

BROOM. SCOPARIUS.—*Broom-tops.* "The tops of *Cytisus Scoparius* (L.) Link. (fam. *Leguminosae*)" (U. S. P.). This is a densely growing, erect, yellow-flowered shrub of Europe and adjacent Asia, two to five feet high, its branches terminating in thick masses of long, exceedingly slender twigs, which are used like brooms, whence the popular name. These twigs constitute the drug of commerce. They are two to three feet long, one-eighth to one-fourth inch thick, sharply five-angled, of a very dark green, and exhaling a peculiar odor when bruised. This odor largely disappears with time, when the drug becomes inferior. The leaves, which are rarely present, are sub sessile, trifoliolate or reduced to one leaflet, the latter oblong or oval or obovate, somewhat hairy. Yellow papilionaceous flowers are often present, and perhaps some flat pods, looking like undeveloped pea pods.

Composition.—Broom contains tannin, fixed and volatile oil, wax, and the two peculiar bodies *scoparin* and *sparteine*. The volatile oil slightly assists the diuretic action of the scoparin. The latter is an amaroïd (C₂₁H₂₂O₁₀), amorphous or in yellowish crystals, soluble in alcohol or hot water, and diuretic by directly stimulating the renal secretion. It is occasionally given in doses of 0.5 to 1.0 gm. (gr. vii.-xv.), but is a very expensive remedy. Sparteine (C₁₅H₂₆N₂) is a yellow, syrup-like, aromatic, volatile alkaloid, soluble in alcohol and water, and yielding crystalline salts. It is a powerful poison. It has a primary circulatory stimulant action, contracting the arterioles and increasing blood pressure, thus assisting the diuretic action of the scoparin and volatile oil. The secondary action, which is very prompt, is to weaken the heart muscle and partly or wholly to overcome the vaso-motor contraction. The drug is thus a cardiac sedative and in over-doses a paralyzing cardiac poison. It is also sedative to other muscles, and may act as a mild anodyne. It was originally used as a cardiac stimulant, but was found disappointing, and is now little used, mostly in the form of the official sulphate, in doses of 0.01 to 0.02 gm. (gr. $\frac{1}{4}$ to $\frac{1}{2}$).

Broom is very considerably employed as a diuretic. The fluid extract is official and is given in doses of 1 to 4 c.c. ($\frac{1}{2}$ to 1 fl. dr.). The five-per-cent. infusion is a better form of preparation, in doses of one-half to one ounce.

Henry H. Rusby.

BROWNSVILLE, Texas, a town of 6,130 inhabitants, is situated on the north bank of the Rio Grande River, opposite Matamoras, in the extreme southeastern corner of the State. It is a port of entry, and has a warm, moist climate. It is not a health resort, and is mentioned here simply to indicate the climatic conditions which exist in this section of the country.

CLIMATE OF BROWNSVILLE, TEXAS, LATITUDE, 25° 53'; LONGITUDE, 97° 26'. PERIOD OF OBSERVATION, SEVEN AND ONE-HALF YEARS. ELEVATION OF PLACE OF OBSERVATION ABOVE SEA LEVEL, TWENTY-EIGHT FEET.

Data.	January.	July.	Year.
Temperature (Fahrenheit scale)—			
Average mean	59.5°	84.4°	73.1°
Average range	17.2°	15.2°	
Mean of warmest	66.9°	92°	
Mean of coldest	49.7°	76.8°	
Highest or maximum	83°	98°	
Lowest or minimum	18°	68°	
Humidity—			
Average relative (per cent.)	79.6	71.9	76.3
Precipitation—			
Average in inches	2.10	2.63	32.03
Wind—			
Prevailing direction	N.	S. E.	S. E.
Average hourly velocity in miles	7	6.9	6.9
Weather—			
Average number clear days	8.1	13.3	116.3
Average number fair days	8.1	14.2	148.9
Average number fair and clear days	16.2	27.5	265.2

NOTE.—If the above chart is not self-explanatory to the reader, he is referred to the article upon *Baltimore*, where in a similar table some of the terms are commented upon.

Edward O. Otis.

BROWN'S WELLS.—Copiah County, Mississippi. Post-Office.—Brown's Wells. Hotel and cottages. Access.—Via Illinois Central Railroad to Hazellhurst, thence five miles by stage line to springs.

Brown's Wells are situated near the central part of Mississippi, 40 miles south of Jackson and 150 miles north-east of New Orleans. The location is among the pine hills of Mississippi, though hickory, oak, and other growths abound. The climate here is very salubrious, and extremes of either heat or cold are seldom observed. The temperature rarely falls lower than 20° F. in the winter or rises above 98° F. in the summer. The elevation above the sea level is quite considerable. The resort is open for the reception of visitors all the year. Four springs are found in the neighborhood, but only two have been analyzed. Examination of Spring No. 1 was made by Prof. John R. Chilton, of New York, with the following result:

SPRING No. 1.

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Sodium sulphate	17.76
Magnesium sulphate	45
Calcium sulphate	97.60
Aluminum sulphate	8.11
Iron protosulphate	36.52 (?)
Calcium chloride	16.44
Organic matter32
Free sulphuric acid	40.88 (?)
Total	263.23

This analysis shows a very potent mineral water. It is probable, however, that the chemist's report has been misread in some of the findings, and a new analysis is consequently desirable. According to a quantitative analysis by State Geologist George Little, Spring No. 2 contains:

Calcium carbonate.	Alumina.
Magnesium carbonate.	Organic matter.
Sodium carbonate.	Carbonic acid gas.
Iron sulphate.	Sulphureted hydrogen gas.

The proprietor of the springs, Mr. M. L. Morehead, presents many testimonials from well-known physicians certifying to the value of the waters. They are said to be very useful in rheumatic and gouty disorders, in obstinate disturbances of the alimentary tract, in functional liver complaints, in dropsical affections due to nephritis, and in anemia and allied disorders. James K. Crook.

BRYONY. BRYONIA.—"The root of *Bryonia alba* L. and *Bryonia dioica* L. (fam. *Cucurbitaceae*)" (U. S. P.). There are eight species of Bryonia, natives of the Mediterranean region. The *B. dioica* grows as far north as England. They are tendril-bearing, cucumber-like vines, with very large, starchy roots, growing mostly in sandy soil. Their bitter and active constituents are doubtless for the protection of their nutritious roots against foraging animals.

The roots are sliced, mostly transversely, to facilitate drying. These commercial slices are white discs (becoming gray with age), from one to four inches in diameter and one-fourth to nearly one-half inch in thickness. They are not appreciably thinner at the centre, though the bark is slightly broader than the fleshy portion. There are several concentric circles of short wood bundles. The surface is granular and slightly harsh to the touch. The fracture is short and sharp. There is a characteristic, though faint odor, and a powerful and disagreeable bitter taste. It is not adulterated.

Composition.—With much starch and gum, and some sugar, the active constituents are the two bitter glucosides *bryonin* and *bryonidin*.

Action and Uses.—Bryony is a hydragogue cathartic, practically identical with colocynth and elaterium. Like these, also, it is a stimulating or irritating diuretic, and thus emmenagogue, for which latter purpose it has been much employed. It is poisonous in over-doses. A

ten-per-cent. tincture is official, the dose being 8 to 15 c.c. (2 to 4 fl. drs.). The extract, dose 0.2 to 0.4 gm. (gr. iii.-vi.), is a preferable form of administration.

H. H. Rusby.

BUBO (from *βουβών*, the groin; Ger. *Leistenbeule*; Fr. *bubon*), a term originally used by medical writers of antiquity to designate glandular tumors of the groin, was applied by authors of the period of the Reformation to glandular inflammations of every part of the body irrespective of their nature. Modern writers have again reserved the term for inflammatory affections of the lymphatic glands of the groin. While buboes are alluded to in the earliest medical treatises of which we have any knowledge, and the pathogenetic importance of the genitalia in their causation was apparently familiar even to Hippocrates, the distinctive types of the affection which are now generally recognized were, of course, unknown until long after the general outbreak of syphilis, which appeared at the close of the fifteenth century. Then, besides the adenitis, which suppurates and often leaves an ulcer, there presented itself a bubo which from its inception is indolent, unattended by pain, and rarely the seat of suppurative change. Gaspard Torella, Fallopius, Nicolaus Massa, Paracelsus, and other writers of that memorable epoch in the history of venereal diseases speedily recognized and described with sufficient accuracy this earliest systemic manifestation of syphilis. Nevertheless, the nature of buboes was so little comprehended that they were regarded as sympathetic in character, or as unsuccessful endeavors of nature to check through them the invasion of the system by the disease. That the majority of buboes result from the deposit in the lymphatic glands of a poison conveyed to them from a distance could not have been known prior to the discovery in 1651, by Olaus Rudbeck, of lymphatic vessels situated in different parts of the body and possessing a function of absorption like that of the lacteals previously described by Asseli. Even then precise knowledge of the subject was slowly developed, and it remained for the observations of Hunter, Swediaur, Benjamin Bell, and Ricord to depict the clinical symptoms and finally establish the etiological relations of the different varieties of the disease under consideration.

ANATOMICAL AND PATHOLOGICAL.—The subcutaneous cellular tissue of the groin encloses, together with the superficial blood and lymphatic vessels, a varying number (eight to twelve) of lymphatic glands, which receive their lymph from the subumbilical segment of the anterior abdominal wall, from the external genitalia, urethra, perineum, vagina, cervix uteri, anus, and inferior extremity. The size of the inguinal, as of other lymphatic glands, in their normal state is so small that in persons with a *panniculus adiposus* of ordinary thickness they cannot be felt through the skin. Oval or elongated in form, the glands of the groin are arranged in two quite distinct groups, the larger of which follows the course of Poupart's ligament, while the smaller forms part of the cribriform fascia covering the saphenous opening. The individual glands of these groups, when naturally large or enlarged from disease, present distinctive directions. Those which overlie the ligament have their axes parallel to the inguinal fold, while those of the lower group have their axes parallel to that of the lower extremity. This factor is of considerable importance, in that it often gives a clue to the source of the ganglionic complication, since the lymph from the external genitalia is conveyed to the upper, while that from the lower extremity passes to the lower chain. It must not be forgotten, however, that these groups communicate very freely with each other by numerous lymphatic vessels, in which the circulation is from the upper to the lower glands. Indeed, it is through the glands over the saphenous orifice and through one or two glands (Rosenmüller's) deeply seated underneath the *fascia lata*, that the lymph must pass from both lower extremity and genital area before it can enter the general lymph receptacle in the abdomen. This anatomical factor will account for the not very infrequent

occurrence of two suppurating glands on the same side of the body, of which one belongs to the upper and the other to the lower chain, the inguinal fold lying between them.

Formed of a capsule embedded in the periglandular adipose tissue, containing within it lymph sinuses networks of reticular connective-tissue and lymph cells, the lymphatic gland, when the seat of inflammatory changes, presents appearances which vary greatly with the degree of the inflammatory process and the nature of the primary cause. The acute adenitis which may follow in the wake of any traumatic or specific infection of the skin or mucous membrane, and which manifests itself clinically by moderate swelling and tenderness of the affected gland, is associated with dilatation of its blood vessels and proliferation of the lymph corpuscles contained in the meshes of the reticular network or stroma.¹ When this cellular infiltration becomes excessive the reticular network suffers from compression; it becomes rarefied, the capillaries are obstructed or completely torn. When deprived of their nutrition the infiltrating cell masses are speedily converted into pus foci. Through the confluence of these the gland capsule, already distended from the inception of the process, becomes an irritant to the surrounding parts: the subcutaneous cellular layer and the skin more or less rapidly participate in the morbid changes, and soon the suppurating bubo, having attained twenty fold the size of the normal gland, is emptied spontaneously or by the knife of the surgeon. After the evacuation of the pus the abscess cavity speedily contracts, and cicatrization ensues with such rapidity at times that the wound is closed in a week from the opening of the bubo. Not always does this process of repair follow so quickly the elimination of the pus. The behavior of the periglandular tissue is a most important factor in the events that are to follow. This is often the seat of more extensive inflammation than the gland itself. Minute abscesses form around the inflamed gland from obstruction of its afferent vessels, so that after the elimination from the gland itself this remains embedded in a secondary abscess cavity formed about it. Covered by granulations it may in time appear as a foreign body in the floor of an ulcer, or it may remain for months covered by integument yet surrounded by indolent sinuses. Nor is the pathological process that ends in suppuration necessarily limited to one gland alone. The infection may be conveyed from the gland originally involved to one or more in the vicinity, until a number of them are bound together in one large inflammatory nidus, the suppuration of which usually entails the destruction of a considerable extent of skin. To a large extent, the termination of an adenitis depends upon the nature and gravity of the primary disease. If the irritation in the lymph radicles of the affected gland is mild or evanescent, as in herpes, balanitis, erysipelas, or gonorrhœa, the consecutive adenitis rarely proceeds to suppuration. Absorption of the infiltrating cellular elements may supervene in a few days or even hours. On the other hand, long continuance of the local irritation, whatever its character, will at times completely change the results of the glandular inflammation in that the cellular infiltration, being insufficient in extent to induce suppuration, yet not disappearing by absorption, leads to organization. Here it is not the exuded lymph corpuscles that are converted into a durable tissue, but the reticular substance which forms the framework of the gland. In the suppurating adenitis this disappears; in subacute adenitis it undergoes a reactive hypertrophy. In the course of time the septa of the gland increase so greatly in thickness that the lymph corpuscles between them are seriously encroached upon. Hence the firm fibrous appearance of the section of a lymphatic gland that has been the seat of a chronic inflammation.

ETIOLOGY AND VARIETIES.—The inguinal glands differ in no way from those of other parts of the body, and the morbid processes to which they are subjected can be duplicated in those of the groin. Hence *a priori* reasoning as to the venereal origin (using the term in its widest significance) of an adenitis here situated must be strenuously

deprecated. Violent exercise, strains while lifting or while mounting a horse, direct trauma, herpes, furuncles, eczema genitalium, and scabies may all be the source of an inguinal adenitis. Some time ago there appeared at my clinic a lad of seven years, with two suppurating glands, the one above, the other below the ligament. The most careful inspection of genitalia and lower extremity failed to reveal anything abnormal. The cervical glands were not enlarged, nor were there traces of tuberculosis or syphilis discernible. The only adducible cause of the bubo was a severe fall from a sand bank, which the boy had sustained one week before aggravated symptoms supervened. Buboos such as these, which in no way depend upon an inoculable, undiscoverable primary disease, and which stand neither immediately nor remotely in connection with the sexual act, I have been in the habit of designating *non-venereal buboos*.

Each of the three typical venereal affections, viz., gonorrhoea, the chancroid, and the initial lesion of syphilis, may be attended by complications of the inguinal glands, which are known as *venereal buboos*, and are subdivided into, 1, the simple or inflammatory; 2, the virulent, and 3, the syphilitic varieties. They are produced respectively (1) by the irritation of a gonorrhoea and chancroidal or syphilitic ulcer; (2) by the chancroid solely, and (3) by the presence of the initial lesion alone.

1. Buboos are rarely produced by gonorrhoea. While a slight tenderness of the neighboring glands not infrequently attends a urethral discharge, it is very exceptional to witness in them an inflammation that ends in suppuration. Ferry states that in the United States Marine Hospital Service two and one-half per cent. of gonorrhoeas are followed by suppurating buboos (*Jour. Amer. Med. Soc.*, 112, p. 571). In three hundred and twenty-seven cases of gonorrhoea seen by Sigmund, suppurating buboos developed in nineteen. Yet buboos of considerable size, with extensive destruction of tissue, are occasionally encountered as complications of gonorrhoea. They have been met mostly in very young subjects, in persons of tuberculous habit, or in subjects debilitated by a previous attack of syphilis. Again, it is not unusual to find a chronic hyperplasia of one or more of the inguinal glands after repeated and prolonged urethral discharges, a condition analogous to that of the cervical glands in persons prone to catarrhal affections of the throat. The term "sympathetic bubo," formerly applied by preference to gland complications of gonorrhoea, is gradually being discarded. Whether the bubo results from purulent preputial catarrh, gonorrhoea, or chancroid, instances are not rare in which there can be detected that cord-like swelling along the dorsum of the penis which is but the evidence of a lymphangitis developed by direct propagation of the disease from its first seat. Still, the morbid process in the lymphatic vessels does not usually manifest itself by perceptible symptoms. Like the *cas deferens* in epididymitis, the lymphatic vessel conveys the irritant to the gland without being often seriously affected by it.

2. The chancroid is by far the most common precursor of the bubo. From its very inception to the period of its repair, and even for months after its complete closure, the chancroid may be the cause of an inflammatory bubo. This the soft sore may accomplish in its dual capacity of harboring the ordinary pus-formers and the special bacillus of Ducrey and Unna. Ricord formulated the law that when the chancroidal virus is absorbed into a lymphatic gland there must inevitably be a suppurating bubo, the pus from which, in turn, will reproduce a chancroid. When the pus from a bubo of chancroidal origin is not inoculable, it is presumed that the fluid absorbed from the chancroid did not possess the characteristic qualities of chancroidal virus. This is the distinguishing feature between the simple and virulent buboos originating in chancroids. Still, it is difficult to comprehend why a large, suppurating, yet non-virulent bubo should follow from the irritation of so small an area as is usually covered by a chancroid, when it so rarely follows the infinitely more extensive irritation of the urethra from gonorrhoea. It has been estimated that the

proportion of simple to virulent buboos (following chancroids) is nearly equal; it being 149 simple to 138 virulent.² These figures are far from conclusive, since every case should be made the subject of most careful inoculation before being utilized in statistics. The relative frequency of buboos in general as a complication of chancroids has been more accurately determined. Fournier³ has observed 207 chancroids of which 65 were complicated by suppurating buboos.

In 146 cases of chancroid observed at my dispensary in the Medical College of Ohio, during a period of two years, suppurating buboos were recorded in 40. Thus it appears that in about 28 per cent. of the total number of chancroids buboos appear. In private practice the proportion is not so large, since with proper treatment of the primary ulcer ganglionic infection can generally be averted. It is a remarkable fact that in women buboos are not so prone to develop as in men, owing probably to the fact that the latter cannot abstain from work for a trivial soft chancre. The size of the original sore does not appear to influence, in any manner, the action of the inguinal glands, since it is not unusual to find destructive buboos following small and superficial ulcers, while destructive chancroids remain uncomplicated. The retention of the discharge from the chancroid is, no doubt, an important element in the production of buboos, since those of the frænum and those associated with phimosis are relatively most often followed by them. With few exceptions the chancroidal bubo develops in the groin of the same side occupied by the first sore. When this is situated in the median line, and particularly when it involves the frænum, bilateral buboos are apt to supervene. Only in very exceptional cases is the irritation or virus conveyed across the median line, to the glands of the opposite side, through the anastomosis of the lymphatic vessels. Occasionally a bubo will form in the median line at the root of the penis, or in the pubic region, where a small lymphatic gland is often found at the confluence of the lymphatic vessels of the two sides. Pubic buboos were encountered in 3 out of 298 cases.⁴

The pus from chancroidal buboos is ordinarily sterile and free of micro-organisms. Inoculation with it as a rule fails. This has been shown by Strauss, Spitscka, and others. The most extensive investigations relative to this question have recently been made by Deutsch.⁵ He examined the pus from 66 buboos. Thirty-seven occurred with the soft sore, 29 with the hard or mixed ulcers. Bacteriological experiments were made with a view to establish auto-inoculability, and to determine the length of time required for the bubo to heal. Of the 37 cases occurring with the chancroid, inoculation upon the abdomen with the production of a typical chancroid was successful in only 3 cases. In these 3 cases the pus from the bubo showed the Ducrey bacillus. The pus from chancroidal buboos could be classified under three categories: (a) Sterile pus; (b) pus containing ordinary pus formers; (c) pus containing the Ducrey bacillus with or without the admixture of other microbes. In the 29 cases occurring with the hard or mixed sore, auto-inoculation was successful in only 3 cases, and in only 1 was a typical hard sore produced. It may safely be stated, therefore, that in the great majority of cases suppuration in buboos is the result of toxic absorption, and is not due to the entrance of micro-organisms themselves into the lymph channels and nodes.

3. Syphilis. The initial lesion of syphilis is almost invariably followed by a sclerosis of the upper chain of the inguinal lymphatic glands, of which the innermost is first involved during the first fortnight after the primary sore manifests itself. In the course of a few weeks the other glands of this region (*Pleiades ganglionnaires*), and subsequently the glands in general, become affected. Fournier failed to find induration of the inguinal lymphatics 5 times in 265 cases; Berkeley Hill⁶ 3 times in 176 cases; whereas Bumstead⁷ has never "met with a chancre which was not attended by induration of the neighboring lymphatic ganglia." It is a characteristic of the syphilitic

bubo that it involves the entire chain of lymphatic glands, and that its progress is not attended by acute symptoms. Hence this form of bubo is often termed *indolent*. In its morbid anatomy nothing of an inflammatory nature is apparent. The small-celled infiltration which takes place in the initial lesion of syphilis is reproduced in the inguinal glands. Every mesh of the reticulum is fully distended by cells. The induration resulting therefrom continues for months, and even for years, without terminating in inflammation or necrosis of the gland. As in the case of the primary induration, after continuing for a varying length of time, a fatty metamorphosis of the cells ensues; the detritus is absorbed, and the gland returns to its normal condition (*Rindfleisch*).⁸ In galloping syphilis and in that of lymphatic subjects, the inguinal glands at times undergo extensive suppuration. Even then it will be found that the immediate cause of the inflammation is a secondary pus infection of the primary ulcer, with the development in it of phagedæna. This suppuration of an indolent bubo, therefore, has neither a favorable nor a contrary influence on the subsequent course of the syphilis. While the suppurating adenitis is, as a rule, a sequel of the soft chancre, its presence does not infallibly demonstrate the non-infecting (chancroidal) character of the primary sore.

Bubon d'Emblée.—The buboos which have been thus far considered are ascribable to plainly discernible lesions in the area of origin of the lymphatic radicles of the affected gland. Therefore they are secondary in character. The question has for a long time been discussed whether, without the development of a lesion at the point where the virus entered the body, this could be directly absorbed and conveyed to the glands and produce in them its peculiar pathological effects. Authorities of great weight (Vidal, Reynaud, Benjamin Bell) have cited numerous instances in which such absorption without local reaction is supposed to have taken place. To designate this particular form of ganglionic disease the terms "primary bubo," "idiopathic bubo," and "bubon d'emblee" have been used as synonyms. It has already been observed that primary buboos could arise from direct trauma, excessive exercise, strumous habit, and other like causes. Aside from these etiological factors, it is at present deemed impossible for a venereal bubo to develop without pre-existing primary trouble. It is within the experience of every one that this primary affection may be very trivial in extent and of remarkably short duration, therefore escaping the attention of the patient. Here, as in the case of the minute dissecting wound that may lead to suppurating lymphadenitis, and even to death, the original lesion, or some trace of it, can always be found. Until it can be demonstrated that chancroidal pus or syphilitic virus can be made to permeate the unbroken skin, there is no good cause for believing in the bubon d'emblee. It is particularly through the efforts of Ricord, Langlebert, Fournier, and others that the "idiopathic bubo," for so long a period the subject of most ardent polemics, is now generally believed to have no actual existence.

SYMPTOMATOLOGY.—*Simple Bubo*.—The appearance of an inguinal bubo is ordinarily announced by a feeling of discomfort while walking. A passing sense of fulness causes the patient to examine the part, when he finds one or more tender glands in the groin. Palpation at this time reveals the presence of a resistant, movable swelling, tender to the touch, and varying in size from a bean to a cherry. Within a few days the symptoms rapidly increase in severity. The tumefaction, increasing in extent, is oblong in form with the long axis parallel to the groin when a gland of the upper chain is affected, and parallel to the axis of the thigh when one of the lower group is involved. A decided elevation of the skin becomes apparent before its implication in the process occurs. Pain is usually complained of, and it is either sharp and spasmodic in character or dull and constant. Hence follow disturbed sleep and impeded progression. With the extension of the inflammation to the periglandular tissue, the mobility of the swelling disappears, the tumor loses its well-defined outline, the skin itself be-

comes adherent and the seat of more or less redness. Even when symptoms so pronounced as these have continued for a week or more, resolution may supervene in the course of two or three days. Such a fortunate termination is more likely to ensue when the primary affection was a gonorrhoea, balanoposthitis, or herpes. But in undoubted cases of chancroid a gradual resolution of the acute inflammation, or its termination in a chronic induration, is not at all infrequently observed. These terminations are quite as likely to follow in the buboos which supervene during the early stages of the chancroid as in those that attend the reparative process of the sore or that follow its cicatrization.

When the inflammation passes to the suppurative stage the indurated mass generally presents a softer spot, which is as often situated out of, as in, the centre of the swelling. With the increase of the area of softening the skin changes to a dusky hue. An examination, while the skin is still intact, reveals distinct fluctuation, and when the attenuated integument is indented by the finger the indurated wall of the abscess can ordinarily be distinguished. It is at this time, from ten days to two weeks after the beginning of the bubo, that the pus is usually evacuated by incision. In quantity this does not often exceed an ounce. If left to itself, weeks will often elapse before the skin yields to the ulcerative process, during which time the abscess increases in its dimensions until it contains at times from four to six ounces of thick, creamy pus. When permitted to open spontaneously, the abscess usually opens at one point only, although two or three apertures are often formed. This feature of inguinal suppurating buboos requires especial mention. When the swelling has attained the size of a walnut or small peach, it will often appear to be subdivided by a deep furrow into two quite distinct growths, of which the smaller is usually situated below and nearer the median line. When suppuration is finally established, a separate opening will be formed or made necessary for each division of the swelling, irrespective of the question as to whether more than one gland is involved. Not always does the suppurating bubo run so acute a course. Instances are not at all infrequent in which the inflammatory symptoms develop in successive stages with intervals of quiescence. Such buboos often require several months before maturing, and for these cases the term "subacute" is occasionally reserved. The pus contained in them is usually watery in character, and ordinarily not very abundant.

The clinical course of a simple bubo, after it has discharged, does not differ materially from that of an abscess from other causes. In about thirty per cent. of all cases, and particularly in those in which an early incision was made, the walls of the abscess become agglutinated, and suppuration rapidly ceases. Generally, however, the discharge continues for from one week to many months before the abscess cavity is obliterated. Chronicity of discharge characterizes particularly those abscesses in which more openings than one have formed, and in which sinuses lined with exuberant granulations undermine the skin. In many of these cases, the force of the inflammation having been spent on the periglandular tissue, these sinuses lead down to one or more glands. When the integument covering the sinuses finally yields to the suppurative process, or is divided by the knife, the gland covered by granulations will appear in the floor of the ulcer or in the wound thus produced.

Virulent Bubo.—With the conveyance of the ptomaines or of the specific microbes from the chancroid to the lymphatic gland, suppuration in the latter is inevitable. The bubo of absorption, which results from this, in its inception presents symptoms precisely like those that belong to the simple bubo. The rapidity of development of the symptoms alone might arouse suspicions as to the virulent form of adenitis. It is only after the evacuation of the abscess that the differential diagnosis becomes practicable. Inoculation with the pus of the virulent bubo invariably produces a chancroid; inoculation with the pus from a simple bubo yields negative results save

in syphilitic subjects (*vide supra*). But the inoculation test is superfluous, since the progress of the virulent bubo after it is opened is usually sufficiently pronounced. The margins of the wound which gave passage to the pus become inoculated with the chancreoid virus. As in the chancreoid, during its period of progress the integument covering the virulent bubo is rapidly destroyed until a true chancreoid ulcer, varying much in area and depth, presents itself in the groin. When fully exposed to view, the floor of the bubo, from absorption, presents the yellowish-gray, irregular, and worm-eaten appearance of the chancreoid. The margin of the ulcer, tumefied at one part, appears attenuated or undermined at another. From the entire surface there is exuded a watery pus which is often tinged with blood. Capillary hemorrhages from the bubonic ulcer are often encountered as in the chancreoid. Indeed, the clinical history which belongs to the chancreoid is on a larger basis duplicated in the case of the bubo. Healing in rare instances in a few weeks, in less fortunate cases it continues in its destructive course for months, and occasionally even for years. When thus protracted, the ulceration usually assumes the serpiginous type, healing in one portion and extending in another. Thus the ulcer gradually spreads over abdomen, thigh, pubes, or gluteal region, leaving frequently ungainly cicatrices. In these cases the ulcerative action is often so sluggish that, as in lupus or rodent ulcer, it is almost imperceptible. Continuous auto-inoculation of the skin in the vicinity of the ulcer is the only plausible explanation of these protracted forms of bubo. Phagedæna, that most terrible complication of the venereal sore, occasionally attacks the virulent bubo. Under its influence the bubo may in a few weeks become converted into an ulcer the size of the palm. Superficial in some cases, in others the ulcer under its influence dips down into the tissues, producing extensive sloughs. Progressing among the blood-vessels, it has been known to open them and induce fatal hemorrhage. Fatal results have likewise been induced by the excessiveness of discharge and from pyæmia.

Syphilitic Bubo.—The inguinal adenopathy of syphilis is but the reproduction on a larger scale of the indurating process manifested in the primary lesion. Appearing early and affecting an entire group of glands, the syphilitic adenopathy yields a row of larger and smaller tumors, freely movable and easily felt, except in very obese subjects. These tumors are hard, resistant, not tender to the touch, and usually largest on the side of the primary sore. Oftener than in the other forms of bubo, the dorsal lymphatics of the penis participate in the morbid process and appear in the form of indurated cords with irregular nodosities. Like the enlarged lymphatic glands, these lymphatic cords are freely movable. It has already been observed that indolence characterizes the syphilitic bubo. Only in persons of scrofulous taint, and in cases of great malignancy of the syphilitic virus (galloping syphilis), does suppuration ensue. With or without treatment, the syphilitic bubo continues while the primary and many of the secondary manifestations remain. It is rare to find these buboes subside completely, even under treatment, in less than two or three months, and in many instances they survive all other syphilitic lesions, when they assume great diagnostic importance in determining the presence or absence of a syphilitic taint. After continuing sometimes in an unaltered state for two or three years, they finally subside spontaneously.

TREATMENT.—The treatment of buboes must necessarily vary with the nature of the primary trouble. In a prophylactic way nothing can be done to prevent the syphilitic bubo, while much can be accomplished in the prevention of simple glandular inflammations as complications of the chancreoid and gonorrhœa. In both these affections violent exercise and excessive walking and riding should be strictly interdicted. Irritant applications to the primary disease should be strictly avoided, since too astringent urethral injections and irritating ointments applied to chancreoids are often the immediate causes of gland complications. What influence has the cauteriza-

tion of the chancreoid upon the development of buboes? If statistics be carefully examined, it will be found that in about thirty per cent. of all cases buboes supervene, and that their development is uninfluenced by the use of, or abstention from, cauterization. For this reason the application of violent caustics to chancreoids is being more and more discarded. Of much greater importance as a prophylactic is cleanliness and the securing of a free escape for all discharges. It is for this reason that chancreoids treated in private practice are much less often complicated by buboes (according to my experience, one to eight) than those of hospitals, and particularly of dispensaries.

When the evidences of an adenitis become unmistakable, every effort must be made to bring about resolution of the inflammation, since this favorable termination is possible in every instance save those in which the chancreoid virus has been observed. As in other inflammations, rest in bed is the chief antiphlogistic measure, and its importance must be fully explained to the patient. Applications of very cold cloths will at this time prove serviceable. A rubber bag is preferable, since it acts at the same time as a compressor. Local applications of the *liquor plumbi subacetatis*, with cold compresses, have been highly recommended by Hamilton and Zeissl, and are doubtless often beneficial. It is at this period of the inflammation that repeated applications of the *tincture of iodine* are so frequently resorted to. Although this practice has stood the test of time, and has the sanction of eminent authorities, it seems to me devoid of benefit and often pernicious in its results, since it not infrequently is followed by violent inflammation of the skin and hair follicles, even to the extent of vesication. Another important objection to the tincture of iodine is the fact that the artificial condition of the skin produced by it frequently prevents the early detection of suppuration. When, for the purposes of absorption, iodine seems indicated, I have lately employed the iodide of lead quite extensively, using in connection with it veratrin, belladonna, or opium to allay pain. Inunction with iodine-vasogen, six per cent., likewise serves a good purpose. Since compression, where it is practicable, plays an important rôle in the treatment of inflammations, it should be used here. It can be best applied by means of a bag half-filled with small shot. If the patient cannot be retained in bed, collodion applications and a compress, held in position with a spica bandage, should be resorted to. Happily for the patients, a number of methods of aborting the inflammation which were formerly practised have been entirely abandoned. Among them may be mentioned methodical compression by instruments, repeated blistering with the subsequent application of mercurials, the forcible rupture of the gland capsule, and the use of the seton. To these may be added the subcutaneous incision of the gland and the somewhat analogous procedure of Auspitz. The latter observer punctures the inflamed gland even before suppuration can be detected. A probe is introduced through the opening and the glandular septa are torn; the substance of the gland is thus broken up and discharges through the external wound. This practice of Auspitz has not found and does not deserve many followers. Nevertheless, it has been most highly indorsed by Bumstead. Intra-glandular injections of iodoform emulsion, carbolic acid, and corrosive sublimate have been used to avert suppuration. Welander (*Arch. f. Dermat. u. Syph.*, 1891, H. 3) advocated the injection of a one-per-cent. solution of benzoate of mercury. Of 78 cases reported, 56 were cured without suppuration. Perry (*loc. cit.*) employs it in all non-suppurating buboes, injecting twenty to thirty minims of the solution. More than two injections are rarely necessary and the time required to effect a cure is fourteen days.

When suppuration has been established, the treatment of the bubo must not vary from that of abscesses in other easily accessible portions of the body. *Ubi pus, ubi incision* is a rule that should be adhered to in the disease under consideration. The ways in which the pus is to be

evacuated are numerous. Within the last fifteen years aspiration has often been resorted to, and has been highly recommended by a number of French and German observers. When it is evident that the purulent accumulation is small, and that a suppurative periadenitis has not yet developed, aspiration cannot be too often practised. Attended by little pain, it can do no harm, and is sometimes followed by permanent agglutination of the abscess walls. Among recent writers R. Hahn speaks most favorably of it. In a series of two hundred cases, seventy per cent. were cured by aspiration alone. In three-fourths of the cases one aspiration sufficed (Mittheil. aus der Hamburg. Krank. Anstalt, 1898). When the abscess is large and the skin attenuated, the only hope for a speedy recovery lies in the prompt and complete evacuation of the pus. The use of the Vienna paste, blisters, and multiple incisions to effect this have been properly abandoned. The last-named method, particularly recommended by Vidal, Zeissl, and Langston Parker, and still practised by many older practitioners, is prone to result in the formation of a number of ulcers in the groin. In the great majority of cases, a single incision, with a narrow blade, is all the operative interference called for. Until two decades ago the incision usually made was parallel to the inguinal fold and extended the entire length of the swelling. The result of such an incision is almost invariably a wound the edges of which are in apposition except when the patient is lying down. Again, when ulceration of the margins of the wound ensues, the skin is very apt to become undermined or inverted. Hence very ungainly cicatrices result that might ordinarily be avoided by making the incision in a different manner. A good procedure is the following: The field of operation being prepared in the usual way, local anesthesia is produced by the ether spray or preferably by the Schleich method (see *Anæsthesia, Local (Surgical)*, in Vol. I.). The long and narrow knife, while held perpendicularly to the surface of the body, is then gently forced into the centre of the fluctuating area. The skin and capsule of the gland resist slightly the intrusion of the blade. When this resistance has been overcome, the cutting edge of the knife is turned about ninety degrees and then withdrawn. With a little pressure, or by inserting a grooved director into the cut, the accumulated pus rapidly escapes. To prevent a too speedy closure of the opening, it is advisable to insert a strip of iodoform gauze or carbolized gauze, which also insures the ready drainage of the abscess cavity. When this is removed, after remaining twenty-four hours, it will invariably be seen that the aperture, measuring from one-eighth to one-fourth of an inch in diameter, is circular in outline, and sufficiently large to permit the escape of the pus as rapidly as it is formed. The after-treatment consists of the application of bichloride gauze fomentations, or the use of the balsam of Peru 10, and castor oil 100, mixture. For cleansing the abscess cavity, injections of hydrogen dioxide may be called for from time to time. Thus treated the bubo usually heals in from ten days to two weeks. As already remarked, the bubo often has a tendency to point at a number of places, when it of course becomes imperative to use the knife repeatedly. The practice of Milton, who uses a very large needle for this purpose, might profitably be imitated in timid patients and by practitioners unaccustomed to the use of the knife. Not so, however, in case of extensive periadenitis and of virulent bubo. When the abscess is very large, a somewhat freer incision is necessary. Even here it seems to me better to make it parallel to the axis of the limb, irrespective of the direction of the bubo. The wound thus made is more easily maintained patent, and in making it there is manifestly less danger of wounding the deep-seated vessels than from the incision as generally made. Almost immediately after opening a large bubo there will be a sinking in of the integument. In the course of a week, or even less, this skin becomes discolored, curled upon itself, or undermined. Under these circumstances it is always best to remove the cutaneous flaps with a few strokes of the

curved scissors, thus converting the abscess into an open ulcer. In other cases fistule in the groin continue to discharge indefinitely. They should be freely laid open with the knife or elastic ligature, and the exuberant granulations removed with the sharp spoon. When once the bubo has been converted into an open ulcer its treatment is ordinarily successful, no matter what applications be made, although at times stimulating medicaments are called for to overcome the sluggishness of the granulations. Among the large number of agents specially recommended for this purpose there should be mentioned iodoform, tincture of iodine, tannin, permanganate and chlorate of potash, preparations of iron, and boric acid. Iodoform usually acts so satisfactorily as almost to merit being called a specific in the treatment of the open bubo. Applied in the form of ointment alone, or with tannic acid, or in ethereal solution (iodoform, 8; ether, fort., 30), it soon causes the floor of the ulcer to be covered with small and healthy granulations which rapidly lead to its permanent closure. When the odor of iodoform is an insurmountable objection to its use, the permanganate of potash (0.5 to 30.0), in aqueous solution, is an excellent substitute. The balsam of Peru dressing already referred to also forms an excellent application. When the reparative process is exceptionally protracted, from the size of surface involved, skin-grafting has been used with as much success as in other portions of the body.

Attention has already been directed to the fact that the lymphatic gland covered by granulations often presents itself in the floor of the bubonic ulcer, or is hidden in the depths of a sinus. The gland then acts as a foreign body. It should therefore be removed as soon as it is discovered. Whether this is to be accomplished with scissors, ligature, or Volkmann's spoon must be determined by the circumstances of the case and the predilections of the surgeon in charge.

Excision.—With the development of modern methods of wound treatment excision of buboes, which if left alone would probably suppurate, has become a favorite method of treatment. It is not to be recommended as a routine procedure, because of the extent of operation necessary to remove all glands and of the danger of wound infection from the primary ulcer. Furthermore, the time required for cure, averaging thirty days, exceeds that which is needed when conservative measures alone are adopted.

Excision is indicated when infection has taken place in a number of glands and when it is evident that the process of suppuration will be long continued. By free excision in these cases the healing process can be curtailed as to time. Primary union should not be sought for; in most cases it will fail.

It is self-evident that the systemic treatment of patients afflicted with buboes must not be neglected. Nutritious diet and tonics are always indicated after the process of suppuration has become somewhat protracted. This is particularly true if the ulcer shows any tendency to phagedæna. It is then that cod-liver oil, quinine, and alcoholic stimulants are indicated, and that the most effective local measures must be resorted to. Blisters, fuming nitric acid, the carbo-sulphuric paste, bromine, and even the actual cautery must at times be employed before the tendency of the ulcer to spread is permanently overcome and the process of cicatrization is well established. Fortunately, this class of cases is becoming rarer from year to year.

Syphilitic buboes, as a rule, require no local treatment. As the secondary manifestations of the disease disappear under treatment, the enlargement of the inguinal glands also subsides. When the induration in them persists after other symptoms have yielded to treatment, inunctions with the mercurial ointment or the oleate of mercury over the ganglia will often cause their reduction in size. Compression might also be resorted to in these cases with marked benefit.

Joseph Ransohoff.

¹ Rindfleisch: *Pathol. Gewebelehre*, p. 139.
² Jullien: *Traité pratique de mal. vénér.*, 1879, p. 429.
³ *Dict. nouveau des sc. médicales*, vol. v., p. 764.