munities, but that the malignancy of many and the prevalence of all the infectious diseases have been lessened by a recognition of their connection with organic exhalations from the human body.

But evil consequences of a lighter grade are also recognized as the legitimate offspring of vitiated air. The breathing of air that has already been breathed gives rise in succession to feelings of languor and heaviness, headache, dulness of mind, drowsiness, dizziness and faintness, sometimes nausea and, if continued, feverishness. These symptoms indicate a poisoning of the blood by organic matters which would not be present in it with free supplies of air to wash them away. The brain is the first of the organs to feel the effects of the tainted blood. The mental inaptitude of children after two or three hours in a close schoolroom is easily understood. The waste organic matters retained in the blood are not necessarily absorbed from the contaminated air. They may be due in great part to a suppression of the regular exhalations and a consequent retention of matters which ought to have been exhaled. As with moisture in air so with these organic exhalations. The air when saturated refuses to take up more. Again, their retention in the blood interferes with the oxidation which should go on in the tissues; and the transition products that are formed, being also retained, add seriously to the disordered condition. The individual becomes poisoned by products of his own living processes.

The human system, however, appears to accommodate itself to a certain degree of impurity in the air, so that, after a time, the breathing of such air ceases to occasion the feelings of acute discomfort that have been mentioned. But in their stead a depressed condition of the system is developed, manifested by pallor of countenance and loss of appetite, strength, and spirits. The vitality of the individual is lessened. Every draught becomes dangerous to him, and even the chill from a wall or closed window may cause serious sickness. He becomes a ready victim to consumption if the germ of that disease is present, as is so frequently the case in the crowded dwellings of the poor in our large cities. Health, in fact, becomes broken and the nervous system prostrated, a condition in which a resort to alcoholic stimulants often gives temporary relief at the expense of a more rapidly fatal issue.

Besides the gases and vapors already mentioned there are many particulate bodies, living and dead, organic and mineral, floating in the atmosphere. All are accidental and therefore impurities. A few years ago, Professor Tyndall made use of an electric beam as a searchlight for floating particles. In pure air, made so by specially filtering it, the track of the ray is invisible, but in the free atmosphere it is defined with more or less brightness by reflection from particles ordinarily invisible. If the electric beam were passed through the air of many of our rooms, we would hesitate to inhale the aerial turbidity which it would reveal. The lower strata of the air are filled with such impurities, but air at a height of six hundred feet is comparatively pure in this respect. The smoke clouds, consisting of particles of unburned carbon which hover over manufacturing cities, seldom rise higher than this.

It is impossible to do more than outline these floating particles in the most general way, because everything on the face of the earth is susceptible of being ground into dust and of being swept up by atmospheric currents. Matters, indeed, of an extra-terrestrial origin are present in the form of dust derived from the destruction of meteors in their passage through the atmosphere. The inorganic dust consists chiefly of carbon particles, amorphous silicates, irregular fragments of hard mineral substances, and salts of lime, potash, soda, and ammonia. The organic dust includes the detritus of decaying vegetation, starch cells, epidermal hairs, filaments from the pappus of the Compositæ, pollen grains, and disintegrated woody tissue. The animal kingdom also is represented in the dust by fibres of wool, plumlets of feathers, butterfly scales, and other débris of insect life, together with occasionally epidermal and epithelial scales. Saprophytic bacteria are present, and in certain localities pathogenic bacteria, as the bacilli of tuberculosis, bubonic plague, pneumonia, etc. Locality and season influence the quantity and character of these impurities. Naturally air which blows over a long stretch of land contains more than sea air. Cotton is found in nearly every sample of autumnal air in the Southern States. Pollen grains, on many occasions, have given a yellow color to the rainfall. Autumnal catarrh, sometimes called hay fever, which affects so many people at a certain period of the year, is attributed by most medical men to this impurity. Susceptible individuals avoid attack by getting away from the pollen-laden air. Crystals of sodium chloride are notably present in the air of the seacoast, while in that of cities we find carbon particles and crystals of ammonium sulphate from the combustion of coal. The air of houses contains fragments of the fibres of clothing and epidermal scales, while that of hospitals, workshops, factories, mines, etc., is charged with particles varying in character with the occupancy and work. Sand and other mineral substances are irritant from their hardness and angularity. They induce irritation of the eyes and air passages, predisposing to consumption and pneumonia. Workmen in the dust-producing trades, such as stone-cutters, steel-grinders, potters, etc., frequently suffer from lung diseases. Sanitarians have given earnest attention to this subject with a view to lessening sickness and mortality.

But in many instances, according to the nature of the mineral particles, effects are produced other than those due to their physical characters. Lead-miners and painters are liable to colic, wrist drop, and serious disease of the brain from the absorption of the inhaled particles into the blood. In this instance, as in all atmospheres contaminated with absorbable matters, the evil arises not alone from that which is inhaled, but as well from that taken into the mouth and swallowed either directly from the air or by eating with unwashed hands which are tainted with the dust. Arsenical dust also is injurious when inhaled or swallowed, and not only do the workers in arsenical pigments suffer, but many of those who live in rooms lined with arsenical wallpaper.

Sometimes the inorganic matters pervade the atmosphere of localities in the form of vapor, as in factories where phosphorus or mercury is in constant use.

The earliest observations on the impurities of air were made on condensations gathered from the outside of a vessel containing ice. Subsequently experiments were made on water which had been shaken with successive volumes of air. In both cases a liquid was obtained which putrified readily and in which the presence of living organisms could be identified. R. A. Smith was perhaps the first to use the latter method. He put one hundred and fifty drops of pure water in a small vial containing air from a cow stable. He shook the bottle that the water might entangle and wash out all particles of solid matter from the air. He renewed the air; and this he did five hundred times. When he examined the water under the microscope, he was astonished at the immense number of spores which were visible, along with many other matters organic and mineral; and afterward many animalcules of various kinds were developed in it.

At the present time aerial organic matter is investigated microscopically, biologically, and chemically. Solid particles for microscopic study are caught on a glass slide lightly coated with glycerin. The general characters of atmospheric impurities may be ascertained by an examination of the rain or snow, for all those impurities that are not dissolved or absorbed by the rain are washed down by it. But for evaporation, condensation, and rainfall, the inhabitants of the earth would speedily be stifled in the dust swept up by the atmospheric currents. Distant objects, hazy and indistinct in a dry summer air, become sharply outlined in a purified rain-washed atmosphere. In rain water suspended impurities may be seen with the naked eye, and in the gradual melting of a pure white mantle of snow the stain made by its entangled

impurities will appear before it has shrunk to half its original thickness.

The biological examination resolves itself into a determination of the number of bacterial colonies and other micro-organisms in a given volume of the air, with culture experiments for the study of species. Official observations at the Montsouris Observatory near Paris, France, have shown that there are few bacteria in the air in winter, and that the numbers increase through spring and summer to over one hundred per cubic metre in the autumn. The air of city streets is densely charged with bacteria. The atmosphere is purer in this respect in its upper strata; air collected at over six thousand feet is practically free from bacteria and moulds.

Chemistry has done but little to perfect the organic analysis of air. With known methods of analysis the results obtained by the expenditure of much time and care are of small value. If an air specimen contains an unusual amount of the organic elements, it may be correctly considered as impure, but the nature of the impurity is not defined. The carbon estimated may have been a harmless particle of soot, or in part it may have been essential to the spread of a deadly disease. Nevertheless, analyses are made as a matter of official routine by sanitary officers in England and France. The organic substances are absorbed by aspirating large volumes of the air through a small volume of distilled water, and the liquid menstruum is then investigated by the processes of water analysis. Professor Remsen, of the Johns Hopkins University, Baltimore, Md., endeavored to improve on this process by filtering the air through powdered and moistened pumice before passing it in fine bubbles through the distilled water. He thus showed that, so far as could be determined by chemical means, all nitrogenous matter was retained by the filter. But, as germs or microscopic organisms might have passed through without thus showing their presence in the absorbing liquid, owing to the necessarily minute trace of nitrogen in them, the present writer carried out a series of experiments which determined, first, that the nitrogenous matter of air, excluding ammonia from consideration, is particulate; second, that it consists in large part of micro-organisms; and third, that filtration through Austrian glass wool effects their removal from the passing air. The experiments were conducted in a sterilized apparatus. The air was drawn through a short glass tube 1 cm. in diameter, lightly packed for two or three inches of its length with the glass wool. From this it was passed in fine division through distilled water. After this it was mixed with steam generated from a dilute solution of alkaline permanganate of potash, the mixture immediately entering the tube of a Liebig's condenser, where the steam was deposited, carrying down with it, after nature's process of air purification by the rainfall, any micro-organisms which might have escaped removal by filtration or absorption. The difficulties in the way of sterilizing the various parts of this apparatus were such that the first experiments, which gave speedy developments in culture liquids tainted by the filter, the absorbing liquid, and the condensate, were regarded only as the practical expression of these difficulties. The experiments were repeated with precautions suggested as necessary by the previous experience, and ultimately success attended them.

One of the processes of water analysis to which these matters were subjected involved the distillation of the ammonia which was present in the liquid, and its estimation by the calorimetric method with Nessler's solution. Ammonia gives, with this test solution, a faint straw-yellow color, which deepens, in proportion to the amount of ammonia present, to a dark sherry brown, or to a dark haziness or distinct precipitate. But it not unfrequently happened that in testing for ammonia in the distillate from the pure water in which the glass wool containing the organic matter of the air was suspended, as well as in that from the absorbing liquid which contained most of the ammonia, and in that from the condensate which contained but a trace, a citron-green color was produced which masked the ammonia reaction and rendered its estimation impossible. Dr. Kidder, of the navy, observed this interference with the ammonia coloration, and attributed it to the presence of substances evolved in the putrefaction of organic matter. He concluded from the few experiments he made that the amines are not necessarily concerned in its production, as he found that butyric acid gave a somewhat similar interference to that met with in the experiments on air washings. But the haziness with which the presence of butyric acid masks the true ammonia color is not the citron-green coloration which so frequently occurs in the analysis of foul airs. This is due to the presence of an ethyl compound which is given off from the carbohydrates while undergoing change. It may be obtained free from the ammonia which ordinarily accompanies it and obscures its reaction by submitting the liquid containing both to the process of nitrification. It may also be obtained from ammonia and free glucose, and from starch, cane sugar, tannin, salicin, etc., after treatment with heat and acids (see *Water Analysis*).

In some of the experiments referred to, an air volume of 100 litres was passed through the interior of a glass globe which contained liquid sewage and silt, garbage, or other foul and decomposing materials, and then through the glass-wool filter, absorber, and condenser to remove the matters with which it had become contaminated. Culture experiments showed the satisfactory removal by the filter of all germs and nitrogenous matters, ammonia excepted, and chemical tests determined approximately the quantity of organic matter thus removed. In some instances a second air volume of 100 litres was drawn over the organic matter in the globe, and the results obtained from the filter through which it was afterward passed did not differ from those of the first experiment on the same organic matter. From these experiments the conclusion appears admissible that the volume of air which is contaminated by a certain decomposing organic mass is the volume which comes in contact with it. If no air is drawn through the foul globe, only that which is contained in it is rendered impure. This air has its oxygen in time replaced by the foul-smelling gases of decomposition. Evaporation takes place from the contained liquid until the stagnant and enclosed air becomes saturated. The ascensional force of evaporation carries from the smeared and half-dried sides of the globe, and from the unsubmerged solids within it, some of the innumerable micro-organisms with which they are pervaded, and the air becomes charged with organic particles to an extent proportioned to its temperature and hygrometric condition. If a volume of air is drawn through the globe, it will be contaminated by organic matters carried away by its own movement and by the increased activity of evaporation produced by it. If a second volume is drawn through, it will be contaminated in like manner, and to the same extent, if the volume, rapidity of passage, temperature, and hygrometric condition are the same in both instances; and so for a third, a fourth, or more volumes, until the decomposing mass has become changed by their agency. This is recognized practically in sanitary work. The dead are buried that their decomposition may not contaminate the atmosphere. For the same reason garbage is collected and removed. A receptacle for foul-smelling and fermenting matters is less of a nuisance and less dangerous to health when fitted with an air-tight cover than when freely exposed to the air, for in the latter case every volume of air which comes in contact with it is a volume of air polluted. Sanitary officials in growing cities protest against the continued existence of small surface streams which of necessity pass into the condition of open sewers, tainting every volume of air which comes in contact with their foulness. These are bricked over and the air is preserved from the impure contact. But in the construction of regular systems of sewerage provision is made for this contact under the name of ventilation. The sewers are tapped at regular intervals along the streets for the exit of the contaminated air. From

the present point of view this *ventilation of the sewers* is of questionable benefit. The volume of air rendered impure, and possibly dangerous, is proportioned to the thoroughness of the ventilation. Sulphureted gases may be diluted, and the outflowing air be free from disagreeable odors, but the very air movement which effects this may raise invisible clouds of fermentative and morbific agencies from the foul interior. Experiments on this point would be of value. Those mentioned above indicate that the communication with the outer air should only be such as is needful to relieve tension and prevent the forcing of seals, and that these air holes should be guarded by some filtering material. But since the volume of air which becomes contaminated is that which comes in contact with the fermenting material, it may be reduced as well by diminishing the extent of the impure surface as by cutting off the ventilation. Hence sewers of small size, as in what is known as the separate system, are to be preferred, on sanitary grounds, to the large ramifying tunnels of the combined system. The foul airs which arise from sewer apertures are matters of every-day observation. If well diluted with air they may not affect the sense of smell, but they rise, nevertheless, from the grated covers on our streets, and may be seen, by the vapor precipitated from them, as an uprising column in weather which clouds the air of respiration thrown out from the lungs. With open streets and lively breezes it is probable that these exhalations are dissipated, or rather diluted, to harmlessness, but in enclosed spaces and stagnant atmospheres the sewer air, which is so carefully excluded from living rooms by intelligent plumbing, may enter as fresh air through open windows and apertures specially devised for its admission.

Sewer air is atmospheric air with its oxygen diminished and its carbonic acid increased to from ten to fifty volumes per ten thousand, and with taints or notable amounts of marsh gas, hydrogen sulphide, ammonium sulphide, and amines or compound ammonias in which one or more atoms of hydrogen are replaced by a positive radicle, methyl, ethyl, amyl, etc. Cesspool air has an excess of these foul-smelling constituents, for the contents of a cesspool continue to putrefy, while the sewage in a well-constructed system of sewerage should be carried away before putrefaction sets in. Each of the impurities in sewer air is harmful when breathed in strength, but not specially dangerous when diluted with atmospheric air, for it is well known that men whose occupations bring them into contact with this contaminated air do not suffer specially from disease. But sewer air, like respired air, contains organic matter, and the propagation of certain infectious diseases, particularly typhoid fever, has been attributed to the presence of their causative agencies in the organic exhalations.

Dr. William Budd insisted on the harmlessness of human excreta unless infected by a previous case of typhoid fever, but Murchison taught the doctrine of pythogenesis or filth origin, irrespective of any previous case, and his doctrine prevailed for many years. Hence the slightest flaw in a system of sewage removal was accepted as an explanation in full of the presence of typhoid fever. The sanitary order of the day thereafter insisted on improved methods of sewage removal, and much good was thereby effected. Cleanliness and dry-earth systems benefited the country, and "plumbing regulations" gave city houses protection against sewer air, notwithstanding their intimate connection with the sewers. These hidden and too often uncared-for conduits were inspected, repaired, flushed, and ventilated until their air became purer than that of many city tenements. At this time no one seemed to observe that the evidence against sewer air as regards typhoid fever consisted only of assumption and assertion. When the sewers and house drains, the soil pipes and the traps were found to be perfect, the typhoid-fever element of sewer air was assumed to be so penetrating that coming up from the sewers it would saturate the water in a trap and be exhaled into a closet from the upper surface of the water; and if the closet was so situated that its air could communicate with that of a living room or a bedroom, a case of typhoid fever was considered satisfactorily accounted for. Ultimately the propagation of the disease by a contaminated water supply and the discovery of the typhoid bacillus made the innocence of sewer air evident in many cases in which it had been tried hastily and condemned unjustly.

Sewer air is, however, always putrefactive and sometimes specifically infective. In the wide streets of a well-ventilated city, the bacteria in its sewer air, when diffused into the atmosphere at large through ventilators, are carried away, dried up, and deprived of their vitality before they have opportunity of doing harm: but as we may have vitiated air from the lungs in an unventilated room, so we may have vitiated air from the sewers in unventilated streets. The air of narrow streets in densely built localities where there is little air movement, as is often the case in summer, may become tainted with the putrefactions and infections of the sewers, and an epidemic constitution of the atmosphere may thus find an actual existence, manifesting itself by an unusual prevalence of diarrhœal or specific diseases.

The air of dwellings is sometimes contaminated with ground or cellar air drawn up through a porous soil by the greater warmth of the living rooms. Ground air contains more carbon dioxide in summer than in winter on account of the influence of heat in promoting decomposition of organic matters in the soil. In general terms it contains in summer more and in winter less than one per cent. of this gas, or one hundred volumes in ten thousand of the air. It may also be contaminated by other products of decomposition, together with forms of bacterial life, for it remains to be proved that such particulate nitrogenous substances are removed by a filtration through the loose pores of the soil in which they are multiplying. Besides, in this question, evaporation from the surface is involved as well as filtration through the substance. The passage of air through and from the soil promotes evaporation from the surface, which may carry with it microscopic forms of life. Hence may be inferred the inadvisability of furnishing cellar air or air introduced by tunnels into a building for purposes of ventilation. This applies in particular to buildings erected on *made* ground. In fact, cellars, in default of an impermeable lining, should have a free circulation of air separate from the ventilation system of the superimposed building.

Charles Smart.

AIR EMBOLISM. See *Embolism*.

AIR PASSAGES, FOREIGN BODIES IN.—Nose.—The presence of foreign bodies in the nose[1] is of common occurrence. The list[2] of them comprises extraneous substances introduced either through accident or design by infants or insane adults; sequestra of diseased bone; and parasites. They may also enter the nasal cavities from behind, during the act of vomiting or of choking, or in paralysis of the soft palate. Rarely, as in gunshot wound, they may pass through the walls of the nasal cavity from without. The history of those of the first variety is usually as follows: A child of about two, old enough to creep but not sufficiently intelligent to know better, thrusts some small, rounded object, such as a bean or a shoe-button, which it has found upon the floor, into its nostril. If the child be not caught in the act the body may escape immediate detection. Soon symptoms of chronic inflammation are established. These are confined to the nostril in which the body is, and continue until it is removed, the irritation often being severe and the discharge exceedingly fetid. The mucous membrane adjacent to the foreign body is in a condition of superficial erosion. The body, if too firmly impacted to be dislodged by simply blowing the nose, remains fixed, usually in the inferior meatus, until removed by the surgeon. Removal should be attempted by means of a hooked probe or fine forceps, the sensitiveness of the nasal cavity being borne in mind, and the removal of the body carefully accomplished after complete local anæsthesia of the nasal cavity has been obtained, either by

cocaine or by the extract of suprarenal capsule. Copious hemorrhage, lasting two or three minutes, often follows, but is generally of little moment. The nostril should be washed several times a day with a weak disinfectant. In four or five days the membrane will often have healed so completely that no trace of trouble can be seen; the discharge ceases entirely, and the cure is complete. The possibility of the presence of a foreign body in all cases of fetid discharge confined to one nostril should always be remembered, and, the nostril having been cleansed with a warm douche, examination should be made with probe and speculum. If the object be lodged far backward, care should be taken in removing it not to allow it to fall into the larynx. Rhinoliths[3] are merely calculi formed by an accumulation of the earthy salts of the nasal secretions around some foreign body or inspissated mucus. Their presence has given rise to such irritation that they have been mistaken for cancer. Careful examination and the history of the case will easily establish the diagnosis. If the concretion be too large to be readily removed it should first be crushed. Foreign bodies of this nature are rarely met with, although one is reported which weighed seven hundred and twenty grains. Sequestra of bone, particularly in tertiary syphilis, sometimes remain in the nasal cavity after their separation, thus acting as foreign bodies. They must be thoroughly removed preliminary to further local treatment.

Parasites.—In tropical countries, seldom elsewhere, various kinds of flies, of the order *Muscidæ*, may enter the nasal cavity, preferably of a patient suffering from catarrh, and there deposit eggs.[4] These are quickly hatched, causing in succession irritability, tickling, and sneezing; later, formication, bloody discharges, and epistaxis, with œdema of the face, eyelids, and palate; excruciating pain, generally frontal; insomnia, and if the condition be unrelieved, convulsions, coma, and death. Sometimes the larvæ are sneezed out, or may be seen on examination of the parts. This will, of course, establish the diagnosis. Destruction caused by the larvæ may extend to the mucous membrane, the cartilages, and even the bones of the head; the ethmoid, sphenoid, and palate bones having been found carious. Where the maggots have entered the frontal sinus or the antrum of Highmore, injections of tobacco or alum, or insufflations of calomel, formerly used, will be of little use. Chloroform or ether,[5] preferably the former, either inhaled or driven into the nasal recesses in the form of spray, is the sovereign remedy, as under it the larvæ are not killed, to remain *in situ* and thus cause further trouble, but escape with all haste to the outer air. Meanwhile, anodynes should be given to allay pain, and the patient's strength should be carefully sustained.

Such measures, however, are only serviceable when the case is seen early and the larvæ are still upon the surface of the mucous membrane. When they have attained their full development, they burrow into the soft tissues, whence it seems impossible to extract them except by seizing them bodily and dragging them out. If the desperate character of the situation in severe cases of this kind, and the impossibility of reaching the seat of irritation through the natural passages, are taken into consideration, no surgical procedure which promises relief can be thought too severe. It is therefore justifiable to open into the antrum or the frontal sinuses from without, to perform Rouge's operation, in order to gain access to the upper part of the nasal cavities or to open freely into the ethmoid cells. Several cases in which the patient's life has thus been saved have been related to the writer in recent years.

Leeches, ascarides, earwigs, and centipedes[6] have been found in the nose, causing insomnia, frontal pain, sanious discharge from the nose, lachrymation, vomiting, and, in some cases, great cerebral excitement. Sternutatories are generally sufficient for their expulsion.

Tonsils.—Three general varieties of foreign bodies may be found in the tonsil: (1) Foreign bodies proper, or substances which have become lodged in the tonsil during deglutition; (2) tonsillary concretions or calculi; (3) parasites. The last two conditions are not common: the first will be described under Foreign Bodies in the Pharynx.

Tonsillary calculi are formed in the lacunæ of a chronically inflamed tonsil by a perverted condition of the natural secretions, and their retention in the recess through closure of its outlet. They vary in size, seldom attaining a greater diameter than three-fourths of an inch, and consist of phosphate and carbonate of lime, some iron, soda, and potassa, with varying proportions of mucus and water. Hence they are not necessarily of gouty origin.

The *symptoms*, generally not prominent, may be slight pricking of the throat with, occasionally, dysphagia. The presence of the calculus is sometimes directly irritating, and may give rise to quinsy, ulceration of the cavity, and abscess. Frequently, however, the symptoms are reflex in character. This is especially true with relation to the ear, in which organ the existence of a calculus may be associated with various forms of otic congestion and with tinnitus.

Diagnosis, by ocular examination or by the use of the probe, is usually easy, and so also is the removal of the calculus by means of a forceps. Sometimes, however, the mass is so completely covered that it is only seen after careful exploration with the probe or even after the actual removal of the tonsil. In most cases the latter operation will afford the most certain cure. Very rarely, hydatids and trichocephali have been found in the tonsil.

Pharynx.—Foreign bodies are very often arrested in the pharynx, and the variety of these bodies is very great. Certain individuals seem especially liable to this accident, either from carelessness in eating, from insensibility of the parts, or from some unusual irregularity in the pharyngeal walls. Foreign bodies of large size generally lodge in the lower part of the cavity, where the cricoid and arytenoid cartilages project backward, or between the base of the tongue and the epiglottis. Small and sharp-pointed bodies may become fixed at any part of the pharynx, particularly in the tonsils, on account of their exposed position and the irregularity of their surface. They may also be entangled in the pillars of the velum, or in the lateral folds of the cavity. A large body may be found stretching across the whole width of the pharynx.

Symptoms.—These are local pain, dysphagia, and more or less inflammation, with occasionally ulceration or abscess of the pharynx; but generally there is simply localized inflammation and irritation. If an abscess be formed, the foreign body may escape through a fistulous opening in the neck, or it may perforate some important blood-vessel, or may even penetrate the intervertebral substance and cause caries of the vertebral bodies.

Inflammation of the pharynx may give rise to dyspnœa, while a large foreign body may cause suffocation by obstructing the entrance to the larynx.

The *diagnosis* can generally be established by the history of the case, and by inspection of the pharynx. Nervous patients often insist upon the presence of a foreign body in the throat, despite all assurances to the contrary, particularly if the pharynx be sensitive, or if at a certain point there is an inflamed lymph gland, or if, as often happens, a hard substance may have caused a slight laceration of the mucous membrane while being swallowed.

Treatment.—The patient's tongue should be well depressed, and the upper parts of the pharynx carefully examined in a strong light. If the foreign body does not then appear, search should be made for it, with the aid of the laryngoscope, in the region of the base of the tongue, the glosso-epiglottic sinuses, and the upper portion of the larynx. If present, it will generally be found without much difficulty, and should be removed by the finger or by a suitable forceps or probang. If dyspnœa be urgent, immediate surgical interference, of a nature suited to the special features of the case,—either tracheotomy, thyrotomy, or, possibly, some form