

It was Sir Henry Thompson who said, in 1874: "No dead body is ever placed in the soil without polluting the earth, the air, and the water above and around it." This saying has been confirmed by men of science in every country of Europe and America; and nowadays the fact of the pollution of air, soil, and water by decomposing bodies is as well ascertained and recognized as are the poisonous qualities of strychnine and arsenic, or the froth of a rabid dog.

It is well known that grave-diggers, who are generally of strong constitutions, very seldom live to old age. "In the Middle Ages, when burial in churches was common, they fell victims by hundreds to their horrible duties," says Wagner-Ercolani, who observes that even now "they are mostly pale of face and seldom healthy." Instances of the sudden death of grave-diggers by foul-air poisoning in the bottom of vaults were very numerous in the past and are still of frequent occurrence. A few years ago three grave-diggers in Paris died suddenly while lowering some coffins in a deep vault. Fetid emanations from decomposing bodies are mortal if breathed in a concentrated state, and when diluted in the atmosphere diminish the vital powers and produce low forms of fever, which are often fatal. Dr. Copeland relates that a gentleman of his acquaintance was poisoned by a rush of foul air from the grated openings at the side of the church steps; he was seized with a malignant fever which he communicated to his wife. There are well-authenticated cases of sextons being infected while shaking and cleaning the matings of church floors, the mats being saturated with the poison of the vaults (Williams on "Cremation").

We may here mention the fact that the experiments of Drs. Koch, Ewart, and Carpenter have shown that the blood of animals dying of splenic fever may be dried and kept for years, and pulverized into dust, and yet the disease germs survive with power to produce infection. We all know of the plague of Modena, breaking out in 1828, in consequence of excavations made in the ground where, three hundred years before, victims of the plague had been buried. A similar fact occurred a few years ago in Derbyshire, England, and the terrible violence of the cholera in London, in 1854, was charged to the upturning of the soil wherein the plague-stricken of 1665 were buried.

In 1843, the population of Minchinhampton, England, was nearly decimated by a disease manifestly caused by using as fertilizer for their gardens the rich soil of an abandoned graveyard. In 1823, an outbreak of the plague in Egypt was confidently traced to the reopening of a disused graveyard at Keliob, fourteen miles from Cairo. A few years ago, the villages of Ritondello and Bollita, in Italy, were decimated by a terrible epidemic, the origin of which was unmistakably traced to the cemeteries. More recently, the monumental cemetery at Milan, situated on a hill to the north of the city, was proved to be the cause of a fatal epidemic that prevailed in parts of the city, the wells being the channel of communication and infection (Williams).

The investigation and experiments of Professor Pettenkofer, of Munich, have proved conclusively the manner in which graveyards exert their poisonous influence through air and water—*Grundluft* and *Grundwasser*.

The danger of contamination of wells, fountains, and running water in and around burial-grounds is well known. This contamination sometimes extends to quite a distance, as we have seen, and is a source of far greater danger than is generally supposed. These waters present a sparkling and seductive appearance—due to a large proportion of nitrates and nitrites—which make them still more dangerous. "It is a well-ascertained fact," says the London *Lancet*, "that the surest carrier and the most deadly, fruitful aider of zymotic contagion is this brilliant, enticing-looking water charged with the products of decomposition." There are many examples of transmission of disease, such as typhoid fever, dysentery, by water apparently pure and attractive, running in or around burial-grounds, or in the vicinity of places where

the *excreta* from those diseases had been simply deposited.

In the strata of air lying in a prolonged calm above a cemetery, Professor Selmi, of Bologna, discovered an organic corpuscle (the septo-pneuma) which poisons the atmosphere to the detriment of the living economy. This substance, says Dr. Pietra Santa, which it is easy to collect and isolate, if placed in a solution of glucose, produces the phenomena of putrid fermentation, and gives birth to a considerable quantity of bacteria similar to those which are manifested in butyric fermentation. A few drops of this solution, injected under the skin of an animal, bring on the symptoms of typhic infection, and death supervenes on the third day. Infiltrated into water courses, this substance has doubtless carried infection and death into important towns.

It was Professor Selmi who discovered those deadly poisons he called *ptomains* or *alkaloids cadaverici*. By protracted experiment, he showed, and his results have been confirmed by other investigators, that the common constituents of the human body, as the brain, the blood, fibrin, etc., perfectly innocuous in health, are rapidly converted by decomposition, under certain conditions of heat and moisture, into new alkaloids, analogous to those of plants, and equally virulent. He even showed that death does not always precede the change, but when the disease is one that induces internal decomposition of the plasmatic or histological elements, the transformation into *ptomains* may take place while the patient is still alive, or immediately after death, before any indication of external putrefaction becomes apparent.

A few years ago, in a celebrated trial which took place in Italy, in which a party was accused of poisoning by strychnine, this eminent chemist saved the prisoner from the gallows by proving, to the satisfaction of the tribunal, that the poison found in the dead body was simply an alkaloid formed in the body after death, by the natural process of putrefaction.

Dr. Domingo Freire, of Rio Janeiro, asserts that, while investigating the causes of a recent epidemic of yellow fever, he came upon the dreadful fact that the soil of the cemeteries in which the victims of the outbreak were buried was positively alive with microbial organisms, exactly identical with those found in the vomitings and blood of those who had died of yellow fever in the hospital. This characteristic parasite, says Dr. Freire, permeates the soil of cemeteries, even to the very surface. From a foot underground he gathered a sample of the earth overlying the remains of a person who had been buried about a year before; and though it showed nothing remarkable in appearance or smell, under the microscope it proved to be thickly charged with those yellow-fever germs. The cemeteries, therefore, Dr. Freire pronounces "nurseries of yellow fever, and perennial foci of the disease." It may be proper to mention here that since our first edition, Dr. Sanarelli, of Montevideo, seems to have positively discovered the micro-organism of yellow fever. His claim, however, that he has succeeded, by cultivating and attenuating said micro-organism, in obtaining an antitoxin that is both *curative* and *prophylactic*, has not yet been confirmed.

The above-given facts, as well as the facts relating to the breaking out of the plague in Modena in 1828, and of cholera in London in 1854, from the opening of trenches in graveyards in which, three or four hundred years before, plague- or cholera-stricken victims had been buried in the ground, and those that have been observed in New Orleans during the cholera epidemic of 1832, and in New York in 1806, at the time the Potter's Field was abolished and converted into a public square (Washington Square), all go to demonstrate most positively that soils once saturated with products of decomposition may retain for an indefinite period their infective properties, and continue for generations to be a source of danger. This danger exists at all times, but during epidemics becomes threatening indeed. In fact, we have seen that the bodies of those who die of contagious or infectious diseases are a

source of alarming danger, not only during life, but long after they have been buried according to prevailing custom.

Does not the germ theory of disease, the doctrine nowadays generally accepted by the scientific world, explain in a perfectly satisfactory manner this pollution of soil, air, and water by decomposing bodies? Darwin, Pasteur, Koch, and others have already shown that the immediate essential cause of most contagious and infectious diseases is a living animalcule, or microbe, capable of reproducing itself *ad infinitum*.

These germs are possessed of a vitality, of a power of reproduction and resistance, which is really wonderful. It seems that the lower in the animal scale is an organism, the more numerous and prolific are its species, the more clinging its vitality. We have an additional proof of this in the particular, and at one time mysterious, mode of transmission of charbon (anthrax), first observed by the illustrious Pasteur. A sheep which had died of charbon was buried at the depth of twenty feet in the ground, in a field which, for ten or twelve years after, ceased to be used as a pasture ground. After that length of time some healthy sheep were pastured in that field; soon after, three sheep were taken sick and died of charbon, at a time when the disease did not exist in that locality or the environs. Upon diligent investigation it was found that the animal affected with charbon, and which had been buried twenty feet deep ten years before, was the cause of this new breaking out of the disease. Pasteur demonstrated that the germs of the disease were brought to the surface by earth worms.

Are not all these facts positively conclusive? Can any one doubt the infective qualities of soil saturated with the poisonous germs of disease? In the light of the late researches and discoveries of science, it is not difficult to understand how cemeteries may continue for centuries to be the *nidus* and *habitat* of the living microbes of virulent diseases.

From the very moment the vital spark abandons an organized living body, be it man or the lowest animal, putrefaction begins its slow and loathsome process; it gradually passes through the different phases of putrid decomposition, too horrible to behold or even to describe, until all the constituting elements of the decomposing body are finally set free by a slow and dangerous process of combustion. This process has been known to last, according to circumstances—especially according to the nature of the soil in which it takes place—ten, twenty, fifty, and even hundreds of years! While this slow and horrible process of decomposition is going on, every particle of matter around it is being saturated and infected with these germs of disease and death. This pollution of air, soil, and water takes place more readily, and gives rise to special dangers, in certain soils and climates:—for instance, in lower Louisiana, where the atmosphere and soil are saturated with dampness, subsoil water is found at only a few inches from the surface, and the land is of such a nature as to absorb and retain all sorts of offensive and poisonous matter. With all these unfavorable conditions of climate and soil, they have adopted, in New Orleans, a method of disposing of the dead which is quite peculiar to that locality. With a few exceptions the dead are not buried in the ground, as is generally the case all over the world, but deposited in tombs or ovens above ground, generally badly constructed and exposed to the alternate influences of a burning sun and excessive moisture. No disinfectants are used either in the coffins or in the vaults, and, to make matters worse, most of the cemeteries are overfilled and located in the very heart of the city. This practice constitutes one of the worst unsanitary features of that city, where cremation is more needed than anywhere else.

We have seen that the ordinary mode of inhumation presents a double danger: first, the contamination of earth, air, and water, which may extend to quite a distance; second, the reproduction of *special* contagious and infectious diseases by germs which are buried with the human body, but not destroyed. How are we to destroy

these disease germs? What is the remedy? There is but one. That remedy is cremation or incineration. Cremation alone will put an end to the pollution of earth, air, and water. It applies not only to the dead human body, but to animals, to garbage, to everything which is offensive or dangerous to health. Cremation alone can completely annihilate the living organisms or germs of contagious and infectious diseases. The ashes from the incinerated bodies of victims of smallpox, plague, yellow fever, or cholera are as pure, as clean, as innocent as those of the most precious woods or metals.

We should by all means prefer cremation to the Potter's Field and all its horrors. The relics of the dissecting-room, of the dead-house, etc., should be properly cremated. In epidemics of a contagious or infectious character, the crematory flame should be made, by law, the great purifier. The garbage of cities should be cremated. It is the safest and cheapest manner of disposing of it.

It is evident that these germs of disease are not destroyed by being simply deposited in any particular locality, however remote from large centres. The stopping of intramural interments only partially remedies the evil. It does not solve the problem; it only adjourns the question. The legal obligation to establish cemeteries beyond certain limits, as in the case of the new cemetery of Paris, at Marly-sur-Oise, sixteen miles from the capital, is simply planting the seeds of disease and death a little farther off. The cemetery will always be a focus from which death radiates. One shudders at the thought that in all large cities, or in their immediate vicinity, there are constantly to be found, in a state of complete putrefaction, as many as forty and fifty thousand corpses.

Sanitary reasons should alone influence and determine the scientist and the physician in all questions of science, especially in all questions which concern the public health. Having said this much in favor of cremation, from a sanitary point of view, I might here put an end to this article by giving a short description of the most approved processes of incineration. But the subject would be incomplete without a few considerations on the religious, sentimental, and utilitarian aspects of the question, more especially as the greatest objections to the generalization of cremation come from the want of proper understanding of these questions.

For my part, I do not see why the religious question should enter into the subject of cremation. Religion has nothing whatever to do with this great sanitary reform, not more than it has in questions of drainage, sewerage, water-closets, or any other sanitary measure.

Cremation is nothing else but a very simple method of reducing the human body to its constituent elements without injurious consequences to the living. It is in strict conformity with the laws of nature, and merely accomplishes in a few minutes that which putrefaction would take months and years to accomplish. It is nature's remedy, *combustion*, facilitated, hastened, and purified, and rendered innocuous by the application of the laws of modern science. Why should it be called a barbarous custom, a relic of paganism? Was not inhumation practised by antiquity as well as cremation? Yet the custom of burying the dead, which we owe to antiquity as well as many other customs, such as baths, festivals, etc., has never been called a barbarous or pagan custom. And how can ignorance and fanaticism base their objections to the system of cremation on the religious idea of resurrection? Does an omnipotent God need the assistance of man to accomplish his great work? Is the void of the tomb more favorable to resurrection than are the ashes of the urn? That power which can recall to life every part and parcel of the human body, whether devoured by ferocious beasts or burnt at the stake like the martyrs and saints thousands of years ago or dissolved in the waters of the sea or which have turned to clay on many a battlefield, can certainly resuscitate the ashes of the funeral urn in the hands of friends.

In all countries where cremation has been adopted it is only after all religious rites and church ceremonies have been performed that the corpse is taken to the cre-

matorium. The process of cremation is no more incompatible with the idea of religious services to the dead than is our present method of inhumation in a tomb or in the bowels of the earth.

The religious rites could be performed in church or at the crematorium in a room especially consecrated to that purpose.

I am happy to notice that of late the opposition to cremation, on religious considerations, has considerably diminished. Some of its most enthusiastic advocates in our country are either clergymen or zealous members of the church. In Italy the opposition of the Catholic clergy has apparently entirely ceased, and in Rome itself a splendid crematorium has been built, and cremation is steadily on the increase—forty bodies have been cremated there during the last four months. By degrees, all objections based on considerations of a religious character will disappear, and I do not believe that at the present day an intelligent and enlightened member of the clergy, of whatsoever sect or creed, could be found honestly to oppose cremation on religious grounds. Ignorant and bigoted persons may, willingly or not, confound the two questions; not the intelligent and philanthropic.

In this utilitarian age the question of economy is not to be despised. Statistics show that the sums annually expended in the United States as funeral expenses exceed the value of the annual produce of all our gold and silver mines, and equal the amount of all the failures of our business houses of the country (Beugless). A decent burial costs not less than \$100, exclusive of the price of the tomb or vault. How many families are daily impoverished by the excessive cost of interment incurred through false pride! How often expensive burials are given to those who in their lifetime lacked all the necessities of life! The whole cost of cremation would not reach one-twentieth part of the price of an ordinary tomb and interment. As practised at present in Milan, the cost for cremating one body is only eight francs! But, from a general point of view, the great economy would be that of land and space occupied. The practice of cremation would eventually restore to the state or community vast amounts of valuable land now used as graveyards, which are lost to agriculture and industry. Under the present general system of interment the dead are gradually crowding out the living. Take, for instance, the city of London, with an annual death rate of only twenty-one per thousand; the number of deaths is about eighty-one thousand per annum. Have you calculated how much space is required for the annual burial of eighty-one thousand persons? At the limited rate of two feet by six per person, or twelve square feet per each grave, you can bury three thousand six hundred and thirty bodies to the acre; but this allows nothing for walks, roads, gardens, monuments, etc. On this crowded theory of three thousand six hundred and thirty graves to the acre, London's annual deaths will fill twenty-two and one-third acres. Of course, it practically requires four times as much space. Cremationists do not advocate the abolition of cemeteries now existing, but they claim that, through the process of cremation, cemeteries would cease to be nuisances and would become amply sufficient for all time to come. On the smallest lot of ground, an edifice in the shape of a columbarium, divided into compartments, would serve the same family for ages. It has been calculated that six millions of urns, each containing the ashes of one person, and placed in separate compartments, would not require twenty acres of land, including the flower beds, walks, etc. Greenwood Cemetery alone could receive no less than twenty million urns. Owners of lots in graveyards would not be slow to perceive the increased value of their property, since the space for an ordinary vault, twenty by twenty feet, could receive four hundred urns. The sale of a compartment or vault would yield greater profit than the sale of a whole lot could possibly now give, and cemeteries would never be full. Each and every church or temple could accommodate four thousand urns containing the ashes of as many persons, without any resulting injury, thus serving

a religious purpose while being a legitimate source of income to the church (Beugless).

The generalization of cremation would render impossible the desecration of tombs and the theft of dead bodies, examples of which have been quite frequent of late in our country. Be it sufficient to recall the theft of the body of the late millionaire, A. T. Stewart, of New York, and the attempts made to steal the bodies of Presidents Lincoln and Garfield, without mentioning the many instances of body-snatching for the purpose of dissection, etc.

With that system in vogue the danger of being buried alive will no longer prey on our imagination. This danger is not chimerical. In a recent work published in Italy on the dangers of premature inhumation, no less than sixty-five well-authenticated cases of burial of living persons are related.

Again, cremation offers the advantage, the consolation, of being able to preserve and transport the ashes of those whom we have loved. Many of us will heartily join Rev. Burke Lambert, of England, in his opinion when he said, recently: "I have lost three very dear kinsfolk in remote quarters of the earth, and I would give everything I could command if I could receive their ashes and keep them by me in a vase."

Why should not the purification of human remains be intrusted to this rapid method, which frees the sepulchre of its horrible mysteries, and which in its comeliness retains a certain degree of poetry? For "Cremation," says Professor Gross, "is truly a beautiful method of disposing of the dead."

The process of cremation does not consist, as is erroneously believed, in the *burning* of a corpse. It is a mere incineration or reduction of the body to ashes by means of dry heat, reaching as high as 1,500° and 2,000° F. Neither fire nor flames ever come in contact with the corpse. All the smoke and volatile substances resulting from combustion pass through a heated absorbing retort and are immediately destroyed. The process has been described by ocular witnesses to be as follows: The body is borne into the chapel and placed on a catafalque, which stands in front of the altar. The section of the chapel floor upon which the body rests constitutes the floor of a lift or elevator. As the funeral service proceeds, the elevator invisibly and noiselessly descends, bearing the body to the basement in front of the incinerator, which by means of superheated air has been raised to a white heat within, at a temperature of about 1,500° F. As the door of the incinerator is opened to receive the body, the rushing cold air causes the temperature to fall a little, and gives to the interior a beautiful rose tinge. The corpse, wrapped up in a sheet saturated with alum or asbestos, and placed on a metallic bed, passes over rollers into a bath of rosy light. The sheet delineates the form of the human body until incineration is complete, and the bones crumble into ashes under the mystic touch, as it were, of an invisible agent. This process may be called the etherealization or spiritualization of the human body. It requires about an hour per one hundred pounds of the original weight. A few pounds of clean, white ashes are dropped by means of a lever into the ash chamber below, and are drawn thence into an urn of terra-cotta, marble, alabaster, or other suitable material, and returned by means of the elevator to the catafalque. The service or ceremony being now over, the friends of the deceased find the ashes just where they had last seen the body of the departed, and may bear them thence to the columbarium or mortuary chapel, or set them on the border and plant violets, heartsease, and forget-me-nots in them from year to year. Each urn contains the ashes of but one person, as a rule, and has an appropriate inscription. The process is accompanied with no perceptible sound, smell, or smoke, and presents absolutely nothing that can offend the susceptibilities of the most fastidious.

Scarcely an instance, says Beugless, is known of anyone having witnessed the process as thus conducted who has not at once become a pronounced convert to cremation, whatever may have been his pre-existing prejudice.

Connected with the crematorium are rooms for post-mortem examinations and medico-legal researches, when deemed necessary.

Crematory temples, in many large cities of Europe, are of beautiful monumental architecture. Italy alone boasts of thirteen such temples. Milan has two. Those of the latter city and the one of Rome are of the grandest proportions. There exist to-day cremation societies in all countries of the world. There are not less than thirty-seven in Italy alone. The most important and most active is in Milan, which city is also the centre of the "Lega Italiana delle Società di Cremazione." The Cremation Society of Copenhagen numbers two thousand members, that of Holland twelve hundred members, that of Paris six hundred. There are also societies in Berlin, London, Dresden, Rio Janeiro, etc.; and in the United States there are not less than ten regularly incorporated organizations. Among their members are to be found some of our most distinguished citizens.

The greatest practical objection to the generalization of cremation was, until recently, the want of a proper apparatus for the rapid and complete incineration of bodies. That objection exists no longer—the problem is now solved by the late experiments made in Europe and in our own country. Great progress has been made in the different apparatuses. Venini's, which is used in Milan, Padua, Brescia, and Udine (Italy), seems, so far, to be the most perfect. It destroys most thoroughly all animal gases, is fumivorous (smoke-destroying), emits no smell, and its action is continuous. It is heated by gas, with variable oxidation, and its jets can be subdivided and concentrated on one point at will. By this apparatus the most rapid and hygienic, and at the same time least expensive, method of cremation has been obtained. As we have said before, the cost of cremating one body has been reduced in Milan to the sum of 8 francs (\$1.60).

In Italy they have already built, in addition to their numerous beautiful crematorium temples in cities, large crematory furnaces (*forni collettivi*) for the cremation of bodies in time of war, especially of those who fall on the battlefields, and during epidemics for those who die from contagious or infectious diseases. These furnaces have been constructed according to Gorini's plan. It has been estimated that three of these *forni crematorii collettivi* could incinerate ten thousand bodies in three days.

A movable crematorium, on wheels, intended for an army in the field, or for localities in which crematory temples do not exist, has been invented by Captain Rey, of the Italian army, and has, upon trial, given perfect satisfaction. This apparatus, which can be easily drawn by two horses, does not cost over 3,000 francs (\$600).

The main object of cremation societies, for some time to come, should be to enlighten public opinion, to remove all prejudices against cremation, and to prove that it can be practised without in the least wounding religious sentiment or susceptibilities. For, with so many powerful sanitary, philosophical, and economical arguments in favor of cremation, why is it that this essentially useful and hygienic measure is not more generally adopted in our country? Is it not simply on account of the ignorance, bigotry, and prejudice that surround us? Is it not the duty and mission of hygienists, philosophers, and sanitarians to attempt to enlighten the people, to advise legislation, to remove prejudice and false ideas, to prepare public opinion for the adoption of one of the greatest sanitary reforms of the age, which is intended to bring sanitary results of incalculable importance? Let our people understand and appreciate the immense benefit of cremation; let prejudice and bigotry be conquered. Cremation, once known, will become popular among us, and science will have made one more great step forward.

PRINCIPAL CREMATION SOCIETIES EXISTING IN ITALY, WITH DATE OF THEIR ORGANIZATION.

Milan	1876	Varese	1880	Padua	1881
Lodi (municipal institution)	1877	Domodossola	1880	Codogno	1881
Cremona	1877	Como	1881	Venice	1882
Udine	1879	Bologna	1881	Plaisance	1882
Rome	1879	Modena	1881	Leghorn	1882
		Pavia	1881	Novara	1882

Ancona	1882	Parma	1882	Pistoja	1883
Genoa	1882	Verona	1882	Siena	1883
Florence	1882	Pisa	1882	St. Remo	1883
Brescia	1882	Carpi	1882	Intra	1884
Turin	1882	Asti	1883		

*Felix Formento.*

**DEAD FINGERS.** See *Hand and Fingers.*

**DEAF-MUTES.**—DEFINITION AND CLASSIFICATION. The word "deaf-mutes" signifies, strictly speaking, persons who, having been born deaf or having lost their hearing in early life, have not acquired the power of speech. There is usually no defect in the vocal organs, except such imperfection of development as may be the result of lack of exercise; muteness is simply the consequence of deafness. Ordinary children learn to speak by hearing and imitating the sounds made by others; the deaf child does not hear such sounds, therefore does not imitate them, therefore remains mute.

The term "deaf-mutes" seems to have originated in the United States within the present century. The synonymous term generally employed in England and still frequently used in this country, is "deaf and dumb." Of these two designations, "deaf-mute" is the preferable one; for (1) the words "deaf and dumb" tend to perpetuate the popular error that deafness and dumbness are two distinct physical defects, instead of standing, as above explained, in the relation to each other of cause and effect; and (2) the word "dumb" is open to the further objection that it carries with it an implication of stupidity and brutishness, being associated in the minds of many people with disparaging allusions to the lower animals, as in the Scriptural expression "dumb dogs," and in Longfellow's reference to "dumb, driven cattle."

There are many persons usually spoken of as "deaf-mutes," or "deaf and dumb," and educated in institutions established for the instruction of this class, who are not properly described by either of these terms. Some of them, having lost their hearing by accident or disease, after they had learned articulate language, still retain their speech notwithstanding their deafness; others, formerly mute, have acquired the art of speech through the instruction of skilful teachers of articulation. Such persons are not really "dumb" or "mute," and their improper classification as such—especially in the case of those who have learned to speak before losing their hearing—gives rise to serious errors in the mind of the public concerning the nature of deaf-mute education and its results. The strictly correct designation for the whole class of persons under consideration in this article is "the deaf"; the term "deaf-mute" should be applied only to persons deaf from birth or infancy, who have not acquired the use of articulate speech.

Some deaf-mutes are either born deaf, or, losing their hearing in early infancy from unobserved causes, are supposed to have been so born; others become deaf from various diseases or from accidents. The deaf are thus divided into two great classes: the "congenitally" and the "adventitiously" deaf, or, as they are often called, "congenital deaf-mutes" and "adventitious deaf-mutes." Except when hearing is known to have existed, it is impossible to say positively to which of these classes a deaf-mute belongs (see Proportion of Congenital and Adventitious Cases, *infra*); the distinction nevertheless is an important one.

Among the adventitiously deaf, a large proportion lose their hearing in early childhood, before they have learned articulate language; in other cases in which some progress in speaking has been made, the length and severity of the disease that causes deafness, often temporarily affecting the brain at the same time, seem to efface the language previously acquired; and in others the neglect of parents and friends to aid and encourage the deaf child in the extraordinary efforts necessary for the retention of speech after hearing is lost, produces the same result. Such persons are sometimes called "quasi-congenital deaf-mutes." Speech as well as hearing is gone, and they as truly belong to the class of "deaf-mutes" as if they had never heard.