči hnilobě“.

Ještě máme vyjádření takové, jež poslal Sir Jindřich Thompson, † prof. chirurgie na universitě londýnské.

„Žádné mrtvé tělo nebylo uloženo v půdu, aniž znečistilo zemi, vzduch a vodu svého okolí.“

Když hájil spalování, pravil:

„Fohřbíváním do země způsobuje se nezměrné množství škod, avšak žádná nenastane spálením mrtvého.“

V úvodním článku o „spalování při nemocích nakažlivých“ prohlašuje Brit. Med. Journal ze 6. února 1897: „Jistě

jest na čase, aby byla uskutečněna rada před 20 roky udělená poprvé sirem J i n d ř i c h e m T h o m p s o n e m a často opakovaná, že tělo každé osoby nakažlivou nemocí zemřelé mělo by býti spáleno. Spalování mrtvých jest výkon moudré prozřetelnosti a hledí k zájmům živých.“

Jest bĕze sporu jasno, praví Dr. K. S. T r a c y v posledním vydání encyklopedie lékařské Z i e m s s e n o v ě, že úplné zrušení těla těmito moderními způsoby jest v ohledu zdravotním rozhodně lepší nežli pohřbení.

Dr. E d m u n d P a r k e s, prof. vojen. zdravotnictví na britské vojensko-lékařské škole, navrhuje ve svém díle o zdravotní vědě pohřbívání mrtvých do země.

Pohřbívání do země, ujišťuje tento spis důrazně, jest nejnezdравější způsob, jak naložiti s mrtvolou.

Dr. W. H. C u r t i s tvrdí: „Že mrtví ničí živé, jest jen příliš pravdou, a že cholera, žlutá zimnice a celá řada zymotických a nakažlivých nemocí jsou přenášeny pokažením vody a vzduchu, není obtížněji dokazovati nežli zkoušeti schopnost plynů stokových neb vody stokové, že rozšiřují nemoci.“

Prof. Vítězslav C. Vaughan na lékařském učení univ. v Michiganu tvrdí, že obyčejné mínění, jakoby voda filtrovaná pádou na určitou vzdálenost byla očištěna, jest mylné a uvádí řadu svých pokusů a četné případy na podporu svého tvrzení. Ve článku o opatřování vody, jenž byl přednášen na zdravotním sjezdu v Ypsilanti 1. července 1885 a opakován ve zdravotních zprávách státu Michigan, uvádí též spisovatel případy překvapující zmíněných možností.

Jeden případ jest pověstný, případ, jenž objasňuje, jaké rozsáhlé množství ústrojné látky může býti propuštěno pádou a ještě obsahovati své jedovaté vlastnosti:

V malém městě švýcarském objevil se před několika roky tyfus břišní velmi zlé povahy, tak že byl pověstný po několik roků v tomto malém, horském městě; nastala otázka, odkud přišel tento tyfus.

Na druhé straně pohoří a polohou výše nežli toto město byla jiná menší vesnice; ve které několik neděl dříve panoval tyfus; mnoho lidí bylo stíženo a někteří zemřeli touto nemocí. Vesnicí tekł potok; voda jeho byla upotřebena na zavlažování louky a rozlévala se po ní. Do proudu potoka byly vylé-

vány výkaly nemocného tyfem břišným stíž-
ného i prádlo jeho bylo v této vodě práno.

Otázka byla: Jak může tato voda vnik-
nouti do pohoří na jedné straně a vytékati
jako pramen na straně druhé a nakaziti lid
touto nemocí? Lid v městečku užíval vody
z pramene a bylo pozorováno, že tyfus břiš-
ný panoval mezi těmi, již této vody užívali.
Vláda vyšetřovala věc; na pozemku lučním
bylo rozhozeno 50 centů soli a zjistilo se,
že obsah soli byl ve vodě pramene na straně
druhé nápadně zvýšen. Patrně bylo zde spo-
jení mezi loukou a pramenem. Voda pronikla
skoro jednou mílí půdy.

I nastala otázka: byl zde podzemní pra-
men nebo pronikala voda půdou? Na zá-
kladě nařízení, by byla rozřešena tato otáz-
ka, bylo několik centů mouky jemně roz-
troušeno na prostoře louky, avšak obsah škro-
bu nebyl dokázán na straně druhé, čímž byl
podán důkaz, že nebyl zde podzemní proud,
nýbrž že voda pronikala půdou. To jest ve-
lice proslulý případ, jenž prokázal původ
tyfu břišného. —

Jiný případ uvádí prof. V a u g h a n, jenž
se přihodil ve státu Michigan.

„Ve hrabství Kalamazoo jest čistá ves-

lice jménem Richland, jež leží ve velice krásné zemědělské krajině. Zemědělci této krajiny zbohatli z úrodné půdy a jiných zvláštních výhod.

Před několika roky přál sobě obecní úřad vyhledati nové místo pro hřbitov a zvolil je uvnitř hranic obce; ve vzdálenosti 150 m byla studna, jejímž majitelem byl starý lékař Dr. Patchin. Tento uváděl proti umístění hřbitova blízkost svého domu a studny; výsledek této námitky byl soudní proces a s Vaším dovolením zmíním se o jakosti půdy a některých pokusech zde provedených: půda měla bohatou prst stepní, 18 palců hluboko pod touto pak 2 až 3 střevice tvrdé vrstvy, pod kterou zase byla vrstva 18—20 střeviců šterku, jako v celé jižní části Michiganu.

Při kopání hrobů byla by přišla těla do této vrstvy šterkové; neb tato vrstva byla tak řídká a vlhká, že při kopání hrobů bylo nutno vkládati roubení, aby šterk při kopání hrob nezasul. Pod tímto šterkem a asi 20 střeviců pod povrchem byla nepropustná vrstva hlíny se svahem od hřbitova ke studni. nastala otázka, zda-li je možnost porušení

vody v studni, budou-li mrtvoly pochovávány v navrženém novém pohřebišti.

Byl jsem povolán a prostudovav geologicky útvar usoudil jsem, že jest zde možnost porušení pramene.

Dvakrátě denně byla voda ze studánky úplně vyčerpána a průměrně bylo 15 sudů vody při jednotlivém čerpání vybráno. Abych ukázal, jak směšné teorie o tomto předmětu byly pronášeny, sděluji, že byl u soudu uveden tento posudek: Že by nebylo možno, by voda neb déšť, připadající na hřbitov 150 m vzdálený, mohly vniknouti do studny, ježto, jak bylo zjištěno v některé staré knize, pouze ta voda vniká do studny, jež padá na povrch kruhu, jehož středem jest otvor studny a poloměrem hloubka její. Toto tvrzení bylo pronášeno bez ohledu na polohu půdy a geologický útvar a na skladbu okolní krajiny. Na štěstí lze to zjistiti velmi lehce.

Z pramene bylo denně čerpáno 30 věder vody. Známe množství vody dešťové v Michiganu za rok a můžeme snadno vypočítati číslici věder, jež může spadnouti nad tímto povrchem, jako nahoře bylo uvedeno. Výsledek tohoto výpočtu jest, že množství dešťové vody, spadnuvší za rok na tomto

povrchu, nestačil by zásobiti studnu ani 3 dny. Navrátil se, sdělil jsem výsledek s Dr. Langleyem, jenž navrhl, by přímým pokusem bylo zjištěno, zda-li některá látka může proniknouti z navrženého hřbitova do pramene čili nic.

I zkoušel vodu ve studni na lithium, látku lehce dokázatelnou a zjistil, že jí neobsahuje, a pak byla nad povrchem hřbitova roztroušena sůl lithiová, načež voda studny byla zkoumána každý den potom: Osmý den po nasypání lithia na hřbitově bylo zjištěno lithium ve vodě studničné, což dokazuje, že voda, spadající na hřbitov, beze vší pochybnosti pronikla půdou, vnikla k neprůchodné vrstvě hlíny, jež tvořila rozhraní vody, nad kterou se voda ve studni shromáždila, a odtud vnikla do studny.

Přes tento zřejmý kladný důkaz vzdělaný soudce v Michiganu propustil případ a povolil zřízení hřbitova na tomto místě s možností, by bylo množství rodin otravováno.

Důsledně musily rodiny ze sousedství přerušiti užívání této vody.“

Neznám vyšší vědecké authority, jako jest prof. Vaughan; ostatně o témže předmětu

můžete se přesvědčiti v dílech prof. P e t t e n-
k o f e r a z university mnichovské. Jeho vy-
šetřování a pokusy dokázaly jasně způsob,
jakým jedovatým vlivem účinkují hřbitovy na
vzduch i vodu!

Ve výroční zprávě státního zdravotního
úřadu v Kalifornii pro 1894 jest velice za-
jímavý článek Dra. W. P. Nutta, prof. na
univerzitě v Kalifornii, z něhož sděluji toto:

„Před 2—3 roky řádila epidemická zhoub-
ná difterie při silnici Point Lobos. Zjistil
jsem, že stížená rodina užívaly vody z po-
vrchového pramene, jenž byl vzdálen něko-
lik set stěevíců od hřbitova Odd Fellow.“

Dle zprávy Dra. Jindřicha B. Barkera,
vydané státním zdravotním úřadem Michi-
gan za rok 1874, řádila hrozná epidemie
zánětu plen mozko-šijových (ztrnutí šíje) ve
vesnici Petersburgu, Michigan počátkem roku
1874 a byla způsobena pramenem vzdáleným
od obytného domu asi 4 metry a 11 metrů
od hřbitova, jenž leží 12—15 stěevíců nad
povrchem pramene. Asi 13.5 metrů byl pra-
men vzdálen od čerstvého hrobu.

Prof. R. C. Kedzie na vysoké škole ze-
mědělské státu Michigan vyjádřil se takto:

„Přítomnost neobvyklého množství chlo-
ridů ammonatých, nitrátů a nitritů a konečně
fosfátů v této vodě ukazuje, že tato voda
jest dle své skladby k pití nzpůsobilá.

Můžeme vysvětliti přítomnost jmenova-
ných látek, jestliže hmoty bohaté na dusík a
kostík, t. j. maso v rozkladu v sousedství se
nalézá a jestliže zplodiny tohoto rozkladu pře-
cházejí přímo do vody. Okolnost, že jest
pramen blízko, že se nalézá pod hřbitovem
a že studna jest ve středu starého indián-
ského hřbitova, propůjčuje tomuto výkladu
velkou pravděpodobnost. Skutečnost, že první
osoba, stížená strnutím šíje v Petersburgu,
pila vodu z tohoto pramene a že také ostatní
osoby, jež pily tuto vodu, byly stíženy touže
nemocí, přivádí významný pokyn, že slo-
žení této vody patrně bylo ve spojitosti se
strašnou epidemií a zpusťošilo tuto obec.“

Ještě uvedu jeden případ a zakončím tuto
část své přednášky:

Chef-inženýr státního úřadu zdravotního
pro Massachussets, s nímž jsem v živé kor-
respondenci, poskytl mně následující infor-
maci:

„Aby byl zjištěn pravděpodobný vliv hřbi-
tovů na povahu vody, hlavně spodní vody

pod nimi se nalézající, byly tímto úřadem před několika lety pokusy konány. Pokusy byly provedeny s výsledkem velice zajímavým, ukazující značné znečištění spodní vody, jež pocházelo od pohřbené mrchy malého psa v obyčejné hřbitovní půdě, dešti splachované.“ Naše zdravotní úřady, poznavše nebezpečí, jež vyplývá z porušení vody v městských studních hnilobnými ostatky lidskými, všeobecně zakazují požívání studničné vody a ve většině našich velkých měst jest voda opatřována ze značné vzdálenosti od hranic města, a konají se za účelem udržování čistoty od času k času náležitě zkoušky. Tato opatření přispěla k tomu, že nebezpečí byla na nejmenší míru uvedena, ačkoliv ještě ve mnohých městech z opatrnosti se voda vaří a filtruje, nežli se upotřebí.

Kdežto průkaz ohledně znečištění vodovodů v sousedství hřbitovů jest očividný, nebývá ohledně pokážení vzduchu za stejných okolností tak rozhodný. Mám za to, že vliv výparů hřbitova na zdraví lidské jest velice nepatrný a že musí trvati delší dobu, aby zhoubný účinek nastal. Odstraněním hřbitovů do částí mimo město ležících se toto nebezpečí podstatně zmenšuje. Avšak okolnost,

le okres Newtown-u, Long Island, jenž jest
obklíčen hřbitovy, obsahujícími hnilobné
ostatky 1,250.000 lidských těl, jeví nejvyšší
úmrtní číselci státu Nového Yorku a posky-
tuje dosti látky ku přemýšlení právě jako
říředně zjištěné faktum, že všechny případy
strašlivého tyfu břišního v Carmansvillu,
Nový York, v březnu 1883 objevily se na
třech stranách kolem hřbitova sv. Trojice.“

Uvažte dále následující zprávy na strán-
ce 542. *Ziemssenovy encyklopedie*
o praxi lékařské, Nový York 1879:

Dr. Allen sděluje případ, kde nemoc
byla způsobena pokaženým vzduchem ze hřbi-
tova.

R. 1814 byli vojáci, umístění blízko Fot-
terovského hřbitova v Nov. Yorku, jenž od-
borně zapáchal, stíženi průjmem a horečkou.
Hned po objevení se nemoci byli odstra-
něni: jeden voják zemřel a ostatní se po-
zdravili.

Dr. Barton zaručuje zprávu, že byla
žlutá zimnice velice zhoršena za epidemie
r. 1853 v Novém Orleansu výpary z pře-
plněných hrobů uvnitř města.

Norfolk a Fortsmouth trpěly tím-

že způsobem za trvání památné žluté zimnice r. 1855, která skoro vylidnila tato města. Největší část mrtvých byla pochována uvnitř měst do země za nejnejpříznivějších okolností. Výška vody byla toliko 6 střevice pod povrchem zemským; hroby byly asi 4 střevice hluboké a obsahovaly často dvě až tři těla.

Dr. R a u c h vysvětloval šíření se cholery v sousedství hřbitova v Burlingtonu, Jowa, r. 1850 z výparů, způsobených rozkladem těl nedávno pochovaných. Žádné případy se neobjevily v sousedství, až teprve po pohřbení 20 těl, a to směrem větru od hřbitova.

Přicházím nyní k úvaze o možnosti šíření nemocí nakažlivých pohřbíváním do země a předkládám Vám důkaz beze všeho řečnického okrašlování, jako byste byli porotou 12 mužů zdravých a pravdy milovných a ochotných, rozhodovati o spalování proti pohřbívání dle zásluhy:

V Rukověti lékařských věd, Nový York 1901, stránka 358. a 359., se uvádí:

„Fokusy Dra. K o c h a, E v a r t a a C a r p e n t e r a dokázaly, že krev zvířat zemřelých snětí slezinnou může býti sušena a po léta udržována a v prášek rozmělněna a ještě jsou s to zárodky nemoci po tak dlouhé době způ-

sobiti nákazu. Všichni slyšeli jsme o moru v Modeně, vypuknuvším r. 1828 následkem vykopávek konaných v půdě, kde před 300 lety oběti moru byly pochovány. Podobný případ se objevil před několika roky v Derbyshiru v Anglii a strašlivá prudkost cholery v Londýně r. 1854 byla přičítána vykopávce půdy, kde morem stížení r. 1665 byli pohřbeni.

R. 1843 bylo obyvatelstvo v Minchinhamptonu v Anglii téměř zdecimováno nemocí patrně způsobenou tím, že bylo úrodné prsti z opuštěného hřbitova užíváno k účelům zahradnictví.

R. 1823 vypukl mor v Egyptě v Kelioubu, 14 mil od Kahýry po opětném otevření opuštěného hřbitova; následek byl, že zemřelo v Kelioubu 2000 lidí a úmrtnost v Kahýře byla strašná.

Před několika roky byly obce Ritondello a Bollita v Itálii zdecimovány strašlivou epidemií, jejíž původ byl patrně přičítán sousedním hřbitovům.

V Juře na poli, kde byla zcepenělá kráva pochována dva roky ve hloubce asi 7 střeviců, aniž povrch země byl v této době rušen, zjistil Pasteur, že prst obsahovala

zárodky, které vočkovány byvše morčeti způsobily sněť slezinnou a smrt. Dále, když byla z nakaženého místa vyňata dešfovka, obsahovala částička země ze zaživací roury červa zárodky sněti slezinné, které vočkovány tuto nemoc vzbudily; a tato prst' na vzduchu vyschlá proměnila se v prach a byla rozváta na trávu a rostliny, na nichž se dobytek pásl: tímto způsobem se nemoc rozšířila.

Pasteur se vyjádřil, že jest zcela možno, aby zárodky ze hřbitovů rozšiřovaly různé nemoce nakažlivé, jež jsou sice dešfovice zcela neškodné, avšak jsou-li přivedeny tímto červem na povrch půdy, mohou vzbuditi nemoc u dotyčných zvířat. Praktické důsledky ve prospěch spalování jsou dle slov British Medical Journalu tak závažné, že nepotřebují býti více zdůrazňovány, jak Pasteur sám doznává.

Jestli Dr. Felix Tormento napsal: „I údy jednou přesycené účinky rozkladu po-
držují na neurčitou dobu nakažlivé vlastosti a zůstávají pramenem nebezpečí pro pokolení další,“ měl patrně na mysli zprávu, podanou Drem. Domingo Freirem, jenž zkoumal příčinu hrozného epidemie žluté zimnice, která řádila před několika roky v Rio

de Janeiro. Tento lékař napsal: „Zjistil jsem strašnou příčinu, že půda hřbitova, v níž byly uloženy oběti nemoci, byla přesycena organismy, jež se nalézají ve vydáveninách a krvi osob, jež zemřely v nemocnicích žlutou zimnicí. Charakteristický cizopasník proniká půdu hřbitovů až na povrch. I vzal jsem z hrobu oběti rok pohřbené částičku země střevíc pod povrchem půdy a ačkoliv nejevila nic nápadného ani zevnějškem ani zápachem, dokázal drobnohledný rozbor, že jest zkušební část přeplněna zárodky žluté zimnice. I jsou hřbitovy semeništěm zárodků žluté zimnice, trvalým ohniskem nemoci.“

Nedivme se, že Dr. Wolfréd Nelson z Nového Yorku ve výtečném příspěvku ku literatuře žluté zimnice bezpodmínečně doporučuje spalování jako prostředek k vyhubení nemoci.“

Depeše z Montréalu ze 26. října 1885 zjistila, že hrobník u sv. Sulpice, jménem Robitaille, vykopal hrob vedle místa, kde před měsícem byl pochován muž, zemřelý neštovicemi. Toho času nebylo neštovic v obci; avšak Robitaille několik dnů po vykopání hrobu onemocněl a zemřel konečně neštovicemi.

vicemi, čímž jest dokázáno, že získal nemoc od těla, před měsícem pochovaného.

Chcete-li se o pravdě přesvědčiti, naleznete telegram o této otázce v řádkách listu „Detroit Evening News“.

V kapitole, věnované tuberkulose ve „Twentieth Century Practice of Medicine“, jež byla uveřejněna v Novém Yorku r. 1900, tvrdí Dr. S. A. Knopf, věhlasná autorita co se týče bílého moru, že by kapitola o ochraně proti tuberkulose nebyla úplná, kdyby se neučinila zmínka o nebezpečí, vznikajícím z panujícího způsobu zacházení s mrtvým tělem. Fraví:

„Já jsem vždy poukazoval k pokusům Lorteta a Despeignes a, jimiž bylo dokázáno, že dešfovky jsou způsobilé požívati a vyměšovati tyčinky tuberkulosní, aniž tyto ztratily svou nakažlivost. Jiní učenci, jako Galtier v Lyoně, dokázal, že tyčinka tuberkulosní vzdoruje hnilobě po několik měsíců.

Gartner pohřbil tyčinku na jeden rok; tyčinka podržela svou nakažlivou vlastnost.

Schottelius tvrdí, že tyčinka vzdoruje hnilobě dva roky.

Vzhledem k těmto a jiným četným zkouškám o nebezpečí pochovávání osob, zemřelých tuberkulosou, schválil třetí sjezd pro studium tuberkulosy, odbývaný v Paříži roku 1894, usnesení, žádající povinnou desinfekci těl osob, tuberkulosou zemřelých.

Návrh, doporučující povinné spálení těchto těl, nebyl přijat.

„Vypouštěje náboženskou námitku z úvahy, mám za to, že námitka se stanoviska právně-lékařského (nemožnost zjistit jed po spálení) může sotva míti nějakou důležitost v případě úmrtí vleklou tuberkulosou. Za jeden z prostředků, by vyhubena byla tuberkulosa v pokolení lidském, považoval bych povinné spalování všech zemřelých tuberkulosou.“

„Nevyhýbáme-li se, a to vším právem,“ táže se Dr. Wheelhouse z Leedsu v Anglii, „společnosti osob stížených nemocemi nakažlivými, dokud žijí mezi námi, a přece, jakmile je smrt odstraní, jsme spokojeni, ovšem s jemným soucitem a láskyplně se staráme (avšak zdali rozumně?) uložit je do země, aby z poznenáhla rozšiřovaly strašlivě nakažlivé plyny a přesycovaly jimi půdu.“

Nasákne-li tato deštěm, pak voda, přijavš nákazu, opět ji může šířití zákázonosným způ sobem mezi živými.

Nevěřím v desinfikující a očišťující moc půdy, jak jsem jindy věřil, pro hrozné pří pady, o nichž jsem se dozvěděl, v nichž tato schopnost naprosto selhala.“

Vzhledem k této zprávě a sděleným pří padům zasluhuje zmínky, co napsal Dr. Alfred Regensburger ze San Francisco ve zprávě zdravotního úřadu státu Kalifornského z r. 1894:

„V poslední době bylo prohlašováno, že není již třeba báti se nebezpečí z blízkého sousedství hřbitovů s obydlími, ježto novodobé rychlé prostředky dopravní umožňují umístiti hřbitovy do takových vzdáleností, by nemohly ubližovati zdravotnímu stavu obyvatelstva.

I kdybyste odstranili hřbitovy na určitou vzdálenost od měst, jaké právo máte zakládati takové nebezpečí pro život a zdraví uprostřed venkovského obyvatelstva? Nestane se to místo třebas později středem města? Hřbitov mohl by dokonce překročiti hranice města, jichž se neměl ani dotknouti. Takto se tato otázka nerozřeší.“

Na konci této části své přednášky, jež jest věnována zdravotní stránce spalování, uvádím, co my, přátelé spalování, považujeme za prorocké vyjádření, jež záhy se uskuteční, z „Rukověti praktické hygieny“ Caplina a Bevansse, Philadelphia 1893:

„Co jest pravdou o vodě stokové, pokud se týče nebezpečí při opatřování vody, platí mnohem více o pohřbívání mrtvých. Jest vůbec nemožno, posouditi nebezpečí, jež vznikají při špatně volených a nesprávně udržovaných hřbitovech a nevhodně zařízených hrobech; jest zde celá řada nebezpečí, jež nás děsí. Jest pravděpodobno, že s přiměřeným opatřením mrtvol spolu se zdokonalením zdravotních předpisů veliký počet nemocí nakažlivých může býti odstraněn. Lidová výchova nedostoupila tohoto stupně pokroku, by spalování mrtvých bylo všeobecně přijato, avšak čím rychleji se rozšíří vědecké poznání, tím pravděpodobnějši jest všeobecné přijetí spopelnování.“

Uvážíme-li vše, co bylo řečeno, zdaž není zcela zřejmo, že spalování není v pravdě leč požadavkem zdravotnictví veřejného ve prospěch našeho vlastního zdraví, a není-li mož-

no, že přejde den, kdy věda uloží společnosti
povinnost, by rozhodla, ne zdali spalo-
vání, nýbrž pohřbívání do země
může býti dále trpěno?



DŮVOD NÁRODOHOSPODÁŘSKÝ.

Odůvodňuje naši propagandu, zmínil jsem se o možnosti přeplnění amerických hřbitovů a prohlásil jsem, že se opravdově přičiníme, bychom zabránili takovému stavu, jak existuje na příklad na hřbitovech v Londýně, kde umírá denně 2000 osob nebo 72.000 během roku.

Lituju, že na jednom místě, bohužel, přišli jsme již pozdě, ale vzhledem na větší část našeho zemědělu moje tvrzení platí.⁶

Ctihodný Dr. Jan B. Bengless popisuje pohřebiště města Nového Yorku:

Na velikých hřbitovech kolem Nového Yorku není jediného hřbitova, ani ve Woodlandu neb Greenwoodu, kde by nebyla ve větší části v jednom hrobě uložena tři těla nebo více. Ve všeobecné, neb chudé části hřbitova (Calvary Cemetery) jsou poměry ještě horší.

Hroby jsou vykopávány z šíří 7 střeoviců z hloubi 10 až 12 a neurčité délky, v nichž jsou nacpány rakve, jedna na druhé, tvořící řadu pěti stupňů nebo ještě hlubší s nedostatečnou mezivrstvou země. A to jest pověstný křesťanský hřbitov v této nové zemi se svými 10 tisíci velikými jitry země! Co mají vyprávěti naše děti o nás, když budou pro nesnáze prostory stavěti svoje příbytky nad těmito zřídly moru? Výklad jest zbytečný!

Jsme, trvám, přesvědčeni o tom, že země byla stvořena pro živé a nikoli pro mrtvé. Je-li to pravda, jak to můžeme srovnati se skutečností, že 100 z tisíců jiter v celé zemi jest vyloučeno z veřejného užívání, když po celé Unii jsou věnovány mrtvým.

V městě Detroitu jest 420 jiter uvnitř hranic hřbitovů Elmwoodu, Mt. Elliottu a Woodmere, jež se staly částí obce a jsou všecky uvnitř hranic města. Všecka tato země, to třeba připomenouti, jest prosta daně a sice 4000 jiter, jež jsou zabrána hřbitovy v bezprostředním sousedství Nového Yorku a Brooklynu.

Na místo tohoto hrozného mrhání cenou země, jež by mohla býti využitkována k lep-

šímu účelu, jako na př. pro výrobu potravin neb k obývacím účelům, mohlo by columbarium neb síň popelnic na jednom jitru země obsahovati ostatky všech mrtvých pohřbených na těchto hřbitovech, kdyby byly spáleny.

Prospěch jest na bíledni!

Jednou jsem se střetl s člověkem, jenž se vyjádřil, že by bylo nejlépe ukládati ostatky mrtvých v mausolejích. Ze všech způsobů ukládati zemřelé, jest tento beze vší pochybnosti nejhorší! To by znamenalo hromaditi tlející látky na staletí, až by konečně toto nahromaděné množství hniloby poskytl pro živoucí nový úkol, mnohem těžší, nežli jest pohřbívání do země. Vzhledem ke případu následujícímu a ke vlastní své zkušenosti týkající se rozkladu, jsem velmi skeptický vůči možnosti uschovávatí ostatky lidské v takových rozměrech, aby neposkytovaly nebezpečí pro zdraví veřejné.

V knize „Čistota či nákaza“ sděluje lord R enald S utherland G ower tuto velmi zajímavou událost:

„Před několika roky daroval Khedive Ismael mému bratru v Kahýře krásnou mumií v malovaném obalu, již můj bratr dopra-

vil do Londýna a umístil v sále domu Staffordova. Můj bratr sezval několik učenců, by shlédli obsah obalu. Tak se stalo a mezi těmi, kdož byli při rozbalení mumie, měl hlavní účast Sir Richard Owen. Pozněnáhla a starostlivě byl obal otevřen a obvazy byly s těla odstraněny. Během této operace bylo čichati ostrý zápach a za krátko byl veliký sál naplněn zápachem ze starého světa čili z mumie, jenž postupně se stal nesnesitelným pozorovatelům, takže učenci a ostatní v brzku utekli a ubohý zbytek ženy egyptské, již prof. Owen prohlásil za paní, byl rychle a bez obřadu odstraněn. Dozvěděl jsem se, že v museu v Boulaku poblíže Kahýry často bylo shledáno nutným, odstraňovati mumie, jevící tyto vlastnosti, což znamená, že nejlépe balsamovaná těla stávají se odpornými, byť tisíce let přelítla přes jejich starostlivě opatřené ostatky.“

Jsem přesvědčen, že jest pouze jedna cesta při řešení úkolu správného odstranění mrtvého těla a to jest přispěti přírodě a nepřekážeti průběhu jejích zákonů. Spálení provede v hodině jedné neb dvou to, co ona vykoná za několik roků v hrobě a konečný výsledek je týž: popel v popel, prach v prach.

Ohledně postupu a prostředku, jimiž se vykonává spopelnění lidských ostatků, nehodlám mluvit, ježto zajímají pouze odborníky a inženýry, již jsou s to pochopiti a oceniti obtíže technické.

Stačí pouze podotknouti, že byl vykonán znamenitý pokrok a že prvá uhelná kamna s uzavřeným pláštěm byla dokonale nahrazena přístroji vytápěnými naftou nebo plynem. Elektrický spalovač jakýkoli jest dosud snem budoucnosti a nebude možný, dokud nebude topení domů elektrickou možným.

Avšak když jest skončeno spálení, nezbu-
de nic jiného, než málo úlomků spálených
kostí a jemného šedivého popelu, úplně či-
stého a bez zápachu.

Řekněme si otevřeně, není to vhodnější
osud pro odstranění těla nežli má-li tělo zů-
stat po leta hmotou hnusné smrtelné hni-
loby?

Spálení poskytuje jinou výhodu mimo již
uvedené přednosti: má velikou důležitost pro
ty Američany, kteří cestují po Evropě. Jest
to šťastná okolnost, když při nešťastném pří-
padu smrti cestovatele v cizině, mohou pří-
buzní pohodlně a s malou výlohou obdržeti

jeho popel. Příprava mrtvého těla pro převoz přes oceán jest tak drahá a nedostatečná, že obyčejně osoba zemřelá v cizí zemi také zde bývá pochována. Mrtvola Američana na cestách v Římě nebo v Alpách může snadno býti uložena ke svým předkům v Detroitu neb v jiném městě Michiganském.



NÁMITKY PROTI SPALOVÁNÍ.

Abych nebyl obviňován z jednostrannosti, chci nyní krátce promluvit o některých námitkách, jež byly pronášeny proti spalování; bylo tvrzeno, že spopelnování mohlo by zničiti průkaz otravy. Tato snaha nemá tak veliké váhy, ježto jedy minerální mohou býti dokázány v popelu, kdežto mimo jediný alkaloid strychninu všechny rostlinné jedy a to nejobávanější se s tělem rozkládají a tudíž výsledek bude týž, ať se tělo spálí nebo pohřbí! Neznám statistických dat v této zemi, ale v Německu připadá jedna exhumace na 600.000 pohřbů a v Anglii na 1 milion ve případech, kde bylo podezření vraždy vysloveno. Dlužno však připomenouti, že ve mnohých z těchto případů nedojde k usvědčení z vraždy, čímž onen poměr ještě se zmenší.

Za těchto poměrů jest podivuhodno, že

prof. Virchow z university Berlínské a mimochodem řečeno: žádné jméno v německé lékařské vědě není ve větší úctě, ve své slavnostní řeči v Reichstagu, ve které obhajoval všeobecné přijetí spalování, mohl popírat, že dobrodiní získaná spalováním, daleko předčí pochybný prospěch vykopávky mrtvol v podezřelých případech otravy! Mimo to jsme my, přátelé spalování, ochotni připustiti nejpřísnější nařízení ze strany autorit, počítaje v to i vykonání pitvy, avšak musíme na tom trvati, by tato nařízení se vztahovala také na pochování do země v každém případě, kde příčina smrti není úplně jasná. Provádění těchto nařízení, pouze při spalování, byla by strašnou nespravedlností a zřejmým rozlišováním. Přenechávám jiným způsobilejším, nežli jsem já, by poukázali na náboženskou stránku výkonu spalovacího. Že jest zde náboženská stránka, žádný z nás nemůže popírat. Obsahuje jednu z nejvyšších zásad náboženství, ohled na blaho našich bližních a provádí prakticky učení každého čistého náboženství, totiž že tělo jest jenom rouchem duše. Avšak nemohu pominouti bez poznámky ječné tak zvané náboženské námitky proti spalování stále a stále opakova-

né, ačkoliv již dlouho byla vyvrácena. Mínil tak zvaný důvod, že spalování po zevním zničení těla zamezuje jeho z mrtvých vstání. Na to odpověděl † biskup Fraser: „Všemohoucnost boží není omezena a Hospodin mohl by vzkřísiti mrtvého, ať již by měl vzkřísiti naše tělo ze hřbitovů, či ať již by měl vzbuditi ostatky naše, právě jako ostatky některého starého Římana z popelnice, ve které byly uloženy před 2000 lety.“

Biskup v Manchesteru takto vyřídil tuto uvedenou námitku velmi účinně navrženou otázkou: „Je-li předpoklad správný, že spolepnění těla vylučuje z mrtvých vstání, co se stane v tomto případě se svatými mučedníky?“ K tomu můžeme připojit: „A co by se mělo státi s hasiči různých vyznání, již zahynou v požárech a jsou úplně ohněm ztráveni?“

Každému, kdokoli chce užiti šedé hmoty mozkové, kdo uvykl si jednati dle svého vlastního myšlení, musí býti mylnost názoru našich nepřátel o těchto předmětech očividna. Neboť tělo jest úplně ztráveno v hrobě nebo v peci krematoria a rozdíl je jedině v tom, že první trvá déle. Konečný výsledek v obou případech jest týž. Jest zcela možno,

že spopelnňování povede k obnově pohřbívání ve chrámech. Skutečně také úřady opatství Westminsterského prohlašují za pravidlo, by ostatky těch, již si chtějí opatřiti místo odpočinku v této úctyhodné budově, byly spáleny.

Albert Parsons naznačil jednou, že jsou tři stupně ve vývoji u přátel spalování:

1. Při prvním pomyšlení jest veliký odpor proti přijetí tak důkladné změny zvyku trvajícího staletí, jestli ne hrůza před upotřebením ohně.
2. S dalším poznáním nastupuje ochota, dokonce živé přání, býti spálenu, avšak odpor, jde-li o spálení milé bytosti.
3. Mnozí z nás procházejí tímto stupněm, než-li se ocitnou u třetí mety, totiž, že uznají přednost spálení proti pohřbení do země, po každé stránce pak pokládají tento postup za povinnost pro budoucí pokolení, aby je uchránili před nebezpečím hřbitovů, jež otravují půdu, vodu i vzduch svého okolí.

K tomu názoru došly myslící osoby a máme za to, že toliko jasná úvaha o předmětu a poznání jeho jsou nutny, provésti tuto refor-

mu téměř všeobecně. Jakmile dosáhnete této mety, nastává 4. stupeň, to jest jednati.

Máte-li odvalu, ke svému přesvědčení, měli byste také využítovati každé příležitosti, přesvědčovati své bližní o výhodách této metody pohřbívací při živoucí a budoucí generaci. Spalování má především zapotřebí, jak před nedávnem prohlašoval dvojitíhodný Frank Roland kampaně pro výchovu v tomto směru — průkopnictví — branců v čáře bitevní.

Chcete býti jedním z nich?

Velká část veřejnosti teoreticky věří ve spalování a přece, když bolestná ztráta nastala, provádí se pohřbívání do země.

A já mám odvalu, Vám říci právě teď, že mám lepší mínění o rozhodném nepříteli spalování, nežli o tak zvaných přátelích této reformy.

Chceme-li se uplatniti, musíme prováděti to, co kážeme!

Lituji, že se musím vyjádřiti, že stanovisko tisku amerického vzhledem ke spalování vyznačovalo se úplnou lhostejností (jest litovati, že totéž platí o stanovisku tisku českého. Dr. Z.).

Jest to opět jiná známka, že naše noviny

spíše odrážejí, nežli by vedly veřejné mínění. Skutečnost, že spalování odstraňuje nebezpečí nachlazení, děje-li se pohřeb. za drsného počasí, jest tak jasna, že stačí prostě ji uvést. Mnoho lidí účastnivších se pohřbu, získalo smrt nachlazením. Byl jsem často tázán: Co činí lidé s popelem? To závisí na jejich posledním pořízení. Někteří uschovávají památku zemřelých ve svých vlastních domech a utěšují se z její přítomnosti; jiní zase pochovávají popel na hřbitovech, ačkoli země nemůže již změny vykónati a zase jiní je hřmísťují ve výklencích popelnicové síně čili kolumbaria čili v krematoriu.

Doufám, že mně odpustíte, když se ještě jednou vrátím ke krásnému způsobu spalování, dílu reformy, způsobu, jenž má pro mne tak velikou přitažlivost.

Na jedné straně máme před sebou všechny hrůzy strašného rozkladu, na druhé nic jiného nežli rychlý přechod v neškodlivý stav.

Jemnocit dlouho vzdychal: „Pokoj budiž Tvému popelu!“ Básnictví nenalézá nic odmítavého ve zbylém popelu.

Gerald Massey běduje:

„Zapadlo slunko mého života a nad hrst-

kou bídnou bídného popelu odpočívám ve své temnotě a v slzách.“

Bayard Taylor píše o popelu bledém a Tennyson praví:

„A z popelu jeho může vyrůstí fialka jeho rodné země.“

Na konec své přednášky dovolu, bych Vám přečetl, jak básník Callimachus v Eleusině poblíže Alexandrie 260—240 př. Kr. byl dojat zprávou, že jeho starý přítel Herakleitus zemřel a byl spopelněn. Zmínka o slavících týká se básní nebožtíkových.

„Řekli mně, Herakleite, řekli mně, že's zemřel. Trpkou zprávu mně přinesli, že hořce jsem zaslzel. Plakal jsem při vzpomínce, jak často jsme oba dva unavili slunce hovorem a poslali je spat pod oblohu. A nyní, an Ty ležíš, můj drahý, starý Karský hosti, jako hrstka šedého popelu, bys dlouho, dlouho odpočíval, přece ještě na živu jsou Tvé rozkošné hlasy. Tví slavíci, neboť smrt, jež vše odstraní, těchto zrušiti nemůže.“



VÝLOHY SE SPOPELNĚNÍM TĚLA LIDSKÉHO SPOJENĚ.

V poučení pro český lid o pohřbívání ohněm čili spalování mrtvol r. 1916 vydaném byly uvedeny položky některé, jež r. 1918 nemají další platnosti, ježto dobou válečnou všechny materiálie i výkony velice se zdražily; i bylo uznáno za správné, pp. členy naší Společnosti i jich známé o těchto změněných výlohách zpravit.

1. Předběžný rozpočet špopelaění pro zemřelé z Prahy nebo Pražských předměstí:

	K
Za potřebnou rakev dřevěnou, žlábkovanou	140
„ kovovou vložku	160
„ zaletování rakve	20
„ postavení katafalku v bytě neb kapli, povolení ku převozu, kolky, telegram do krematoria, intervence lékařů	70

Za pohřební vůz	28
„ dopravné po dráze z Prahy do Žitavy	141
„ dávky na dráze, opatření potřebných listin, notářské ověření . . .	40
„ spopelnění v Žitavě pro člena Společnosti s povinnými poplatky . .	179
„ diety a dráhu pro průvodce a obstarání pohřbu a převozu	130
	<u>Celkem K 908.</u>

S výhradou větších výloh: jako jsou dovozní po dráze, výkon okr. lékaře, vystavení zesnulého, pohřební vůz na venkově, prodloužení cestovních diet a nepředvídaný výdaj.

Rozpočet je stanoven dle kursu marek počátkem roku 1917.

2. Předběžný rozpočet jednotlivého spopelnění pro zemřelé ve král. Českém nebo jiných korunních zemích rakouských jest obdobný jako pod 1. uvedený; rozdíl jest pouze v dovozním na dráze.

3. Popelnice kovová stojí K 150, pokud jsou na skladě, popelnice kamenná stojí K 120 a výše, popelnice hliněná stojí K 30 a výše.

4. Nájem za ponechání popelnice neb za místo pro popelnici na hřbitově Žitavském na 30 roků obnáší K 19.20.

5. Na hřbitovech rakouských jest možno dnes uložit popelnici na hřbitovech veřejných; poplatek se řídí dle sazeb hřbitovních.

6. Poplatek za spopelnění ve krematorium Drážďanském jest o K 166 vyšší nežli poplatek v Žitavě.

7. Poplatek za spopelnění nečlena Společnosti jest o K 50 vyšší.

P. S. V případě snížení kursu peněžního zlevní se také celý obnos.



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VŠECH DRUHŮ TISKOPISŮ.

**SPOLEČNOST
PRO SPALOVÁNÍ
MRTVOL V PRAZE
II., JERUZALÉMSKÁ UL. Č. 3.**

Založena roku 1899.

Pořádá odborné přednášky o pohřbívání
ohněm, provázené světelnými obrazy, obstarává
kremaci svých členů a pojištění potřebného
obnosu u Pražské městské pojišťovny,
s níž uzavřela smlouvu.

Podmínky přednášek sděli a prospekt
pojišťovací a stanovy zašle na požádání
pokladník Společnosti

pan J. J. FORMÁNEK, Praha-II.,
Jeruzalémská ul. 3.

Společnost pro spalování mrtvol v Pžaze
vydala roku 1916 brožuru

Dra. Jindř. Záhoře a prof. L. Čížka
**POHŘBÍVÁNÍ OHNĚM
ČILI SPALOVÁNÍ MRTVOL.**

Lze dostati v každém knihkupectví. — Cena 20 hal.



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