

BURSÆ. (SURGICAL.)—The pathological lesions of bursæ that demand surgical relief are those which follow traumatism and various forms of acute and chronic inflammation. Of the large number of bursæ and synovial or bursal sacs in the body, a certain few, by reason either of their situation or of their structure, are especially prone to cause trouble. These alone will be mentioned in this article, although the lesions discussed in connection with them may also be found in other less well-known bursæ. The affections of other synovial sacs, which are really only larger bursæ, will not be considered here because their importance demands that they be separately enumerated. Such are the synovial linings of joints, and the serous linings of the larger cavities existing in the skull, spinal column, thorax, abdomen, and scrotum.

ACUTE LESIONS.—Traumatism.—A fall upon the elbow or knee may cause a contusion of the subcutaneous bursa marked by pain and tenderness, with only slight redness, heat, and swelling. Often the traumatism will give rise in addition to an effusion of serum and sometimes to a hemorrhage into the bursal sac. Under such circumstances there will be, in addition to the signs noted above, that of a well-marked rounded tumor, not attached to the skin. If the bursa is filled with serum, it will be exquisitely fluctuating, though less so if filled with blood.

Treatment.—The affected part should be kept quiet even though to accomplish this end splints or rest in bed are necessary. A mildly antiseptic light wet dressing should be applied, and covered with either cracked ice or a hot-water bag. When the pain and cutaneous swelling have subsided, a flannel bandage, or straps of rubber plaster, will hasten the absorption of serum from the bursal sac.

If rest and pressure do not suffice for the absorption of the serous contents, the latter may be evacuated and pressure again applied. If the sac refills, it may be again emptied and then partly filled with iodine or carbolic acid according to the plan of treatment for hydrocele; or it may be excised.

If a small blood clot exists, similar treatment, *i. e.*, by cold, rest, and pressure, is justifiable. If the clot is of considerable size, it is better to make a short incision, remove the clot, suture the sac and skin, and apply pressure so that the walls of the sac shall remain in contact. If the surgeon is not absolutely sure of his asepsis, he may leave in a drain of six threads of silkworm gut for two days.

Internal Traumatism.—Another form of traumatism occurs from within, that is, through injury of the serous surfaces by the overuse of muscles. As a result the bursal sac becomes sore or distended with fluid, or the serous membrane becomes dry and its surfaces crepitate when they slip on each other. As illustrations of these three types of mild inflammation may be mentioned a bunion which has become sore from a long walk, the distention of the bursa under the tendo Achilles from the same cause, and the crepitation of the extensor tendons of the fingers and hand but especially those of the thumb, a condition which is often produced if a man who has been idle for some weeks starts in energetically at moving furniture or engages in some other hard labor. The swelling and tenderness will be distinct though slight, but the chief symptom will be a fibrinous creaking felt along the course of the tendons when the least motion is imparted to the hand. Sometimes, when the patient has been asked to move the hand a few times in order to demonstrate this symptom, it will entirely disappear.

Treatment.—The treatment of lesions due to traumatism from within does not essentially differ from that of lesions due to traumatism from without. If pain is a prominent symptom, and there is little swelling, the application of iodine, either in the form of the tincture or in that of an ointment, may give relief. In the case of crepitating tendons, a few days' rest of the hand will effect an entire cure; but the patient should be warned against a too speedy return to hard work.

Infection.—Traumatism may produce or be followed by a much more serious condition than those thus far

considered, namely, infection. This may be direct and obvious, as when the wound opens into the prepatellar bursa; or indirect as when the germs introduced by a pin-prick in the finger find their way into the serous sacs about the flexor tendons. In both instances more or less cellulitis will follow together with a collection of seropurulent fluid in the cavity of the bursa. Pus may also accumulate outside of the bursal sac; for example, in the hand an abscess, starting in infection in the sheath of the flexor tendons, may point posteriorly between the heads of the metacarpal bones. Under such conditions an anterior incision to open the sheath, as well as a posterior one to open the point of the abscess, will usually be required. This infection of a digital tendon sheath is a very common one and bears the popular name of felon, which see.

Treatment.—If the existence of pus is uncertain in any of these infective cases, rest and a wet antiseptic dressing are permissible. The patient should be kept under close observation, and if the process does not improve in a day, or if signs of accumulation of pus appear, a suitable incision should be made. A *suitable incision* is one which relieves the tension, evacuates the accumulated pus, and allows the escape of pus yet to be formed. The mere pricking of a bursa full of pus, and the cutting of every felon clear to the bone, are both examples of bad workmanship. And drainage requires judgment no less than the incision. The comfort of the patient and the rapidity of his recovery are best provided for by a wet gauze dressing. If the incision has been properly made, and the walls of the bursa have been kept apart by gauze for a few days until granulation has begun, the gauze may soon after be removed from the bursal cavity without danger of pocketing, if only drainage is facilitated by a constant moist dressing. For this purpose nothing is better, and scarcely anything cheaper, than one-per-cent. creolin solution. The gauze may be wet with this before it is applied and after that kept wet with plain cold water. Such a dressing will keep sweet two or three days if necessary.

CHRONIC LESIONS.—Repeated Traumatism.—Repeated slight injuries may produce chronic inflammation of a bursa, with accumulation in its cavity of a serous or mucoid fluid, according to the character of the bursal lining. Thus in the bursæ overlying the olecranon and patella, the accumulated fluid is usually viscid, glairy. The content of a ganglion may be of the same nature.

The elbow and knee are so exposed to injuries of all sorts that they are often the seat of occupation diseases, and hence the names which have been given to chronic bursitis in these regions—miner's elbow, and housemaid's knee. These lesions are by no means, however, confined to these two classes of workers.

The bursa gastrocnemio-semimembranosa sometimes fills with fluid as the result of a sudden strain, but the trouble is more often chronic than acute. The patient suffers from moderate disability and consults a doctor in reference to a smooth tumor lying to the outer side of the popliteal space. The symptoms are plain enough if one has the lesion in mind, but unfortunately a mistaken diagnosis is often made in these cases.

Another chronic bursitis with accumulation of serous or mucoid fluid is usually found in connection with a joint, sometimes in connection with a tendon sheath, and is called a ganglion. It presents itself as a small rounded tumor, tense, elastic, free from the normal skin, but only slightly movable on the deep parts. When cut down upon the sac can be readily freed superficially and at the sides, but its base is intimately associated with the fibrous capsule of the joint, or the tendon sheath, and its cavity may or may not open freely into the cavity of the normal structures. It is still a disputed point whether a ganglion is a bursal outgrowth from the lining of a joint or tendon sheath, or is a fibrous tumor, in which a cavity has subsequently formed and has then opened into the preformed synovial cavity of joint or tendon.

Treatment.—The old treatment of a ganglion was to crush it by a sharp blow with a heavy book, and to apply and keep up pressure by a bandage. This treatment

will often result in cure in a recent case, but often too, owing to the thickness of the wall of the ganglion, rupture does not follow the blow. Often, too, the sac refills.

The certainty of aseptic excision of such tumors has rendered the method above described obsolete. When the skin has been cleansed and anesthetized, an incision should be made over the crest of the ganglion parallel to the long axis of the limb. It should extend one-third inch beyond the edges of the tumor. The sac should be freed from the skin and at the sides before it is cut into. But nothing is gained by its removal entire, and as the operation is made more difficult by this plan of action, it should not be followed, but the sac, when freed laterally, should be split open and emptied. Any communication with joint or tendon sheath will then be manifest, and the base of the sac may be easily and surely removed. If there is a distinct neck it may be ligated, so as to close the cavity of the joint, or the joint may be closed with a suture, or allowed to close of itself. The wound should be carefully sutured, and ought to heal quickly without drainage.

Of course there can be no thought of "breaking" and "scattering" a chronically distended patellar or olecranon bursa. All such should be excised. The practice of making an incision and allowing the sac to granulate uselessly delays the time of complete recovery in non-suppurative cases. It is difficult to anesthetize the base of an olecranon or patellar bursa, so intimate is its attachment to the periosteum. Hence, unless the patient is ready to stand some pain, it is wise to give a general anesthetic.

Productive Inflammation.—Sometimes the chronic inflammation of a bursa is of the productive type, and as a result the inner lining of the capsule thickens until the cavity is in great part obliterated, its place being taken by more or less recent fibrous tissue. It is useless to attempt the absorption of such a mass. The whole tumor should be excised and the wound sutured. This form of bursitis is most commonly found in the prepatellar bursa.

Tuberculous Inflammation.—Bursæ are very subject to tuberculous inflammation. In a certain number of cases in which no history of injury exists a bursa, or more often the synovial sheath, will gradually swell up and become fluctuating. When opened the sac will be found to contain serous or mucoid fluid, and often a large number of rice bodies. The contents are similar to those of a tuberculous joint in which the trouble began in the synovial lining and has not yet progressed to the destruction of bone.

In some of these chronic cases the clinical and bacteriological examination make the diagnosis of tuberculous synovitis an easy one; but it by no means follows that every lesion of this sort is tuberculous; even the microscopical character of some chronically inflamed bursæ is in bitter controversy. That is a question, however, which the surgeon may well leave to the pathologist.

Treatment.—There is only one satisfactory method of handling these cases—by excision. If the synovial sacs are affected the complete removal of every bit of inflamed tissue is out of the question. Still if a major portion be removed nature may do the rest. Even though the tendons be widely exposed by the removal of the diseased tissue, they may remain perfectly movable if the wound heals primarily. In general the results which follow operation upon the lesser synovial sacs are of a favorable character.

BURSERACEÆ.—A small, but rather important family of some sixteen genera and about two hundred species, distributed through all tropical and some sub-tropical regions. A few fruits are somewhat eaten (Protium), and some of the seeds yield useful fixed oils. The principal value of the family resides in its numerous gum resins and oleo-resins, which have from the earliest times been used for incense and recognized as important articles of commerce. The best known of them are myrrh, bdellium, olibanum, and elemi, which represent the constituents and properties of the family.

Henry H. Rusby.

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BUTTERNUT. JUGLANS.—"The bark of the root of *Juglans cinerea* L. (fam. *Juglandaceæ*), collected in the autumn," U. S. P. The butternut is a medium-sized tree, with short, freely branching trunk and a light foliage of pinnate leaves. The flowers are monoecious: the staminate, in lateral drooping catkins; the pistillate few together in terminal clusters. It is a widely distributed tree, growing in the middle latitudes of North America, furnishing a useful cabinet wood, edible fruit, and a fair dyeing material. The description of the Pharmacopœia is poor, and applies rather to the stem bark. The bark occurs in large quills or curved pieces, about one-quarter of an inch thick. It is of a dark chocolate-brown throughout, the outer surface developing a reddish tinge in time. The outer surface is very little, if at all, fissured or scaly, but is somewhat warty. The inner surface is shagreened with partly detached fibre, in autumn-collected bark, but smooth if collected during the spring or summer. The fracture is weak and soft, but somewhat fibrous, and delicately checkered. It has a feeble odor and a bitter, acid taste.

It contains a little tannin and volatile oil, fourteen per cent. of fat and a large amount of *juglon*, *nucin*, or juglandic acid, which crystallizes in deep yellow needles and is the active constituent.

ACTION AND USE.—Butternut is a mild cathartic, operating, usually, without pain or irritation, well adapted to continuous administration, and worthy of more frequent use than is made of it. Dose, 1 or 2 gm. (gr. xv. ad xxx.). An extract, extractum juglandis—dose, 3 to 6 dgm. (gr. v. ad x.)—is the only preparation.

ALLIED PLANTS.—*Juglans regia* Linn. is the European walnut (*Noyer commun*, Codex Med.); its leaves are the *Folia Juglandis* of the German Pharmacopœia; its oil, the walnut oil of the market. The rind of the green fruits is collected and dried for a stomachic and vermifuge. It contains the *juglon* (*nucin*) above mentioned. The leaves are used for "scrofula, rickets," etc.

Juglans nigra, the black walnut, has probably similar properties to those of butternut. Henry H. Rusby.

BUTTERWORTH'S MINERAL SPRING.—Kent County, Michigan.

Post-Office.—Grand Rapids. This spring is located on Huron Street, in the city of Grand Rapids. Adjoining is a commodious bath-house, with suites of rooms on separate floors for ladies and gentlemen (Walton). The analysis is by Dr. S. P. Duffield.

Solids.	Grains.
Sodium bicarbonate	5.00
Calcium bicarbonate	8.34
Magnesium bicarbonate	5.85
Iron bicarbonate	.97
Calcium sulphate	75.15
Sodium chloride	12.73
Potassium chloride	9.60
Calcium chloride	6.10
Magnesium chloride	41.86
Alumina	.41
Silica	.52
Organic matter	.67
Total	167.20

The water has a considerable resemblance to that of Bath, England. It contains, however, a much larger proportion of chloride of magnesium.

James K. Crook.

BUTYL CHLORAL HYDRATE.— $C_4H_9Cl_2O, H_2O$. This substance, formerly erroneously styled *croton chloral hydrate*, was introduced into medicine in 1870 by Liebreich, but has not met with much favor, and has failed to secure official recognition in the United States Pharmacopœia. Butyl chloral hydrate is in the form of colorless crystalline scales, of an odor and taste reminding of ordinary chloral hydrate. It has the disadvantage, as compared with the latter substance, of being but sparingly soluble in cold water. It dissolves freely in alcohol, in glycerin, and in boiling water.

Butyl chloral hydrate is closely allied, chemically, to

ordinary chloral hydrate and resembles that compound in its effects upon the animal system. Its only recommendation to medical favor lay in its supposed property of being peculiarly anodyne to the trigeminal nerve (Liebreich), and so of peculiar promise for the alleviation of neuralgias of the face and head; but this property certainly does not exist to any marked degree. Practically, the drug is only a comparatively insoluble, and therefore inconvenient, substitute for ordinary chloral hydrate. It may be given in doses ranging from 0.30 to 2.00 gm. (gr. v. to xxx.) in syrupy mixture.

Edward Curtis.

BYRON SPRINGS.—Contra Costa County, California.

POST-OFFICE.—Byron Springs. Hotel and cottages. These excellent springs are pleasantly situated near the foot-hills, on a spur of the Coast Range of mountains, about 16 miles southeast of Mount Diablo, and 68 miles northeast of San Francisco. They are reached by the railroad line running from San Francisco to Stockton and Sacramento via Martinez. The springs are one mile and a half from Byron Station on this line. They lie in a small valley leading from the San Joaquin plains. The elevation is about 100 feet above tide water, and the climate is mild and pleasant. An excellent hotel and a number of cottages have been erected for the accommodation of guests. Being only three hours' ride from San Francisco, the place is visited by thousands of people every year, and is constantly increasing in popularity. The springs are upward of fifty in number, and many of them are of great therapeutic value. They range in temperature from 52° to 140° F. Within a few feet of each other one finds a cold carbonated spring and a hot sulphureted spring. The entire basin has the appearance of being an extinct volcanic crater. The cold soda springs probably come largely from the surface water, while the hot springs undoubtedly have a much deeper origin down in the earth's crust. Of the fifty or more springs only seven or eight are in active use. We present several analyses made by Dr. Winslow Anderson:

THE "LIVER AND KIDNEY" SPRINGS.

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Sodium chloride.....	622.07
Potassium chloride.....	33.74
Potassium iodide.....	.79
Potassium bromide.....	Trace.
Magnesium chloride.....	3.92
Magnesium carbonate.....	15.75
Calcium chloride.....	85.37
Calcium sulphate.....	1.12
Calcium carbonate.....	.59
Barium carbonate.....	.33
Ferrous carbonate.....	.72
Ammonium chloride.....	.05
Silica.....	1.00
Organic matter.....	Trace.
Total.....	766.05
Free carbonic acid gas.....	7.82 cubic inches.
Temperature of water.....	66° F.

The analysis shows this water to be heavily impregnated with saline ingredients. The water is said to have a special action on the liver and kidneys, which fact gives the spring its name. It is said to be very useful in dyspepsia, chronic hepatic diseases, obstruction in the gall ducts, and what is known as "gin livers." Its good effects are also observed in intestinal atony or torpidity of the bowels. The water is diuretic, and is said to have been successful in a number of cases of albuminuria. Its best effects are observed in alcoholic dyspepsia, and in the "rocky" and dilapidated state of the system consequent upon excessive conviviality.

THE "WHITE SULPHUR SPRING."

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Sodium chloride.....	12.01
Sodium bicarbonate.....	12.94
Sodium sulphate.....	1.34

SOLIDS.		Grains.
Potassium chloride.....	Trace.	2.37
Potassium carbonate.....	Trace.	2.37
Potassium sulphate.....	Trace.	2.37
Magnesium chloride.....	2.50	
Magnesium carbonate.....	1.13	
Calcium carbonate.....	.51	
Calcium sulphate.....	3.00	
Ferrous carbonate.....	.26	
Silica.....	Trace.	
Organic matter.....	Trace.	
Total.....	36.06	

Carbonic acid gas.....	21.17 cubic inches.
Sulphureted hydrogen.....	5.80
Temperature of water.....	76° F.

This will be seen to be a light alkaline-sulphur water, with a well-marked quantity of ferruginous salt. Its action is tonic, diuretic, alterative, aperient, and antacid. It is very useful in affections consequent upon the uric-acid diathesis, such as rheumatism, gout, glandular enlargements, and many forms of skin disease.

THE "BLACK SULPHUR SPRING."

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Sodium chloride.....	395.00
Sodium sulphate.....	Trace.
Sodium bicarbonate.....	35.62
Potassium chloride.....	Trace.
Potassium sulphate.....	.74
Potassium iodide.....	.16
Potassium bromide.....	1.00
Magnesium chloride.....	9.50
Magnesium carbonate.....	9.00
Calcium chloride.....	3.20
Calcium sulphate.....	5.95
Calcium carbonate.....	.70
Ferrous carbonate.....	Trace.
Barium carbonate.....	Trace.
Ammonium chloride.....	1.10
Silica.....	Trace.
Organic matter.....	Trace.
Total.....	461.97
Carbonic acid gas.....	25.60 cubic inches.
Sulphureted hydrogen.....	8
Temperature of water.....	90° F.

This water contains a considerable quantity of the chlorides and carbonates, and is largely diuretic in consequence. It is also heavily charged with carbonic acid gas, and has a fair amount of sulphureted hydrogen gas. It is indicated in catarrhal irritation and inflammation of the genito-urinary tract, and has proved of service in cystitis, Bright's disease, dyspepsia, and constipation. It is largely used for bathing purposes.

Among other valuable springs at Byron are the "Iron" spring, a well-marked alkaline-chalybeate water; the "Hot Salt" spring, having a temperature of 122.3° F. and much used for bathing; the "Iron Pipe" spring, and the "Surprise" spring. This latter spring is one of the most heavily charged saline waters in the world, containing 15,000 grains of common salt to each United States gallon of 231 cubic inches. With other mineral ingredients it is known to possess over 18,000 grains—about 40 ounces, or 33 per cent. of solid constituents to the gallon. The following comparative table of heavy waters shows the Surprise spring to be one of the most remarkable known.

ONE UNITED STATES GALLON CONTAINS:	
	Grains.
Sea water.....	2,138.91
Mono Lake (Cal.).....	2,915.16
Castalian Mineral Spring (Cal.).....	4,422.25
Owens Lake (Cal.).....	7,000.60
Syracuse, N. Y. (salt well).....	9,221.00
Salt Lake (Utah).....	about 11,000.00
Dead Sea (Holy Land).....	13,488.10
St. Clair Springs (Mich.).....	17,704.60
Clark's Red Cross Mineral Springs (Mich.).....	17,825.77
Byron Surprise Spring.....	18,773.73

The water is highly diuretic and laxative when taken internally, and ought to be valuable for bathing purposes. Two large bath-houses have been built at Byron, fitted with sulphurous, steam, vapor, and water baths in tub or plunge, at all temperatures. The moor or mud baths

form an important feature of this resort. The hot sulphurous, saline mud has become famous in the treatment of obstinate cases of rheumatism, gout, arthritic joints, scrofula, and skin diseases. The following analysis shows the mineral constituents of this mud:

ONE UNITED STATES GALLON CONTAINS:

SOLIDS.		Grains.
Sodium chloride.....	274.93	
Sodium phosphate.....	42.16	
Potassium chloride.....	26.40	
Potassium iodide.....	.32	
Potassium bromide.....	Trace.	
Magnesium chloride.....	2.06	
Magnesium sulphate.....	19.60	
Calcium chloride.....	7.50	
Calcium sulphate.....	36.05	
Calcium carbonate.....	3.09	
Ferrous sulphate.....	.76	
Ammonium chloride.....	Trace.	
Silica.....	5.62	
Organic matter.....	7.34	
Total.....	425.83	

Free carbonic acid gas.....	17.75 cubic inches.
Free sulphureted hydrogen.....	14.50
Temperature of mud.....	110° F.

REFERENCES.

Winslow Anderson: The Mineral Springs and Health Resorts of California, 1892.
J. K. Crook: The Mineral Waters of the United States, 1899.

James K. Crook.

CACAO, BUTTER OF.—*Oleum Theobromatis.* Oil of Theobroma. "Cocoa Butter." "A fixed oil expressed from the seeds of *Theobroma Cacao* L. (fam. *Sterculiaceae*)" (U. S. P.). The chocolate tree is a native of tropical South America, where we have occasionally seen small forest areas which consisted almost wholly of it. These wild trees only occasionally produce fruit, for which the trees are very extensively cultivated in all tropical countries. There is great variation in the quality of the seeds coming from different regions. Under cultivation, the tree grows like an apple tree, which it closely resembles, from a distance, in form and general appearance. The oblong-ovate leaves are about a foot in length, thick, and rich-looking. The flowers are small and inconspicuous, growing in little cymes directly from the bark of the branches, or even of the trunk. The fruit, about six to ten inches long and half as thick, is oblong-ovoid, coarsely ribbed or grooved, so as to look not unlike a narrow, pointed melon. It has a thick, hardish rind, like a pumpkin or squash, and its color varies through shades of yellow, orange, and red to purple. It is filled with a whitish pulp, as soft as the flesh of a ripe melon and of a very fine texture. The numerous seeds are embedded in this pulp and attached to a soft central placenta. This pulp forms the basis of a delicious jelly of a beautiful purple or wine color. The seeds, after being cleaned of the pulp, are known as raw seeds. In this condition they are bitter and astringent and unfit for use. Two methods of curing are in vogue. The first is to enclose them in tight boxes and allow them to "sweat." The second is to "clay" them by burying in holes in the earth. Either process results in fermentation, by which the outer coating is caused to peel off, and they lose their disagreeable taste. They are then dried, cleaned, and marketed under the name "cacao" (pronounced kah-kah'-o; or in English, kay-kay'-o). Venezuelan clayed cacao is probably the most highly esteemed and is the most expensive. The seeds are about as large as unshelled almonds, oblong-ovoid and somewhat flattened, blunt at both ends, of some shade of brown, veiny on the outer surface. The shell is thin and brittle, the cotyledons friable and fatty. The latter are wrinkled, and in good seeds fill the cavity loosely, with an irregular, small space in the centre. The taste is slightly bitterish, but agreeable. For chocolate manufacture, the seeds are roasted and shelled and the kernels finely ground into a paste, with or (usually) without a very slight addition of water. In the process

a portion of the oil separates. In the earlier manufacture in the United States, this, with frequently an additional portion, was removed, making our chocolate dry. We have since learned so well from our tropical relatives that we not only retain all of this oil, but abstract a portion in making the poorer grades of chocolate, to add to the richer and finer grades.

The seeds yield almost half their weight of fat, about a third as much albuminous matter, considerable starch, and about one and one-half per cent. of the alkaloid *theobromine*. The shells removed from the seeds yield about one per cent. of this alkaloid. They are utilized for the preparation of an inferior drink. The use of chocolate produces, in a milder degree and after a longer time, the cerebral stimulation of coffee. As the latter acts through its caffeine, which is methyl theobromine, it would appear that some transformation of the theobromine of chocolate must occur in the system.

Cacao butter is obtained from the seeds by the aid of heat, either by pressing with heated rollers or by boiling. The cake which remains is ground into "breakfast cocoa." The cacao butter occurs in cakes of a yellowish-white color; has a slight, agreeable odor and an oily taste, a little like that of chocolate. Its specific gravity is from 0.970 to 0.980. It melts at from 86° to 91.4° F., and is soluble in 100 parts of alcohol. It is much subject to adulteration with other fats, for the detection of which the Pharmacopœia provides ample tests. The peculiarities of this fat are its hardness and its melting point, at about the temperature of the body. This combination renders it exceptionally useful for the making of suppositories and bougies. As it does not readily decompose like other fats, it becomes a useful base for medicaments, and is, for the same reason, frequently employed in hot countries as a delicious substitute for butter. It has no distinctly medicinal action.

Henry H. Rusby.

CACHEXIA.—GENERAL PATHOLOGY.—DEFINITION.—

The term as now used designates a condition of marked anæmia associated with great emaciation. The causes of the condition are many. Formerly the term was used rather loosely to designate any state of deterioration of the general health. This led to its use as a generic term, while numerous specific terms designated the causes in individual cases; thus, *C. canceratica*, *C. cardiaca*, etc.

ETIOLOGY.—Cachexia is not associated with the primary anæmias, namely, pernicious anæmia, chlorosis, leukæmia, and pseudo-leukæmia. In these the general bulk of the frame is well maintained, and in some cases may be increased. In the secondary anæmias the associated emaciation in grave cases leads to the typical picture of cachexia.

The term cachexia, however, is especially used in connection with certain diseases. The most generally recognized types occur in malaria, syphilis, lead poisoning, gastric carcinoma, and infantile scurvy. It is well, however, to consider all the pathological processes which may lead to this state. The condition resulting from the removal of the thyroid gland, sometimes spoken of as *cachexia strumipriva*, is a special condition not to be considered under the general subject of cachexia.

In this connection the work of Lazarus* on the secondary anæmias has been largely drawn from; his etiological classification is especially valuable. He divides the secondary anæmias into three classes: (1) *hypoplastic*, due to insufficient blood formation; (2) *consumptive*, caused by abnormally extensive destruction of the blood; and (3) *complex*, resulting from a combination of these two causes. Of the consumptive anæmias the post-hæmorrhagic is the purest type. In most cases the pathological processes are so complex that it is impossible to determine whether the hypoplastic or the consumptive factor obtains. The examination of the blood gives no clew to the cause, as the hæmatology of most of the secondary anæmias is practically the same.

* Ehrlich-Lazarus: "Die Anæmie," II. Abtheilung, 1900.