

In conjunction with these wafers, the following may be employed:

- R Pulv. carui sem.,
 - Pulv. coriandri sem.,
 - Pulv. cinnam. 5ā 3 ss.
 - Sacch. alb. 3 i.
 - Mucil. gum. acacie. q. s.
- Make fifty pills. Dissolve one in the mouth when necessary.

All these deodorizers are, however, of necessity merely palliative in their effects, and the cause should always, if possible, be searched for and removed. In the preparation of the foregoing article the present writer has made free use of the material published under the same heading in the previous edition.

Emma E. Walker.

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BRIDES-LES-BAINS is a spa in Savoy, France, often called, because of the composition of its waters, the French Carlsbad. Until recently the place was practically inaccessible, the nearest railway station being

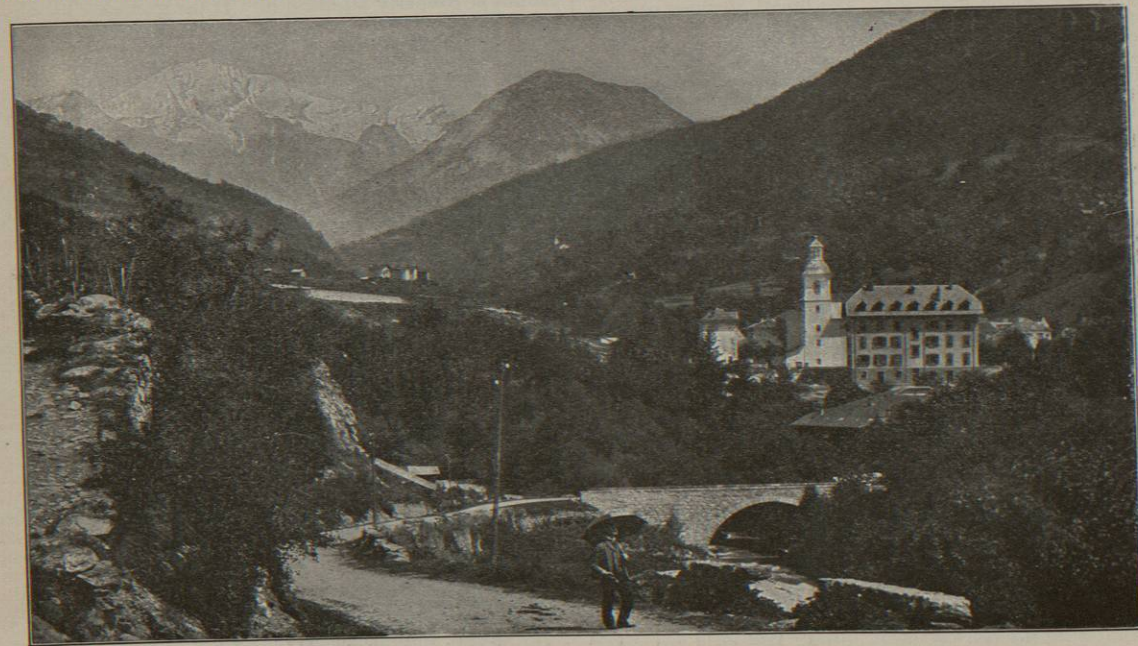


FIG. 1052.—Brides-les-Bains and the Glaciers of the Vanoise.

20 miles away. Now, however, the railroad has been extended and there is a station at Moûtiers, distant only 3 miles. The village is most picturesquely situated, at an altitude of 1,800 feet above sea level, in a valley running from southeast to northwest, enclosed on either side by almost precipitous mountain slopes.

Access.—The station of Moûtiers is on the Paris, Lyons, Mediterranean Railway, 672 miles, or 13 hours, from Paris; fare, 75 fr. 35 c. first class, and 50 fr. 90 c. second class.

Analysis.—The following is the composition of the water, according to an analysis made by Willm in 1890:

	Grams, per litre.	Grains, per pint.
Carbonate of calcium	0.3133	2.7752
Carbonate of magnesium . . . . .	.0112	.9692
Carbonate of iron . . . . .	.0078	.6822
Silica . . . . .	.0464	.4108
Chloride of sodium	1.8318	16.2244
Sulphate of sodium	1.1694	10.2836
Sulphate of potassium . . . . .	.0946	.8380
Sulphate of lithium . . . . .	.0085	.0840
Sulphate of calcium	1.7143	15.1940
Sulphate of magnesium . . . . .	.5288	4.6836
Arsenate of sodium . . . . .	.0008	.0071
Phosphates, bromides, iodides	Traces.	Traces.
Carbonic acid forming bicarbonates . . . . .	.2664	2.6012
Free carbonic acid . . . . .	.1017	.9008

Indications.—The waters of Brides are in moderate doses laxative, in larger quantities (six to eight glasses daily) purgative. It is claimed that they can be taken for many days in succession without increasing the dose, and they do not irritate to the same degree as do many of the stronger purgative waters. They are used in various disorders of the abdominal viscera, such as congestion of the liver following dietetic imprudences or alcoholic excesses or a prolonged residence in the tropics, gall-stones, constipation, functional disturbances of the digestive tract, obesity, the so-called uric-acid diathesis, gravel, diabetes, anæmia and chlorosis, and chronic con-

gestion of the uterus and adnexa. In many cases treatment with Brides water internally is combined with baths at Salins-Moûtiers, distant two miles from Brides.

Accommodations.—There are four hotels at Brides, in addition to numerous boarding houses, which afford good and ample accommodations at from six to eight francs and upward a day. A casino, music in the park, and the usual attractions of the continental spa are to be found here. There are two churches, a Catholic and a Protestant, the latter being served by an English clergyman during the season. The climate is mild, but not enervating. The season extends from the middle of May to the middle of September.

SALINS-MOÛTIERS.—This is a small thermal station in Savoy, France, distant 672 miles from Paris, on the Paris, Lyons, Mediterranean Railway. It is situated in a narrow valley in a grandly picturesque country, at an elevation of about 1,500 feet above the level of the sea. It is 2 miles from Brides-les-Bains, with which it is connected by an electric railway.

Analysis.—The following is the composition of the water, according to an analysis made by M. Willm, Professor of Chemistry at Lille, in 1890:

	Grams, per litre.	Grains, per pint.
Carbonate of calcium	0.6488	5.8382
Carbonate of magnesium . . . . .	.0089	.8011
Carbonate of iron . . . . .	.0136	.1224
Silica . . . . .	.0332	.2988
Chloride of sodium	12.4886	112.3974
Chloride of potassium . . . . .	.1695	1.5255
Sulphate of lithium . . . . .	.0046	.0414
Sulphate of calcium	2.0638	18.5742
Sulphate of magnesium . . . . .	.8460	7.6140
Arsenate of sodium . . . . .	.0007	.0063
Phosphates, bromides, iodides	Traces.	Traces.
Organic matters and losses . . . . .	.0192	.1728
Carbonic acid forming bicarbonates . . . . .	.5906	5.3154
Free carbonic acid . . . . .	.3854	3.3486

Indications.—The waters of Salins-Moûtiers are employed chiefly for bathing, usually in connection with the internal use of the water of Brides-les-Bains, but they are also taken internally in special cases. According to D. W. Samways, "for young people with enlarged glands, anæmia, chlorosis, or general lack of vigor, these baths are excellent, especially in conjunction with the climatic advantages of the locality. For the overworked or neurasthenic, for those also in whom convalescence is tardy, they are similarly very reviving. For such cardiac affections as can be relieved or controlled by baths and exercises similar to those in vogue at Nauheim, and for certain congestions and disorders of the uterus and its appendages they are also very beneficial."

Accommodations.—There is a hotel at Salins-Moûtiers, and there are also many boarding houses in the village where guests may find suitable accommodations. Most of those who take the baths, however, do so in conjunction with the internal use of the waters of Brides-les-Bains, and live at the latter place. The climate is mild but invigorating. The season lasts from the middle of May to the middle of September.

Edward O. Otis.

BRIGHT'S DISEASE. See Kidneys, Diseases of the.

BROMAL HYDRATE.—C₂HBr₃O₂H₂O. Like chloral, bromal is an oily fluid which, uniting with water, forms a crystalline hydrate. Bromal hydrate occurs in white crystalline masses of a sharp, burning odor and taste, fusible at 53.5° C. (128.3° F.), and soluble in water. Physiologically the drug is severely irritant, and, absorbed into the circulation, has been found by experiment (Steinauer) to cause restlessness followed by sleep, and, if the dosage be pushed, dyspnoea, convulsions, and death. It may relieve pain, and has been thought to be of avail in averting threatened epileptic fits, but it is not official in the United States Pharmacopœia and is little used in

medicine. It has been given in three-grain doses (Steinauer), but it is so disturbing to the digestive functions that the dose must be given in great dilution.

Edward Curtis.

BROMALIN.—Hexa-methylene-tetramine-brom-ethylate; brom-ethyl-formin—(CH₂)₆NHC₂H₅Br—made by acting upon hexamethylene tetramine with ethyl bromide. It is in colorless scales or a white crystalline powder, almost tasteless and freely soluble in water. It is decomposed by heat. Bromalin was introduced to take the place of the alkaline bromides in epilepsy, and may be used in other conditions in which bromides are indicated. The dose is gr. xv.-lx., and even large quantities are said not to cause bromism.

W. A. Bastedo.

BROMAMIDE.—Tri-brom-aniline-hydrobromide—C₆H₂Br₃NH₂HBr—nitro-tri-benzol is reduced by nascent hydrogen and then acted upon by hydrobromic acid to form bromamide. It occurs in colorless acicular crystals without odor or taste and is readily volatilized by heat. It is insoluble in cold alcohol, soluble in sixteen parts of boiling alcohol, and in chloroform, ether, and fixed oils. As an analgesic, sedative, and antipyretic it has been shown to act promptly and effectively in acute and chronic rheumatism and neuralgia. Dose: gr. v.-xv. in powder or capsule several times a day.

W. A. Bastedo.

BROMELIACEÆ.—A family of some forty genera and probably five hundred species, almost entirely tropical, in both hemispheres, a few sub-tropical. The family, by virtue of its structure, epiphytic habits and relations, is one of the most interesting known to botanists, and very many of its members are highly ornamental. Its economic importance is considerable. The pineapple is its most important product. The leaves of many species are important fibre-yielders, and the well-known "Florida moss" or "black moss" (*Tillandsia usneoides* L.) has many uses. The dissolving power of pineapple juice upon albumen has been utilized in diphtheria to a slight extent. Its value as an aid to stomach digestion is probably of far greater importance, and the same property appears to exist in some of the leaf juices.

Henry H. Rusby.

BROMIDES.—1. GENERAL MEDICINAL PROPERTIES OF THE BROMIDES.—Compounds of bromine, whose basylous radicle is innocuous enough to permit of their medicinal administration in decided quantity, all show a certain influence over the animal system, commonly, and undoubtedly rightly, referred to the action of the bromine of their composition. Of the effects, the most striking feature is derangement of nerve function, which, in moderate dosage, takes the form of a deadening of reflex irritability, cerebral and spinal, and in poisonous administration shows itself as failure of power, voluntary as well as reflex, in the cerebro-spinal centres. Clinically, the prominent effects are that the nervous, agitated, and wakeful subject becomes calm, tranquil, and predisposed to sleep; that convulsive seizures, the expressions of unnatural reflex irritability, such as the convulsions of epilepsy and of tetanus, tend to abate in frequency and violence; that a qualmish stomach becomes quieted, that tickling of the fauces fails to provoke gagging, and that sexual eagerness and even power wane. In profound bromism what was at first intellectual laziness and indifference becomes positive stupidity, with failure of memory and with or without a certain grade of aphasia; what was a dulness of reflex activity passes to motor and sensory weakness—paresis of sight, hearing, and tactile sense and profound muscular debility, until at last, after apparently total abolition of all conscious existence, the poisoned subject dies, either from respiratory or from cardiac failure. Minor effects, in cases of continuous bromide medication, are a peculiar fetor to the breath, a tendency to an acneiform eruption, most pronounced on the face, arms, back, and buttocks, and a tendency to congestion and even œdema of the fauces

and uvula, and, later, of the conjunctiva also. All of these various symptoms, formidable though many of them are, rapidly abate upon discontinuance of the medicine, and, as a rule, leave no permanent morbid results. Other effects, notably derangement of the circulation and lowering of body temperature, are observed in the operation of the most commonly used bromide, namely, the potassium salt, and also in that of the closely allied lithium bromide; but inasmuch as these are effects which are more or less common to all salts of potassium and lithium, it is an open question whether their occurrence in the present connection is not due rather to the basylous element of the bromide than to the bromine. Bromides are quick of absorption, and, generally speaking, fairly quick of elimination, and in such elimination are to be found in all the secretions—urine, feces, sweat, saliva, and even in the pus of the acne pustules.

The most interesting effect of bromides, namely, the derangement of function of the cerebro-spinal nervous system, has been made the theme of much experimentation for the purpose of finding just where the bromide influence strikes. As usual, the experiments are not wholly in accord, but their general drift clearly indicates, as H. C. Wood points out, that the deadening of functional activity occurs first and most severely in the peripheral ends of the afferent nerves and those portions of the axis that have to do with the reception of sensory impressions and their transmission as an impetus for motor reflex response. Later, and to a proportionately lesser degree, are affected the motor tract of the cord and the motor nerves. By this hypothesis is rendered intelligible the oft-observed occurrence that a bromized frog, while profoundly indifferent to pricks or searings, from evident cutaneous anaesthesia, may still retain enough command of motor power to hop, and vigorously, too, at will.

The therapeutics of the bromides consist of the direct application, for clinical ends, of the bromine influence to blunt nervous impressibility. Such displays of nervous excitement as are the expression of a state of direct morbid irritation of the nervous system, in whole or in part, are conditions proper for the action of a bromide; but, on the other hand, the derangements of nerve function caused by exhaustion, general or local, are distinctly not to be treated by bromine medication. For in such latter case, because of the generally depressing character of the bromine influence, the exhaustion will be deepened, and the nervous symptoms, therefore, intensified. Prominent illustrations of the conditions in which bromides may be of benefit are undue restlessness and wakefulness, or mental irritability or morbidness from any emotional cause, or from severe intellectual labor under pressure; undue excitability of a lusty sexual apparatus from too free indulgence; and, more notable still, expressions of reflex action, such as the convulsions of epilepsy, of tetanus, or of strychnine poisoning; the convulsions of children, seasickness, or the vomiting of pregnancy or of neurotic poisoning. Conditions in which, on the other hand, bromides are useless or harmful are restlessness, wakefulness, or mental derangement from want of sleep, from starvation, from loss of blood, or devitalization from a prostrating disease, such as typhoid fever, or, locally, irritability of the sexual organs when associated with beginning of failure of power through exhaustion from excessive abuse. In cases for which bromides are fitting it is hardly necessary to say that the remedy will promise more if resorted to at the outset, and that large doses may conquer where small ones will utterly fail. In chronic and intractable disease, such as epilepsy, two points, besides sufficiency of dosage, must be observed, as follows: *First*, the blood must be kept evenly and continuously charged with the bromide salt. And, by reason of the rapid elimination of the salt, this result can be secured only by giving the daily allowance in at least three doses, whereof the evening one, having longer to last, should be larger than the others. *Secondly*, the medication must not be too speedily discontinued after apparent cure of the malady, but, on the contrary, must

be kept up for months, and even years, thereafter. In epilepsy, it is singular that the form of the disease called *petit mal* should be, as it is, distinctly less amenable to bromide medication than the classical form in which the fits are outspoken. In epilepsy, when the disease is recent and of the latter variety, the curative power of the bromides surpasses that of any other drug; but, as a rule, the remedy will have to be pushed to the development of a certain grade of bromism before benefit appears.

2. THE BROMIDES USED IN MEDICINE.—The bromides official in the United States Pharmacopœia are, among bases of the heavy metals, zinc bromide, and among those of the alkali metals and metals of the earth, potassium, sodium, lithium, ammonium, strontium, and calcium bromides. *Hydrobromic acid* and *brominated camphor* also may be mentioned as being, logically, bromides, and furthermore as showing in their action upon the animal system the peculiar bromine influence in addition to their other effects. Lastly, an ethereal bromide, namely, *monobromethane* ("bromide of ethyl," "hydrobromic ether"), although not official, has been used in medicine as an anesthetic. In the present article will be discussed only the bromides of the metals of the alkalies and earths, in which alone the bromine influence is the dominant medicinal virtue. For zinc bromide, see *Zinc*; for hydrobromic acid, see *Hydrobromic Acid*; for brominated camphor, see *Camphor*; and for ethyl bromide, see *Ethyl Bromide*.

Potassium Bromide: KBr.—Potassium bromide is official in the United States Pharmacopœia as *Potassii Bromidum*, Potassium Bromide. It occurs in "colorless or white, cubical crystals or granules, odorless, and having a pungent, saline taste. Permanent in the air. Soluble, at 15° C. (59° F.), in about 1.6 parts of water, and in 200 parts of alcohol; in less than 1 part of boiling water, and in 16 parts of boiling alcohol; also soluble in 4 parts of glycerin. On heating the salt upon platinum foil, it decrepitates; near 700° C. (1290° F.) it fuses without decomposing, and at a bright-red heat it volatilizes, communicating a violet color to the flame. The aqueous solution (1 to 20) is neutral, or has at most only a scarcely perceptible alkaline reaction upon litmus paper" (U. S. P.). In some commercial samples the alkalinity is said to be decided, sufficiently so to enable the salt to precipitate alkaloids from solutions of their salts.¹ Potassium bromide should be kept in well-stoppered bottles.

Potassium bromide is the most generally active, the best known, and the most commonly prescribed bromide. It is capable of producing to the highest degree the peculiar bromine effects already detailed, and also has a marked influence over the circulatory organs, and, if pushed to poisoning, a power distinctly to lower body temperature. The circulatory derangement consists first in a slowing and weakening of the heart's contractions, passing even to stoppage of the organ in diastole; and, secondly, a probable—but probable only—narrowing of the lumen of the smaller blood-vessels, through vaso-motor spasm. Partly because of the effect upon the heart, and partly also because of the presumed effect upon the blood-vessels, potassium bromide is commonly held to induce partial capillary anaemia, especially of the nerve centres—spinal cord and brain. And because of this anaemia, in turn, it has been imagined by some, and become quite a text-book tradition with many, that the action upon the vascular organs is the only direct one that potassium bromide exerts, all the nervous phenomena being sweepingly accounted for as mere secondary consequences of a diminished blood supply to the cerebro-spinal axis. To refute this notion it seems only necessary to cite on the one hand the fact that other bromides than the potassic which have but little of the depressing effect of the latter salt upon circulation yet show the bromine influence over nerve function, and, on the other hand, to note that cerebro-spinal anaemia, occurring as it can easily be made to do experimentally by other methods and to any degree, is, when so determined, never followed by the peculiar phenomena of bromism.

As the drug is medicinally given, the clinical effects of

potassium bromide are a salty taste in the mouth, with a little increase in the flow of the saliva, and perhaps also some diuresis, an abatement of all forms of nervousness, fidgets, or even spasms, with a tendency to mental calm and indifference, intellectual and physical sloth, and, if circumstances favor, drowsiness. Along with these suggestive symptoms the pulse falls somewhat in force and frequency. If the dose has been single and not overlarge, little other than the foregoing effects will be declared; but, if the taking be continuous and the doses range high, the derangement may be profound, the subject presenting the picture of one mentally dull even to idiocy, with perhaps some aphasia; dull of hearing, sight, and feeling; physically weak even to paresis, sexually impotent, and with the peculiar symptoms of a foetid breath, a whispering voice, a face broken out in acne, a congested or even edematous faucial arch, a slow and failing pulse and respiration, and a depressed body temperature. In overwhelming dosage, paralysis of sense and motion becomes absolute, and death ensues quietly by failure of respiration or of cardiac action—the former if the poisoning has been progressive by accumulating small doses, the latter if by a single overpowering charge. But, as usual with the bromides, so long as the condition is one short of death, the symptoms quite certainly will ameliorate—and that, too, without lasting results—upon stopping the medication. In case of serious poisoning, the treatment must be in accordance with general principles, consisting in evacuation of the stomach, if a large single dose has been taken, and, for the rest, the employment of measures addressed to maintaining the action of the heart and lungs.

Potassium bromide is used, medicinally, exclusively for the peculiar purposes of the bromides generally, as set forth in the first section of this article. When the need is transient only, as to quiet a squeamish stomach, or to calm a restless subject and invite sleep, the dose will range from 1.3 to 3 gm., or thereabouts (gr. xx. to xlv.), according to the intensity of the disturbance and the susceptibility of the individual. When, on the other hand, a continuous and powerful impression is necessary, as in treating epilepsy or tetanus, the doses may have to be both large and frequent. In dealing with epilepsy, the daily quantity will rarely be less than 6 gm. (gr. xc.) and may need to reach 15 gm. (half an ounce), given broken up into three or four doses evenly distributed over the waking hours, excepting as to the evening portion, which should be somewhat larger than the others. The actual dosage in a given case must be determined by the effects produced upon the fits. A clinical rule with some is to give the salt until the usual reflex gagging, occurring upon tickling the fauces, is found to be abolished. Even with the smallest daily quantity above named a certain degree of "bromism" will follow the continuous giving, and such result must be expected. Rarely indeed will any impression be made upon the epilepsy until some bromism shows itself. In tetanus or strychnine poisoning the dosage of bromide reaches its maximum. Here the extraordinarily heightened reflex irritability which is the essence of the morbid condition in the two affections makes the subject comparatively insusceptible to the numbing influence of bromine. Even so large a dose as 15 gm. (half an ounce) has been given at a single draught, and the daily total should certainly reach this figure. Yet in strychnine poisoning it must be remembered that the tetanus, if it does not kill within a couple of hours, then rapidly abates, and simultaneously, of course, disappears the insusceptibility to bromide influence. Care must be taken, therefore, to diminish the bromide dosing, as the morbid irritability fades, else, as has actually happened, the subject may be saved from death by strychnine convulsions only to be brought to the verge of the grave by bromide palsy. Potassium bromide is administered in solution either in simple iced water or, what is pleasanter and in case of large doses makes the draught less obnoxious to the stomach, in water slightly alkalinized by the addition of a little sodium bicarbonate,

or, best of all, in water both alkaline and effervescent, such as Vichy² or Apollinaris.

Sodium Bromide: NaBr.—The salt is official in the United States Pharmacopœia as *Sodii Bromidum*, Sodium Bromide. It occurs in "colorless or white, cubical crystals, or a white, granular powder, odorless, and having a saline, slightly bitter taste. From air the salt attracts moisture without deliquescing. Soluble, at 15° C. (59° F.), in 1.2 parts of water and in 13 parts of alcohol; in 0.5 part of boiling water and in 11 parts of boiling alcohol. When heated to a bright red heat the salt melts, and, at a somewhat higher temperature, slowly volatilizes without decomposition. To a non-luminous flame it imparts an intense, yellow color. The aqueous solution is neutral, or at most very feebly alkaline, to litmus paper" (U. S. P.). Sodium bromide is hygroscopic, and should be kept in well-stoppered bottles.

Sodium bromide is less unpleasant to taste than the potassic salt, and is in every way less deranging of function. But yet, despite the fact that its innocuousness permits of its prescription in larger doses and for more continuous administration than may be possible with potassium bromide, the bulk of testimony goes to show that the sodic salt is of distinctly inferior curative power. Its use is, therefore, properly confined either to cases in which but a mild effect is called for, or to those in which, for any reason, the potassic salt cannot be given, or having been given must be abandoned. The fact that, weight for weight, the sodic bromide contains more bromine than the potassic (in the proportion of 77.62 to 67.13) simply shows the more forcibly the intrinsic physiological feebleness of the compound. Sodium bromide should be given in the same manner as the potassic salt, and in the same dose, carefully to be augmented according to the effects produced.

Lithium Bromide: LiBr.—The salt is official in the United States Pharmacopœia as *Lithii Bromidum*, Lithium Bromide. It occurs as a "white, granular salt, odorless, and having a sharp, slightly bitter taste; very deliquescent. Soluble, at 15° C. (59° F.), in 0.6 part of water and in 0.3 part of boiling water; very soluble in alcohol; also soluble in ether. At a low red heat the salt fuses, and at a higher heat it is slowly volatilized. It imparts a crimson color to a non-luminous flame. The aqueous solution is neutral to litmus paper" (U. S. P.). Being exceedingly deliquescent, this salt should be kept in well-stoppered bottles.

So far as observed, lithium bromide very closely resembles the potassic salt in its effects, as the nature of its base would render likely. Dr. S. Weir Mitchell, of Philadelphia, who first advocated this bromide for use in the nerve affections for which potassium bromide is commonly prescribed, considers the lithic salt more speedily and more powerfully hypnotic than the potassic. It has the demerit of comparative costliness. It contains proportionally more bromine than does any other of the alkaline bromides, and has been recommended in one-half the dose of the potassic salt (Weir Mitchell).

Ammonium Bromide: NH₄Br.—The salt is official in the United States Pharmacopœia as *Ammonii Bromidum*, Ammonium Bromide. It occurs as "colorless, transparent, prismatic crystals, or a white, crystalline powder, odorless, of a pungent, saline taste, and permanent in the air. Soluble, at 15° C. (59° F.), in 1.5 parts of water and in 30 parts of alcohol; in 0.7 part of boiling water and in 15 parts of boiling alcohol. When heated, the salt volatilizes completely without melting. The aqueous solution of the salt has a slightly acid reaction upon litmus paper" (U. S. P.).

From the point of view of the clinician, ammonium bromide may be regarded as substantially a duplicate of potassium bromide in medicinal virtues, while at the same time more acrid in taste and in local action. It has been used for the same purposes as the potassic salt, and in the same dose, and has been strongly recommended by Brown-Séquard and others in epilepsy. It is less depressing than potassium bromide.

Strontium Bromide: SrBr₂·6H₂O.—The salt is official

in the United States Pharmacopœia as *Strontii Bromidum*, Strontium Bromide. It is in "colorless, transparent, hexagonal crystals, odorless, and having a bitter, saline taste. Very deliquescent. Soluble in 1.05 parts of water at 15° C. (59° F.) and in 0.5 part of boiling water. It is readily soluble in alcohol, and is precipitated from this solution upon the addition of an equal volume of ether, in which it is insoluble. When heated the crystals at first melt and then lose all their water (30.4 per cent.). The anhydrous salt fuses at 630° C. (1166° F.). To a non-luminous flame the salt communicates an intense, red color. The aqueous solution is neutral to litmus paper" (U. S. P.). Owing to the extreme deliquescence of this salt it should be kept in well-stoppered bottles.

As in the case of the strontium salts generally, this one closely resembles in its effects on the animal system its potassic congener. Compared with potassium bromide, however, strontium bromide is the better borne, having less tendency to derange digestion or to bring on the special symptoms of bromism. It may be prescribed in the same doses and for the same purposes as the bromides generally.

Calcium Bromide: CaBr₂.—The salt is official in the United States Pharmacopœia as *Calcii Bromidum*, Calcium Bromide. It is a "white, granular salt, odorless, of a sharp, saline taste, and very deliquescent. Soluble, at 15° C. (59° F.), in 0.7 part of water and in 1 part of alcohol; much more soluble at a boiling temperature. At 680° C. (1256° F.) the salt fuses, and at a higher temperature it is partly decomposed, with loss of bromine. The salt is neutral to litmus paper" (U. S. P.). The salt must be kept in well-stoppered bottles.

Calcium bromide does not seem to differ materially in properties from potassium bromide, and stands in medicine as an additional and not over-necessary substitute for the same, in the same range of application and in the same dosage. It was originally proposed by Dr. W. A. Hammond, in 1871.

Edward Curtis.
U. S. Dispensatory, 18th edition, quoting Charles D. Chase.
2 Seguin: Archives of Medicine.

BROMIDIA is a proprietary remedy which is stated to contain in a fluidrachm Chloral hydrate and potassium bromide, of each gr. xv., and gr. ½ each of the extracts of cannabis indica and hyoscyamus. Analyses indicate that it also contains oil of orange peel and extract of licorice
W. A. Bastedo.

BROMIDROSIS.—(Bromhidrosis, Osmidrosis; Ger. *Stinkender Schweiss*.) Bromidrosis, as a disease *per se*, is a pathological variation in the odor-producing constituents of the sweat *as secreted*, is associated as a rule with the functional disorder of the sweat apparatus, hyperidrosis, and, like it, may be either local or general. This condition as such, if it occurs at all, is rare.

The condition ordinarily denominated bromidrosis is due, as was taught by Hebra to be the case in the majority of instances, to a rapid decomposition of the sweat after its secretion, with the resultant odor, warranting the term stinking applied to it.

When local, as is more commonly the case, the regions affected are those in which sweating oftenest occurs in excess and in which its quick evaporation is more or less retarded or prevented by the nature of the parts or their covering—as the axillæ, groins, ano-genital region, and the feet—the last being by far the most frequent situation of the affection. Here the odor is marked and most characteristic, differing from the odor of other parts affected by its unmistakable, nauseating heaviness when once recognized—and one whiff is all sufficient,—the foul emanation rendering the near neighborhood of the unfortunate victim anything but pleasant, and sometimes impossible.

The change that takes place in the sweat is claimed to be due to the presence of a special micro-organism—the bacterium *foetidum*, a micrococcus which Thin, of Prague, recognized in sweat obtained from the feet. It has been shown by Parkes that soldiers with uncovered feet do not suffer from this affection, and he claims that the only

cause of the disease, if such it can be called, is the covering of the feet, the absence of all coverings giving no opportunity for the development in the secretions of the special bacterium.

Treatment in general is linked with that of hyperidrosis. A level teaspoonful of the precipitated sulphur in milk twice daily has been highly recommended. It is an empirical remedy, the action of it not being explained by Crocker, who claims to have succeeded more often by this than by any other procedure, local treatment not being necessary with it. However, dusting finely powdered boric acid well in between the toes and rubbing it into the stockings and shoes daily will be found as efficient, cleanly, and convenient a local method as any yet devised, and some local treatment will generally have to be resorted to. Hot water applied as hot as can be borne for a few minutes before using the boric acid is a great aid.

If the sulphur treatment purges too freely, its action may be controlled by astringents. In five to ten grain doses salicylate of soda may be found useful. This may be tried when patients object to the sulphur. It has cured some cases. Among other local remedies may be mentioned chromic acid; painted on the feet in five to ten per-cent. solution, according to the obstinacy of the case, every three to six weeks, it has been used successfully. Mutton suet with two per-cent. salicylic acid is in general use in the German army for rubbing on the feet, and further has the advantage of a lubricant when much walking is to be done. Formalin in one to ten per-cent. strengths in alcohol is of value. It should be followed by the use of dusting powders. A one-per-cent. solution of permanganate of potash has been well recommended. Various other remedies are extolled, but the boric acid will be found the best of all if preceded by the hot-water applications.
Charles Townshend Dade.

BROMINE.—Bromine is official in the United States Pharmacopœia as *Bromum*, Bromine. It is described as "a heavy, dark, brownish red, mobile liquid, evolving, even at ordinary temperatures, a yellowish-red vapor, highly irritating to the eyes and lungs, and having a peculiar suffocating odor, resembling that of chlorine. Specific gravity, 2.990 at 15° C. (59° F.), soluble in 30 parts of water at 15° C. (59° F.), and readily soluble in alcohol or ether (with gradual decomposition of these liquids): also in carbon disulphide, and in chloroform, with a deep reddish-yellow color. On exposure to air or to heat it is completely volatilized" (U. S. P.). Bromine has the same intense affinity for hydrogen that has chlorine, and so, in similar manner to chlorine, determines the oxidation of organic matter in the presence of moisture by appropriating the hydrogen of the water and liberating the oxygen. The fumes of bromine are thus deodorant, like chlorine, and if present in an atmosphere in great volume would doubtless prove destructive to floating disease germs. Mixed directly with foul-smelling or infectious matter, bromine is powerfully deodorant and disinfectant. Yet practically it is of little use in such capacity, by reason of its costliness, its bad smell, its caustic and bleaching tendency, and the exceedingly irritant action of its vapor upon the human air passages. Squibb estimates that an ounce of bromine, accidentally spilled in an ordinary chamber, would render the air thereof dangerous to life.

Locally applied to living animal tissues, pure bromine is a very searching and painful caustic, and non-caustic dilutions act as detergent and stimulant lotions to foul or sloughing ulcers. Here again, however, the cost of the remedy and its offensiveness render it less practicable than its efficiency would suggest. For caustic purposes, bromine is applied clear, the patient being etherized, if the area to be cauterized is at all extensive, and the operator taking care that his eyes and nose do not come too near the fumes of the very volatile and pungent liquid. For a strong lotion, a ten per-cent. solution in water may be employed, wherein the bromine is made to dissolve by the addition of one-third of its weight of potassium bro-

mide. For weaker lotions—any percentage less than three—bromine is directly soluble in water without any saline addition. Taken internally, bromine is doubtless absorbed as a bromide. It was formerly used as an internal medicine in the class of diseases for which iodine or the alkaline iodides are now so extensively employed. For the specific purposes of the alkaline bromides (see *Bromides*), bromine is practically unavailable, because of its irritant action and offensive taste. Bromine has been given internally in the dose of from three to six drops of a two-and-a-half-per-cent. aqueous solution.

TOXICOLOGY.—Bromine is an intensely irritant, corrosive poison. The fumes, inhaled, produce extreme irritation of the eyes, the air passages, and even the stomach. Severe bronchitis, pulmonary hemorrhage and inflammation, and death may result. Swallowed in overdose, bromine produces the usual symptoms of the corrosive poisons, viz., intense gastric irritation, collapse, and death. A half-ounce of bromine, swallowed, produced death in seven and a half hours. In case of poisoning by inhalation, the local irritation should be treated by the breathing of the atomized spray of an alkaline solution, such as Dobell's solution. In poisoning by swallowing, the stomach must be washed out and ammonia given, largely diluted and mixed with olive oil.
Edward Curtis.

BROMINE-ARSENIC SPRINGS.—Ashe County, North Carolina.

POST-OFFICE.—Crumpler, Hotel.
ACCESS.—Via Norfolk and Western Railroad to Chilhowie, Va., thence 39 miles by stage to the springs; also by private conveyance from Bristol, Tenn., 34 miles west.

This spring was discovered in 1885. Since that time it has come into extensive use, and its waters are widely sold. The location of the spring is in a mountainous district, 2,725 feet above the sea level. There is a hotel with accommodations for about one hundred persons at the resort. The spring flows about sixty gallons hourly. The following analysis was made by Prof. Henry Froehling:

Solids.	Grains.
Sodium carbonate	1.04
Calcium carbonate	.93
Magnesium carbonate	.62
Lithium carbonate	.63
Copper carbonate	Trace.
Zinc carbonate	Trace.
Calcium fluoride	Trace.
Potassium sulphate	.62
Potassium chloride	.21
Sodium chloride	.65
Sodium arseniate	Trace.
Sodium iodide	Trace.
Sodium bromide	.04
Sodium borate	Trace.
Aluminum phosphate	.12
Iron sulphate	.08
Silica	1.08
Organic matter	.03
Total	5.45

The water is unique in possessing recognizable quantities of copper and zinc. It also contains the somewhat rare ingredients of arseniate of sodium and the iodide and bromide of sodium. We also find an appreciable amount of carbonate of lithium and sulphate of iron. The water is not highly mineralized, but it possesses valuable qualities as a mild antacid, tonic, and alterative. It is useful in many of the affections benefited by this class of waters
James K. Crook.

BROMINE CHLORIDE.—By direct union of the two elements, bromine and chlorine, a compound is formed appearing as a reddish-yellow, volatile, mobile fluid, soluble in water. This compound is powerfully caustic, but has never been used in regular medicine except as an ingredient of a caustic paste used by Landolfi, of Naples, for the treatment of cancer.
Edward Curtis.

BROMIPIN is an addition product of oil of sesame, containing ten per cent. of bromine. It is a yellow fluid having the appearance of a fixed oil, and it has a bland, oleaginous taste. In spite of the large amount of bromine which it contains, the oil is non-irritating and may be given pure by mouth. It is readily absorbed and its action is of the same character as that of the alkaline bromides. Losio claims that it surpasses potassium bromide in chorea, epilepsy, and trigeminal neuralgia. Dornblüth found that one drachm given at the evening meal would ward off a night attack of cardiac palpitation or angina pectoris. The oily taste of bromopin is not pleasant, but very soon the taste is acquired, and the patients continue to take it for a long time without gastric or intestinal disturbance. The dose is one-half to two drachms daily for restlessness and nervous irritability, for chorea or epilepsy, up to four drachms a day. It may be administered pure and unmixed, or with beer, or mixed with cacao, sugar, white of egg, and oil of cinnamon. A not unpleasant emulsion is made by taking two ounces of bromopin and emulsifying it with half an ounce of powdered acacia, half an ounce of syrup, and cinnamon or peppermint water to make four ounces, to be given in doses of from one to four drachms.
W. A. Bastedo.

BROMO-ALBUMIN is a ten per-cent. bromine compound of peptone, albumose, or protogen. It is given in doses of from one-half to two drachms in epilepsy and other nervous conditions. Its indications are the same as those of the alkaline bromides.
W. A. Bastedo.

BROMOFORM.—(Terbromide of formyl, CHBr₃) In chemical composition it is analogous to chloroform, CHCl₃, and iodoform, CHI₃. It is formed by the action of brominated lime on alcohol in the same way that chloroform is made from chlorinated lime and alcohol. It is a bright clear liquid, specific gravity 2.9, taste sweet, and does not cause any irritation to the mucous membrane of the mouth; it has an ethereal odor, is almost insoluble in water, but is soluble in alcohol and ether. It is very volatile and is rapidly decomposed by light, bromine fumes being evolved which impart a pink color to the liquid.

Bromoform possesses anæsthetic properties, but in a less degree than chloroform, the period of excitement being less pronounced and the anæsthesia of shorter duration. It is also a powerful antiseptic.

A new application of this drug was brought to the notice of the profession in 1889 by Dr. Stepp, of Nürnberg, who advocated its use in whooping-cough. He claimed that the course of the disease was shortened in every instance, that the paroxysms were diminished in number and severity, that complications were less frequent, and that when present they were benefited by the treatment. The doses which he gave at different ages were as follows: From six months to one year, ℥ ij, three times a day; from one to two years, ℥ iij, from two to three, ℥ iv, from three to four, ℥ v, and from four to seven, ℥ vi, or viij. In prescribing the remedy its high specific gravity must be remembered, one minim being equal to five drops.

The drug is given in a teaspoonful of water; it forms a "bead" in the water and is easily swallowed. It may be given in solution in water to which a small amount of alcohol is added, but should always be freshly prepared on account of its instability. It should be employed with some caution, as ill effects have frequently followed its use. It has produced nausea, vomiting, and diarrhœa, and other symptoms of gastro-intestinal irritation. The more pronounced toxic symptoms are pallor, cold perspiration, staggering, dilatation of pupils, heart failure, collapse, and a tendency to narcosis. Fatal cases have been reported (*Munch. medic. Wochensch.*, xlv., 1211; *L'union méd.*, September, 1891).

Stepp's method of administration is not to be recommended, and many of the cases of poisoning are explained by the uncertainty of this dose. It is preferable to use it dissolved in alcohol. Compound tincture of