large size of the conidia or spores and by their tendency to occur in groups or masses over the field; the mycelia are fine and interlace between these groups. The Microsporon furfur grows luxuriantly in the upper layers of the epidermis, causing no appreciable irritation, and produces by its strongly refractile spores the yellowish color of the infected regions. It is supposed to have greater affinity for a moist skin; it is therefore found most frequently in those who perspire freely. Perfectly healthy adults are attacked as well as the delicate. It is exceedingly rare in children. The disease is contagious, but mildly so, as some special condition of the epidermis besides moisture is necessary for the growth of the organism.

In all suspected cases the scales should be examined for the fungus. Mild parasitic applications cure an attack. Of these the most elegant and cleanly is a saturated aqueous solution of hyposulphite of soda, applied night and morning after a soap and water bath. A cream of ten-per-cent. sulphur precipitate in Unguentum aquæ rosarum is equally efficacious. Various other parasitic ointments and lotions are used. The attack is easily cured, but when once a person has become susceptible recurrence is the rule; therefore each relapsing spot should at once be destroyed, with any of the agents mentioned; care also being given to the sterilization of wearing apparel and articles of the bath.

Treatment of the Various Forms of Tinea.—The cure of all the types of ringworm depends upon the efficacy with which the parasiticides are brought into contact with the offending organism. This is easily enough accomplished upon the glabrous skin but is quite difficult when the hair follicles are infected. In the latter event it is recommended to extract the hair by epilation, which often proves useless, as the hairs are frequently so badly disorganized that the least traction breaks them off close to the scalp, or just within the follicle. This, however, is not true in ringworm of the beard, where the disease is due to the ectothrix variety, with the formation of pus and the subsequent loosening of the hair. In the infection of the scalp in children, by the microsporon fungus, which disorganizes but does not loosen the hair, it is probably better to "shingle the head than to spend useless time and trouble breaking the hairs by epilation. Epilation by means of the *x*-rays is not indicated here as in favus, for fear that permanent baldness may ensue. The latter disease (favus) frequently produces permanent baldness independently of epilation, while it never occurs in ringworm except in kerion.

Chrysarobin, pyrogallic acid, oleate of mercury, iodine, salicylic acid, sulphur—in fact, all antiparasitic agents, have been used in ringworm of the scalp with more or less success. Whatever remedy be selected it is necessary that it be applied thoroughly and often, and in a medium which is capable of being manipulated into the follicle. It is also necessary to employ the agent in sufficient strength to kill the parasite and cause a not too violent reaction of the skin. Of all these agents chrysarobin, in the following combination of Unna's, has, in the writer's hands, proved the most efficacious: Chrysarobin, 2 parts; ichthyol, 5 parts; salicylic acid, 5 parts; and vaseline, 88 parts. This is applied to the whole scalp (after the hair has been cut as short as possible) twice daily, with a soft tooth brush. A cloth cap is then fastened to the head by a bandage passed along the hair line; this prevents the chrysarobin from getting upon the smooth skin or in the eyes. The latter accident should be carefully avoided. The scalp will show irritation from this treatment in from two to four days. Then the chrysarobin salve should be washed off and a soothing cream or ointment applied until all irritation has subsided and the reduced or hardened epidermis scales off. This procedure should be repeated for several courses, until the hair again grows to sufficient length to show whether or not the fungus has been entirely destroyed. Frequent microscopical examinations are a great assistance in watching the effects of the treatment. The chrysarobin discolors the skin and hair and is an heroic procedure. In young girls, and when the patient cannot be carefully observed, less heroic measures are advisable. In all cases in which the sacrifice of the hair is not too great it should be closely cut, and some weak parasiticide applied to the whole scalp, while the patches themselves may be treated more vigorously. A very good procedure is to apply to the entire scalp a weak sulphur cream and attack the patches with one of the stronger parasiticides previously mentioned. Trikresol, lately introduced by MacGowan, is a most valuable remedy. The patches should be first rendered free of fat and débris by washing with ether or benzin. A mixture of equal parts of trikresol and alcohol is then well rubbed, with a cotton swab, into and beyond the patch. This applicaion will cause some desquamation, which will last for several days, when the remedy may be again applied; some mild antiseptic cream being used in the mean time. Precipitated or sublimed sulphur, in the proportion of from twelve to fifteen per cent. in lard or vaseline, is slow but efficacious. It is well to remember that it is useless to continue applying a remedy after it has caused thickening of the epidermis, and therefore more obstruction in the mouths of the follicles, thus protecting the fungus. It is better to wait and assist the desquamation of the epidermis by the use of a mildly antiparasitic salve before proceeding.

Ringworm of the body is best treated by means of pastes, to which is added a parasiticide. The pastes adhere to the skin, and are not easily rubbed off. The best of these is one made of equal parts of oxide of zinc, starch, vaseline, and lanolin. To this may be added either sulphur (from six to twelve per cent.) or ammoniated mercury (four to six per cent.). Taylor recommends one to three grains of mercuric bichloride to an ounce of the compound tincture of benzoin. Resorcin, salicylic acid, ichthyol, and preparations of tar are all efficacious in salves, pastes, or lotions.

"Eczema marginatum" is, for the reasons already given, the most difficult of the so-called body ringworms to cure. In this affection pastes often prove irritating; the application of salves, dusted over with talcum powder, is more agreeable. The itching and consequent rubbing and excoriation are elements to be dealt with in this locality; therefore the use of an antipruritic, like carbolic acid, is necessary. The writer has been pleased with the following: Carbolic acid, gtt. v.; precipitated sulphur, gr. xx.; balsam of Peru, gtt. xx.; vaseline, ʒ v.; lanolin, ʒ iij. Lotions, unless the case is very mild, do not act well in this locality.

Tinea barbæ in the mild form is readily cured by the application of any of the parasiticides mentioned. In severe cases the crusts should be removed with carbolized or salicylated oil or vaseline; the diseased hairs should be epilated and the beard shaved, immediately after which the remedy is rubbed in. Sulphur, five to ten per cent. in vaseline, or in equal parts of lanolin and vaseline, is generally useful. Xeroform, five per cent. in olive oil, has proved valuable in the writer's experience.

In Tinea unguium the nail, after being scraped, should be soaked in a hot alkaline solution, and the parasitic salve rubbed in; then some of the salve should be spread upon cloth and bandaged on, or held in place by a finger cot. Unna applies, after the scraping, a solution of bichloride of mercury, in flexible collodion thinned with ether (bichloride of mercury, gr. i.–iv.; ether, ʒ ij.; flexible collodion, ʒ vi.). *Martin F. Engman.*

TINNITUS AURIUM.—Definition.—Any subjective noise, heard in one or both ears, as the result of some abnormal condition somewhere in the body.

Causes.—Anything which irritates the nervous mechanism of hearing, in any part, from the cortex of the brain to the cochlear hair cells. Tinnitus has been noted as an *aura epileptica* (cerebral irritation); at the onset of an attack of *syncope* (cerebral anæmia); and at the time of an attack of cerebral hemorrhage (general cranial hyperæmia). It also occurs as the result of poisoning by certain drugs (quinine, salicylic acid). The precise physiology of this action is not clear, but it is probably due to cerebral irritation, since it can be readily controlled by the administration of bromides. Tinnitus is also observed in meningitis. This may depend upon irritation of the auditory nerve in its course.

As commonly seen, however, tinnitus is due to some form of ear disease, and some of these cases present perhaps the most perplexing problems which the whole range of otology can offer. For it is a matter of common observation that a moderate degree of deafness may pass unnoticed for years, and finally be discovered, as it were by accident, by a patient's friends. Tinnitus, however, never fails to be a matter for complaint, causing as it does a degree of discomfort always considerable, and being often of grave danger to the patient's bodily and mental health. It has been claimed that some suicides have been caused by loud and persistent tinnitus, but the writer has not been able to find any reported cases. It is, however, almost certain that in persons predisposed to mental disease, tinnitus has led to auditory hallucinations, and thus has acted as the determining cause of an attack of insanity.

According to Sexton, fifty per cent. of all ear patients have more or less tinnitus. In the writer's experience a greater or less degree of it is so common in chronic deafness that its absence in any case is worthy of comment. It is seen in diseases of all parts of the ear. It is often a prominent symptom in cases of impacted cerumen, also in furunculosis of the meatus externus. It may also be found in cases of tubal catarrh, of stricture of the Eustachian tube, of acute otitis media, catarrhal or purulent; it is a common symptom in all forms of chronic otitis media, and in the lighter forms of otitis interna, where the auditory nerve is not completely destroyed. The worst and most obstinate cases are those of otosclerosis. This disease, which has been only of late differentiated from chronic aural catarrh, is one of the most frequent causes of tinnitus, which is usually an early, and may be during months or years the only, symptom.

Tinnitus presents itself under various forms, both as to quantity and as to quality of noise, and also as to constancy or intermittency of its occurrence. As to quantity, the noise may vary from a soft, barely noticeable rustle, as of the leaves on a tree, to an excessively loud screaming sound, like a steam whistle. The latter extreme is, of course, rare. All intermediate degrees, however, are constantly seen. The quality of the sound varies greatly. It may be high-pitched or low-pitched, blowing like the wind, whistling like the escape of steam, crackling like a wood fire, or occasionally detonating like an exploding firecracker. More serious are those rare cases in which the noise takes the form of music, or of human speech. It is always possible that in such a case we are dealing with a psychopathic patient, and we must therefore be on the watch for the development of genuine auditory hallucinations. Many patients have two or more kinds of tinnitus at once. The writer has at present two such cases under observation.

Panse (*Zeit. für Ohrenheilkunde*, 1898, p. 244) attempted to show that low-pitched sounds occur chiefly in diseases of the sound-conducting apparatus, and those of high pitch in conditions affecting the labyrinth. His conclusions are denied by Politzer, with whom the writer is inclined to agree, never having been able to satisfy himself that there was any necessary relation between the kind of noise and the anatomical condition causing it.

Constancy or intermittence of the noise is a more important feature, because it seems to have a bearing upon prognosis. In certain cases tinnitus occurs in waves, synchronous with the beat of the pulse. In these cases it is always possible that the underlying lesion is of the type of a simple congestion, which may be curable, partly or wholly. In other cases the wave of sound comes with inspiration or expiration (respiratory tinnitus). These cases are sometimes due to the rushing of the inspired air through an abnormally patulous Eustachian tube, as in a case reported by Kerrison (*Med. Record*, April 19th, 1902). In this particular case treatment was wholly successful, and the patient, a man over seventy years of age, was completely cured.

Some patients say that they hear the noise only when lying down, and especially at night. These are usually cases of the milder type. This may depend upon the recumbent position, or more probably perhaps upon the fact that during the hours of rest one has fewer distractions than at other times. To interfere seriously with sleep, tinnitus must be very severe. There are other cases in which the tinnitus is made worse by bending forward, or by or during heavy exercise.

It must also be noted that some persons have the knack of causing at will certain sounds in the ear. These are usually clicking sounds, probably caused by opening and shutting the pharyngeal orifice of the Eustachian tube, by action of the tensor palati muscle. This action sometimes takes place involuntarily, and the noise thus produced is one of the class known as *entotic*. These noises are actual, as opposed to those which are strictly subjective, and in many cases may be heard by the examiner. Apart from the clicking caused by action of the tensor palati, there may be clonic contractions of the intrinsic muscles of the ear (tensor tympani and stapedius) which cause ticking or humming sounds. There are also the so-called vascular entotic noises, caused by anomalies of the blood-vessels. According to Politzer ("Diseases of the Ear," 1902, p. 777) they may be due to the following pathological conditions: dilatation of the arterial branches within the tympanum, changes in the carotid canal, cardiovalvular lesions, goitre, cranial aneurisms, or chlorosis (*bruit du diable*). They are synchronous with the pulse, and may, in some instances, be heard by auscultation all over the head. Attempts which have been made to relieve these cases by ligating the carotid artery have given unsatisfactory results. In a case operated upon in this manner by Linsmayer, and reported by Politzer (*loc. cit.*), the operation was followed by death from softening of the corresponding cerebral hemisphere.

Prognosis.—It goes without saying that the prognosis as to recovery in any given case depends upon the nature of the underlying anatomical cause. In a general way, however, it may be said that the hope of recovery from tinnitus is much less than the hope of relief from deafness. Many patients who complain of both deafness and tinnitus gain a very fair degree of hearing, while their annoying ear noise continues about the same. Cases of intermittent tinnitus offer a somewhat better prognosis than where the noise is constant, as the causative lesion is apt to be of a less permanent character. Slighter degrees of tinnitus, and those in which the noise has existed only for a short time, are more favorable than those of severer character and longer standing.

Treatment.—The successful treatment of tinnitus depends entirely upon the possibility of discovering and removing its cause. Therefore it may be said that the treatment of tinnitus is the treatment of diseases of the ear. Accuracy in diagnosis is essential. Every patient is entitled to the most careful and painstaking examination of which the aurist is capable. A complete history of the case must first be taken, and all possible causes, apart from the ear, must be considered. Next comes a detailed physical examination of the auricle, the external meatus, the drum membrane, and the mastoid region, followed by examination of the nose and throat. By means of the auscultation tube we should listen to the sounds that are generated while air is being forced through the Eustachian tube into the middle ear. Finally, all known means of functional testing of the hearing should be employed—voice, watch, acoumeter, the various tuning-fork tests (Rinné, Weber, Gellé); also the Galton-whistle test for the upper tone limit should be tried in order to acquire as complete a knowledge as is possible of the anatomical condition. Treatment then is directed to rectifying what is wrong, so far as this can be done. Impacted cerumen must be removed. Furunculosis or other disease of the canal calls for appropriate treatment. A retracted drum membrane or a chain of ankylosed ossicles must be restored to the normal condition by inflation, pneumo-massage, or the Lucae pressure-probe. A contracted Eustachian tube calls for dilatation by the use of

bougies. The ordinary filiform urethral bougie serves this purpose well. Of intratympanic conditions suppurative cases call for measures which tend to dry up the discharge, thorough cleansing, the removal of granulations, polyps, or cholesteatomatous masses, and perhaps for ossiculectomy or the Schwartze-Stacke operation (see Vol. VI., p. 706).

Of the non-suppurative cases it is very important to differentiate between chronic aural catarrh and otosclerosis. The former disease is best treated by attention to the nose and throat, with such local treatment for the middle ear as has been mentioned above. The latter disease has only lately been recognized, and, as it is a frequent cause of obstinate tinnitus, calls for special mention. It is of the nature of an hyperostosis, and usually affects the region about the oval window, on either the tympanic or the vestibular side, so that it may give symptoms of ankylosis of the stapes, or of labyrinthine involvement, or both. It is a chronic progressive disease with intermissions. During the active periods there is usually a reddish tinge to the drum membrane, due to the shining through of the congested promontory. At other times the membrane may appear normal, in both character and position. The disease is due to injury, or to extra-aural causes, usually auto-intoxications, from gout and allied conditions, or to disease elsewhere in the body, acting reflexly from a distance, as certain uterine and ovarian conditions. Hartz (*Ann. Otol., Rhinol., and Laryngol.*, vol. xi., p. 637) says the disease is very frequent at the puerperium. The treatment is to be directed to the cause. In the acute stage active local treatment aggravates the condition. Probably in the future, when the physiology of nutrition shall be better understood, some dietetic and hygienic régime will be discovered which will help these patients. At present no treatment does much good.

Tinnitus, due to labyrinthine disease, is often syphilitic. Such cases call for iodides in large doses, and show better results with mercurial inunctions than without them. Pilocarpine also sometimes helps these cases. It is best given at bedtime, beginning with one-tenth of a grain and increasing until the dose is sufficient to cause profuse sweating.

Palliative, local and general treatment usually gives only temporary relief. Politzer ("Diseases of the Ear," 1902, p. 778) recommends sodium bromide internally, five to fifteen grains three times a day. He also recommends a small blister over the mastoid region, followed by applications to the vesicated area of antimonial ointment or bisulphate of quinine. He also speaks of instillations into the meatus of about five drops of a mixture of tincture of valerian, 4 parts, and acetic ether, 3 parts, in glycerin, 40 parts. These measures at least tend to satisfy the patient that his distressing malady is not being neglected by his physician. *Donald M. Barstow.*

TIN, POISONING BY.—Metallic tin, if pure, has no injurious action on the system. The soluble salts of tin, especially the chlorides, are violent irritants; but cases of poisoning by them have rarely come under observation. Two grams (ʒ ss.) of a solution of the chloride has caused death in three days. In the treatment of cases of poisoning by these compounds, milk or albumen, alkaline carbonates, and emetics are indicated first. The after-treatment should be symptomatic.

The compounds of tin owe their toxicological importance chiefly to the fact of their frequent occurrence in various articles of food; but whether this occurrence of tin is attended with any danger to health is still a disputed question. A non-fatal case of acute poisoning has been attributed to the use of salt which had been dried on a tin dish on the stove. It has been suggested, however, that the symptoms described might more reasonably be attributed, in the absence of a chemical analysis, to lead poisoning; since much of the tin plate formerly used was not pure tin, but an alloy of tin with lead.

Many cases of acute poisoning have followed the use of canned foods, and in some of these cases the symptoms have been attributed to tin; but rarely, if ever, has the theory of tin poisoning been substantiated by an analysis of the suspected food. It is a well-recognized fact that many cases of acute sickness have been caused by the ingestion of food which was entirely free from injurious metals. It is considered, therefore, more reasonable, by some authorities, in the absence of any chemical analysis, to attribute the symptoms which frequently follow the ingestion of canned foods to some cause other than metallic poisoning, such as putrefactive changes taking place in the food; or, in a certain number of cases, to idiosyncrasy. Some, while denying the probability of tin poisoning, admit the possibility of poisoning by other metals, as lead or zinc, the former derived from the tin plate or from the solder, the latter from the soldering fluids used in sealing the cans.

It is not disputed that canned foods frequently contain tin, which has been dissolved from the tin plate by the action of acids or other constituents of the food, or which has been introduced by the careless use of stannous chloride, which is a constituent of some of the soldering fluids used in sealing the cans. But the quantity of tin is usually small, varying from a few one-hundredths of a grain to one grain per pound, rarely approaching, however, the higher figure. These amounts are not likely to give rise to symptoms of acute poisoning. Winter Blyth states that he found in some samples of canned fruits as much as 14.3 grains of stannous hydrate per pound, and that the average amount in all examined was 5.2 grains per pound. In some cases the juice had a metallic taste. With such quantities of tin, in a form easily absorbed by the system, the possibility of acute poisoning must be admitted. But the facts at present known to us do not seem to warrant the conclusion that acute tin poisoning, as a result of the use of canned foods, is an occurrence to be greatly feared. A quantity of tin salt sufficient to cause poisoning would probably be recognized by the taste, and the food thus contaminated be rejected as unpalatable.

Stannous chloride is sometimes added to the cheaper grades of molasses to lighten the color and give the sample the appearance of a higher grade of molasses; and sugar crystals are said to be washed with a similar solution, the greater part of which afterward passes into the molasses. Whether this use of the tin salt is attended with any danger to the consumer has not been determined. The chloride is immediately decomposed by some of the constituents of the molasses and converted into an insoluble compound, which is deposited with the sugar, the clear molasses usually not retaining any of the tin. The composition and physiological action of the resulting insoluble compounds have not been investigated.

The question of chronic poisoning, as a result of the habitual or frequent use of foods containing traces of tin compounds, is an important one, which has not yet been thoroughly investigated, and concerning which opinions differ.

In order to determine how far absorption into the circulation may produce disturbances of health, T. P. White has investigated the action of the double tartrate of tin and sodium, and of stanno-triethyl acetate on animals. He places tin near lead in its toxic power. The administration of the acetate is followed by two series of symptoms—one referable to the digestive tract, namely, loss of appetite, nausea, vomiting, abdominal pains, and diarrhœa; the second referable to the central nervous system, manifested by weakness of the extremities and paralysis, diminution of the power of the heart, severe respiratory disturbances, and convulsions. The urine is scanty, has a high specific gravity, and frequently contains albumin. According to White, tin acts directly on the intestinal tract, whatever the channel by which it is introduced. Post-mortem examination showed: Mucous membrane of the stomach and intestines soft, covered with mucus, and hyperæmic; heart in diastole; blood thin and dark; lungs collapsed and hyperæmic; liver pale and somewhat enlarged.

Similar results were obtained with the double tartrate, but larger doses were required. After the administration of these salts tin was found in the muscles, liver, kidneys, brain, heart, and urine. The blood in most cases contained no tin. White concludes, however, as a result of many experiments, that there is no danger of tin poisoning resulting from the contact of fruits and vegetables with the metal, and that cases of poisoning which have been attributed to tin were due to solder or to metallic impurities in the tin.

Ungar and Bodländer have also investigated the action of the two tin salts studied by White, and with similar results; concluding that the question of the poisonous action of the tin compounds, aside from any local effects, must be answered in the affirmative. To determine whether foods containing tin are likely to produce any local or general effects, they fed dogs and rabbits on fruits, etc., containing small quantities of tin, but failed to observe any irritant action on the mucous membrane of the stomach and intestines. The absorption of tin under such conditions was proven by its detection in the liver, spleen, kidneys, brain, heart, muscles, and urine. None was detected in the blood. The authors also detected tin in the urine of man in two cases.

William B. Hills.

TOBACCO (*Tabacum*, U. S. P.; *Tabaci Folia*, B. P.; *Folia Nicotina*, P. G.; *Nicotiane, Tabac*, Fr. Cod.) consists of the dried leaves of *Nicotiana Tabacum* Linn., of the order *Solanaceæ*. It is a rank, viscidly hairy plant, four to six feet high, with coarse, entire, alternate leaves, having a disagreeable odor and taste and turning brown on drying. The simple stems terminate in panicles of rose-purple flowers. The calyx and corolla are five-toothed, the former tubular, the latter funnel-shaped and conspicuous, about two inches long. There are five stamens and a single two-celled ovary. The fruit is a two-celled capsule an inch long, opening by two or four valves. The seeds are small and numerous.

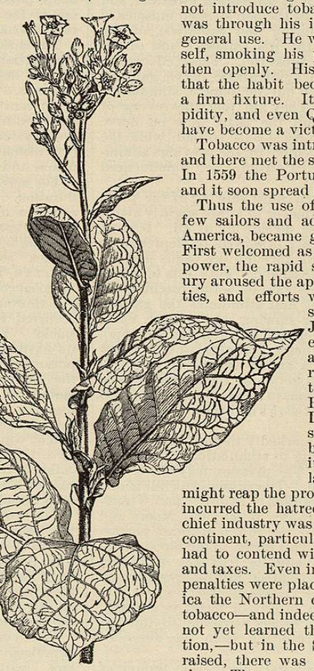

FIG. 4725.—Nicotiana Tabacum Linn. (Baillon.)

Tobacco is a native of America, but is now grown in many parts of the world. The seeds are sown in beds and in early spring are transplanted. The flowering tops are cut off to encourage the growth of the leaves. In August or September the leaves are gathered, dried under cover, then piled up and allowed to ferment or "sweat." The details differ in different tobacco-raising regions, and the further process depends upon the kind of tobacco to be made.

Nicotiana Persica and *Nicotiana rustica* are also used in making Turkish tobacco, from which Egyptian and Turkish cigarettes are made.

The word *tobacco* was introduced by the Spaniards. It was probably not derived, as has been thought, from the name of the island of Tobago or of the Mexican state of Tobasco. Oveido, in 1535, described an instrument, the *tabaca* or *taboca*, used for smoking or inhaling various substances. It was a hollow stick, shaped like the letter **Y**. The small ends were placed in the nostrils and the powdered drug was put in the other end. Ernst believes that the term was derived from a Guarani word meaning "to eat, sucking." Las Casas applied it to rolls of tobacco like cigars. The words *uppowoc* and *poetun* were used in Europe at first, but *tobacco* soon displaced them.

Tobacco was introduced into Europe from the American Indians. Smoking was first observed during the first voyage of Columbus. In November, 1492, he sent an expedition into the interior of Cuba, and members of the party noticed the Indians smoking rolls of the dried leaves, the prototypes (shall we say?) of our Havana cigars. Cartier and other followers of Columbus also observed the practice, and the sailors returning from these early expeditions carried it back to Europe.

The introduction of the habit into other European countries and its spread through the whole world is a most remarkable chapter, and one which can only be touched upon here. In 1559 Jean Nicot, ambassador from France to Lisbon, whose name is perpetuated in that of the genus Nicotiana, sent some seeds to Catherine de Medici, who powdered them and used them as medicine. Thus tobacco was introduced into France.

In England tobacco was known as early as 1564, when Hawkins described its use in Florida. The habit was not introduced till 1586, when Sir Walter Raleigh's unsuccessful Virginian colony, under Ralph Lane as governor, returned to England in the vessels of Francis Drake. Many of the colonists had learned to smoke from the Indians and they brought the habit home with them. Raleigh himself, not being a member of the party, did not introduce tobacco into England, but it was through his influence that it came into general use. He was a famous smoker himself, smoking his pipe at first secretly and then openly. His social position was such that the habit became first a fad and then a firm fixture. It spread with amazing rapidity, and even Queen Elizabeth is said to have become a victim.

Tobacco was introduced into Italy in 1589, and there met the same enthusiastic approval. In 1559 the Portuguese carried it to India, and it soon spread all over the East.

Thus the use of tobacco, starting with a few sailors and adventurers returning from America, became general all over the world. First welcomed as a drug of rare medicinal power, the rapid spread of its use as a luxury aroused the apprehensions of the authorities, and efforts were everywhere made to stamp it out. In England James I. wrote his "Counterblast to Tobacco" in 1603, and followed it with many restrictive laws, as ineffectual as they were severe. Both James I. and Charles I. imposed the severest restrictions and taxes on tobacco, ostensibly to control its use, but really to so regulate the trade that they might reap the profits therefrom. Thus they incurred the hatred of the Virginians, whose chief industry was tobacco-growing. On the continent, particularly in Italy, the smokers had to contend with papal bulls, civil laws, and taxes. Even in Persia and Turkey severe penalties were placed on smokers. In America the Northern colonies legislated against tobacco—and indeed some of our States have not yet learned the futility of such legislation,—but in the South, where tobacco was raised, there was naturally no such opposition. The extent to which tobacco is used to-day may be judged from the fact that in England in the years 1899 and 1900 the consumption amounted to about two pounds per head of the population.

Tobacco needs no description. Its only important active principle is nicotine, which is present to the extent