Medicinally, corrosive sublimate is used both externally and internally. Externally, it is applied most commonly in solution, for the destruction of parasites, or for the specific influence of mercury, when a sharp impression is wanted upon skin eruptions, or, again, as an antiseptic in the treatment of wounds. Sublimate lotions may be aqueous or alcoholic, but should not exceed the strength of one-half of one per cent. of the mercurial in solution, lest undue irritation, or even, in extensive application, absorption and poisoning result. As an antiseptic, mercuric chloride is unrivalled in power, experimental research[1] showing that 1 part in 20,000 is the germicidal peer of 1 part in 833 of the next most potent agent. This potency makes the salt available for efficient antisepsis in the treatment of wounds, in solutions of non-irritant and non-poisonous strength. A solution of one-tenth per cent. is used for the wetting of sponges, compresses, and absorbent dressings, a strength of one-quarter per cent. for the gauze, and a strength of one per cent. for silk sutures or catgut. Internally, frequently repeated minute doses of corrosive sublimate, such as 0.001 gm. (about gr. $\frac{1}{64}$) are often of happiest effect in bowel derangements with fermentation of the food. Such small doses are commonly given in simple aqueous solution. To mercurialize, the average dose is 0.004 gm. (gr. $\frac{1}{16}$) three times a day, in solution or in pill with crumb of bread—the pill mass to be made up with particularly thorough trituration. Mercurialization thus induced is not very speedy, and, since the drug is too poisonous ever to be pushed, it is not an eligible mercurial in cases calling for haste. And under any circumstances, the tendency to irritate the stomach is so great that, for constitutional mercurializing, corrosive sublimate is distinctly not desirable. The salt has also been given by hypodermatic injection for treatment of syphilis, about 0.005 gm. (gr. $\frac{1}{12}$) being injected every other day in aqueous solution. But the procedure is objectionable because severely painful.

Mercuric Iodide, HgI_2. Mercuric iodide—"biniodide," "periodide"—is official in the United States Pharmacopœia under the title *Hydrargyri Iodidum Rubrum*, Red Mercuric Iodide. The salt forms by double decomposition on mixing, in solution, mercuric chloride and potassium iodide, and falls as a scarlet precipitate. Collected and dried, it appears as an amorphous powder, permanent in the air; of a bright scarlet color; odorless, tasteless, and insoluble in water. It dissolves in 130 parts of cold alcohol and in 15 parts of boiling alcohol; also in solution of potassium iodide or of mercuric chloride. On heating it turns yellow, then fuses, and finally volatilizes without residue. It should be kept in well-stoppered bottles, away from light. Mercuric iodide may be contaminated by a little undecomposed mercuric chloride or potassium iodide, whose presence can be detected by washing the sample with water, filtering, and testing the filtrate with a five-per-cent. aqueous solution of silver nitrate. Any soluble iodide or chloride will then precipitate the silver. The most important reaction of mercuric iodide is that it forms double salts with the iodides of the alkalies, which salts dissolve freely in water, yielding colorless solutions. This reaction will take place in the official process for making mercuric iodide, if the potassium iodide be taken in excess, the scarlet precipitate that falls on adding the solution of mercuric chloride instantly redissolving on slight agitation, giving, in colorless solution, the potassium double salt. This same potassio-mercuric iodide, under the name of *iodohydrargyrate of potassium*, has been used in medicine, with the claim for it of remarkable powers, but its effects are substantially those of the simple mercuric iodide—just as a solution of the salt itself is substantially but a solution of mercuric iodide in excess of potassium iodide. The physiological properties of mercuric iodide are practically identical with those of the chloride—locally irritant even to corrosiveness, constitutionally mercurializing in the manner just detailed under mercuric chloride. The salt is not much used, yet some practitioners are partial to it for the purposes of a constitutional mercurial, the administration being in doses and with observances identical with those employed in the giving of mercuric chloride. The iodide may be given in pill, or in solution of potassium iodide. If wanted in the latter way, it may be obtained by prescribing an equivalent quantity of mercuric *chloride* to be added to a solution of *potassium iodide*. By reaction red iodide then forms and remains in solution as double salt, in the manner set forth above.

Mercuric iodide is an ingredient of the official preparation entitled *Liquor Arsenii et Hydrargyri Iodidi*, for whose discussion see under Arsenic.

Mercuric Cyanide, $Hg(CN)_2$. The salt is official in the United States Pharmacopœia under the title, *Hydrargyri Cyanidum*, Mercuric Cyanide. This salt is in the form of colorless prismatic crystals, turning dark on exposure to light. It is odorless, but has a bitter, metallic taste. It dissolves in 12.8 parts of cold water and in 3 parts of boiling water; in 15 parts of cold alcohol and in 6 parts of boiling alcohol. It is sparingly soluble, only, in ether. It should be kept in well-stoppered, dark amber-colored bottles. The important chemical facts concerning mercuric cyanide are, that it is decomposed in aqueous solution by hydrochloric acid with evolution of hydrocyanic acid; but that, on the other hand, unlike many other mercurials, it is not precipitated by alkalies or organic matters. In action, this salt is highly irritant and intensely poisonous, uniting to the usual virulence of mercuric salts the poisonousness of the soluble cyanides. Its sole medicinal use has been to mercurialize, as in syphilis, by giving by the mouth, for which purpose mercuric cyanide has been a favorite with some practitioners, under the claim that it mercurializes after the non-salivating type of corrosive sublimate, but with less tendency to irritate stomach and bowels than in the case of the latter compound. But, with the majority of physicians, the extreme poisonousness of the cyanide has very naturally been a bar to its common employment. The dose is the same as with corrosive sublimate.

Basic Mercuric Sulphate, $Hg(HgO)_2SO_4$. This sulphate, commonly called *turpeth mineral*, is official in the United States Pharmacopœia under the title *Hydrargyri Subsulphas Flavus*, Yellow Mercuric Subsulphate. To make this salt, normal mercuric sulphate, formed by direct action of sulphuric acid upon mercury, is subjected to the action of boiling distilled water in abundance. By this means the salt is decomposed into an acid sulphate which dissolves in the water, and a basic salt which falls as an insoluble, lemon-yellow precipitate. The latter is then collected, washed, and dried. The powder thus obtained is permanent in the air and is without odor or taste. It is insoluble in water or alcohol, but dissolves in nitric or hydrochloric acid. It should be kept in well-stoppered bottles, away from light. Probably because of its solubility in hydrochloric acid, this salt is promptly active when swallowed, with the feature that its irritation speedily excites reflex vomiting—a vomiting that pretty thoroughly evacuates the stomach, with but trifling nausea and depression. In such vomiting the mercurial is itself discharged, and no further effects ensue; but if for any reason vomiting does not come on, then irritant mercurial poisoning results, whose severity depends jointly on the quantity of the mineral swallowed and the degree of acidity of the gastric contents. Turpeth mineral is almost exclusively used as an emetic, and is particularly employed in the emetic treatment of croup, where the non-depressing character of the vomiting is held as a recommendation. But the poisonousness of the salt must be remembered. The average quantity required to vomit a child is from 0.12 to 0.20 gm. (gr. ij.–iij.). The medicine may be given in powder.

Mercuric Nitrate, $Hg(NO_3)_2$. Mercuric nitrate is used medicinally only in the two following pharmaceutical preparations:

Liquor Hydrargyri Nitratis, Solution of Mercuric Nitrate "Acid Nitrate of Mercury." Mercuric oxide is dissolved in excess of dilute nitric acid, whence results a dense, clear, nearly colorless, strongly acid liquid, of specific gravity 2.100, and containing in solution "about

60 per cent. of mercuric nitrate together with about 11 per cent. of free nitric acid" (U. S. P.). This liquid is highly corrosive, and is used solely as a searching caustic. It is applied to the part in full strength, and should be used only when a rather spreading action is allowable or desirable.

Unguentum Hydrargyri Nitratis, Ointment of Mercuric Nitrate, Citrine Ointment. Lard oil, heated, is dosed with nitric acid, whereby the olein of the oil is changed to elaidin. To this mixture, when nearly cold, is added a solution of mercuric nitrate obtained by dissolving metallic mercury in nitric acid. The product is a yellow ointment, decidedly irritant, and exerting powerfully the local specific medicinal powers of the mercuric compounds. Citrine ointment is thus available to destroy parasites, or to excite a healing action in indolent ulcers or eruptions. Unless a strong effect is needed, the ointment should be diluted with lard in equal parts.

Mercuric Oleate. Formula of normal oleate, $Hg(C_{18}H_{33}O_2)_2$. The only condition in which an oleate of mercury is official in the United States Pharmacopœia is in the preparation entitled *Oleatum Hydrargyri*, Oleate of Mercury. The quantity of ten per cent. of dried yellow mercuric oxide is dissolved in oleic acid. If made with oleic acid of standard quality the product is a transparent, yellowish, oily liquid; but if an impure commercial acid be the basis, it is a soft semisolid. The preparation is liable to undergo slow change with deposition of metallic mercury, but the better the quality of the oleic acid used in the making, the slower the decomposition. The "oleate" represents ten per cent. of a mercuric oleate in solution in excess of oleic acid. Its properties are those of a moderately irritant mercuric salt, made highly diffusible by the peculiar attributes of oleic acid. Rubbed into the skin, the mercurial is absorbed as in the similar application of mercurial ointment, but more rapidly and thoroughly. Constitutional mercurialization is thus easily procurable. Lightly brushed upon a part, the preparation produces the local mercurial effects, and, because of its diffusibility, acts more thoroughly than do ordinary ointments or aqueous lotions. For destroying the vitality of the ova of lice, or of vegetable parasitic organisms, the preparation is unsurpassed. To produce constitutional mercurialization, the oleate is used in the same way as mercurial ointment. For such application the oleate is superior to the latter preparation in speed, effectiveness, and cleanliness; but being more irritant, it is liable to make the skin sore or even to raise an eruption. To neutralize this tendency so far as possible, a good plan is to order one per cent. of morphine—the pure alkaloid—to be dissolved by gentle heat in the oleate. For local effects the oleate of mercury is lightly applied to the part by a camel's-hair brush, and, if the skin be tender, morphine may be added, as just described.

Mercur-ammonium Chloride, NH_2HgCl. This salt, commonly known as *white precipitate*, is official in the United States Pharmacopœia under the title *Hydrargyrum Ammoniatum*, Ammoniated Mercury. The preparation is obtained by precipitating an aqueous solution of mercuric chloride by ammonia water in slight excess. Collected and dried, the precipitate appears as a white powder or pulverent lumps, odorless and nearly tasteless. It is permanent in the air, and insoluble in either water or alcohol. It should be kept in well-stoppered bottles, away from light. Ammoniated mercury is irritant and poisonous. It is used externally only for the usual purposes of the irritant mercurials, and almost invariably in the form of the official *ointment of ammoniated mercury*, consisting of ten per cent. of the salt incorporated with benzoinated lard.

Besides the foregoing official preparations, numerous others have been proposed, of which the more important are the following:

Mercurous Tannate. This salt forms by the action of tannic acid upon mercurous nitrate. It is of a greenish color, and resembles calomel in being insoluble in water or alcohol, and, accordingly, odorless, tasteless, and bland in local action. Its peculiarity is that it is easily decomposed by alkalies, however weak, and in such decomposition yields metallic mercury in exquisitely fine subdivision. Accordingly, when swallowed, it is decomposed by the alkaline contents of the duodenum, and offers mercury in a condition ready for absorption but yet not irritating. The tannate, therefore, is a possible bland mercurial for constitutional use, and may be prescribed as an antisyphilitic in doses of 0.06 gm. (gr. i.), in pill. The salt is incompatible with even the weakest of alkalies. Also, potassium iodide should not be given in conjunction.

Mercurous Bromide is a white, insoluble compound, for practical purposes a duplicate of calomel.

Mercuric Bromide is similarly a duplicate of corrosive sublimate. The bromides may be used in the same way as the corresponding chlorides, but present no advantages.

Mercuric Salicylate is an amorphous, white powder, insoluble in water or alcohol, and accordingly without odor or taste. It dissolves in solution of any of the alkaline chlorides, bromides, or iodides, such as, for instance, common salt. The salt has been proposed for internal giving as a constitutional mercurial, on the ground of being effective while but little disturbing to the digestive organs. It may be given in doses of 0.01 gm. (gr. $\frac{1}{6}$), in pill. Also it has been used as an antisyphilitic, by injection, hypodermatic or intramuscular, the powder being suspended in mucilage or paraffin oil. The mixture must be well shaken before use, and 0.01 gm. (gr. $\frac{1}{6}$) may be given at each injection.

Other preparations, proposed especially for hypodermatic use in syphilis, are as follows:

Mercuric Formamidate. A salt soluble in water, neutral in reaction, non-coagulating to albumin, and giving but little pain on injection. Dose for injection, from ten to twenty drops of a one-per-cent. aqueous solution.

Mercuric Benzoate. A white, crystalline salt, without odor or taste. Sparingly soluble in cold water, but soluble in hot water, in alcohol, and in an aqueous solution of common salt. Three parts of the benzoate and one part of common salt may be dissolved together in four hundred parts of water, and of this solution one (hypodermatic) syringeful may be injected daily.

Mercury Amidopropionate or *Alanate*. A white, crystalline powder, soluble in water. From 0.005 to 0.01 gm. (gr. $\frac{1}{12}$–$\frac{1}{6}$) may be given at each injection, in aqueous solution.

Mercury Sozoiodol. A fine, yellow powder, sparingly soluble, only, in water (1 part in 500) but soluble in solution of common salt. Dose for hypodermatic injection, 0.06 gm. (gr. i.). In strong solution, the compound is irritating. It is also employable locally, as a dusting powder, or in ointment of one or two per cent. strength.

Mercury Imido-succinate, or *Asparaginate*. A white, crystalline powder, soluble in 25 parts of water and in 300 parts of alcohol. Dose, by injection, 0.01 gm. (gr. $\frac{1}{6}$).

Mercury Succinimide. A white, silky powder, soluble in water, but almost insoluble in alcohol. Dose by injection, 0.01 gm. (gr. $\frac{1}{6}$).

For local use, the following have been proposed:

Mercury Pyroborate. An amorphous, insoluble brown powder. Used in ointment (two-per-cent. strength) as a dressing for syphilitic or other sores.

Mercury Stearate. A white, unctuous powder, for use as a dressing in place of ointment preparations.

Mercury-zinc Cyanide. A white powder, insoluble in water. Recommended by Sir Joseph Lister for use in antiseptic dressings. Its insolubility saves it from irritating and poisoning.

Compounds of mercury formerly official in the United States Pharmacopœia, and still occasionally used, are as follows:

Mercurous Oxide, Hg_2O. This is the compound commonly called *black oxide* of mercury. It is a dingy, dark olive powder, insoluble in water or alcohol. Its only use is in the so-called *black wash*, a mild mercurial lotion for syphilitic sores. This wash is practically mercurous oxide diffused through water. To obtain it, calomel is

mixed with lime water, generally in the proportion of 4 gm. (ʒ i.) of the former to 500 gm. (O i.) of the latter. Reaction occurs, the lime abstracting the chlorine from the calomel to form calcium chloride, which remains in solution, and giving oxygen in exchange, so that the white powder of the mercurous chloride changes to the dusky one of the oxide. On standing, the precipitate of the oxide rapidly settles to the bottom of the vessel containing the wash, so that the mixture needs to be shaken well before using.

Mercurous oxide is apt to form in small quantity in the trituration preparations of mercury described above, and some have thought that the activity of such preparations is wholly due to the presence of this compound, but this is undoubtedly not so.

Mercuric Sulphide, HgS. This is the well-known substance *cinnabar*, which, finely powdered, makes the pigment *vermilion*. It is a bright red substance, permanent, odorless and tasteless and insoluble in water or alcohol. It was formerly used for mercurial fumigation, by the plan of throwing about 2 gm. (gr. xxx.) on hot coals so placed that the resulting fumes should bathe the naked body of the patient, under an enveloping blanket. But the procedure develops sulphur dioxide gas which is highly irritating.

Cinnabar, accordingly, is now discarded, for use in fumigation, in favor of calomel.

Mercurous Sulphide, Hg_2S. This compound, long since abandoned as a medicine, needs mention only as being the mercurial formerly called the *black sulphide*, or *Ethiops mineral*.

III. General Therapeutics of Mercury Compounds.—As has appeared in the discussion of the several compounds of mercury, the therapeutic uses of the mineral are many and incongruous. Some of these are fulfilled by a single preparation only, but others, and the majority, are possible for several of the compounds. Concerning these latter some practical points present themselves for consideration.

Constitutional Mercurialization.—This procedure was formerly resorted to, in a routine way, in all cases of acute inflammations, especially of serous membranes, generally also in the continued fevers, and, in mild grade, in the various cachexiæ. Nowadays, however, it has fallen into disuse, except in the treatment of the single disease syphilis. In this affection its avail is most important, as will be found discussed in the article on *Syphilis*. General mercurialization can be effected by giving mercurials by the *mouth*, by *inunction*, by *fumigation*, and by *hypodermatic injection*. In general concerning these methods, the points may be noted that administration by the *mouth* is most convenient, is reasonably prompt and efficient, except in cases of most urgent haste, but subjects the digestive organs to a maximum of derangement. The *inunction* method is rapid and potent, peculiarly applicable therefore to urgent cases; saves the digestive organs, but is troublesome, dirty, and exposes the patient to detection of his malady. The *fumigation* process has all the features of the inunction method, with an extreme of troublesomeness. The *hypodermatic* procedure also is prompt, powerful, and saving to the digestive organs, but, with the preparation hitherto most used for the injection, corrosive sublimate, has the profound objection of being painful, and liable to produce abscess. To mercurialize by the *mouth*, if the object be a long-continued, gentle impression, mercury with chalk or blue mass, or small doses of the yellow iodide, are commonly selected from among the mild mercurials. For a less continuous action, but one still short of full therapeutic saturation, the *mercuric* compounds, chloride, iodide, or possibly cyanide, may be employed. Between the respective action of the two groups, the important points of difference are that the *mild* mercurials are most apt to salivate and provoke looseness of the bowels; and the *irritant* unduly to irritate the stomach. For the rapid production of the full limit of mercurialization by the mouth, the more potent of the mild mercurials—calomel, blue pill, or the yellow iodide—should be given in generous dosage. For rapid effect, however, mercurialization by other avenue than the mouth is theoretically preferable. For *inunction*, mercurial ointment and the oleate are the two available preparations, of which the latter is the more elegant and cleanly, but also the more irritating. For *fumigation*, calomel, and the black oxide are possible, but the first named is decidedly to be preferred. For *hypodermatic injection*, corrosive sublimate has been the preparation most used. By any method and for any purpose, modern practice enjoins that mercurialization must be limited in degree to the development of the mildest grade of stomatitis.

Digestive Disorders.—The correction of digestive disorders is one of the prominent applications of mercurials. The efficacy is one of wide range, and in it the antiseptic virtues of mercury probably play a part. The derangement in which the mineral has the oldest reputation is that whereof the main symptoms are constipation, with clay-colored stools, loss of appetite, with a bitter taste in the mouth, and perhaps even nausea, and a muddy or even distinctly jaundiced skin and conjunctiva. In such condition of things, as soon as a free passage from the bowels can be secured by a mercurial—calomel or blue pill, or, in the case of children, mercury with chalk—the various symptoms very commonly subside. And even if there be not constipation, mercury, now not necessarily in purgative dose, will still more often than not work a cure. Next, entirely apart from the matter of clay-colored stools, many cases of vomiting from digestive disorders, and, still more commonly, diarrhœal or dysenteric symptoms arising apparently from the same cause, are more or less controllable by mercurials. The selection is commonly calomel or mercury with chalk for vomiting, and mercury with chalk or corrosive sublimate for bowel affections. In all cases the dose is small, as, for instance, 0.01 gm. (gr. ⅙) of gray powder, or 0.001 gm. (gr. $\frac{1}{60}$) of corrosive sublimate, frequently repeated.

The Killing of Parasites.—A purgative dose of calomel is anthelmintic, but it is particularly for the destruction of external parasites that mercury is used, a purpose for which mercurials are pre-eminent. The forms selected are usually corrosive sublimate in solution, white precipitate ointment, citrine ointment, mercurial ointment, or the oleate. The last named is the preparation to be preferred where the *ova* of lice are to be destroyed.

The Treatment of Skin Affections.—The surface disorders of syphilis are treated with great advantage by mercurials, locally applied, as an adjunct to constitutional treatment; but also non-syphilitic skin affections are often benefited by the same measures. Recognizing that the applications are irritant, the principle obtains to graduate the irritation of the application to the irritability of the part—a raw surface, tender and painful, taking a mild application, and an unbroken skin or an indolent ulcer a comparatively harsh one. In the order of their intensity of action, beginning with the mildest, the preparations in common use as local applications are as follows: *Calomel*, applied as powder or in ointment; *black oxide*, in the form of black wash; *mercurial ointment; ointment of the yellow oxide; ointment of the red oxide; ointment of ammoniated mercury; oleate; ointment of the nitrate;* lotions of *corrosive sublimate*.

The other prominent therapeutic uses of mercurials are generally unique, and the points concerning them have already been discussed in connection with the individual preparations.

Edward Curtis.

[1] Sternberg: American Journal of the Medical Sciences, April, 1883.

MERCURY, POISONING BY.—All the compounds of this element are violent poisons to all organisms whether plants or animals. Even in its elemental state metallic mercury is, under certain conditions, as will be seen, extremely poisonous.

The severity of the symptoms and rapidity of action in each individual case will of course depend upon the nature of the compound absorbed, the method of administration, size and frequency of the doses taken, and the

susceptibility of the victim; conditions which are of general application to all poisonings.

According to statistics collected by Kobert, ninety per cent. of the cases of poisoning by mercury are due to its administration in some form by physicians; the drug having been administered in too large a quantity at a single dose, or its use having been continued for too long a period of time, or, finally, there having been careless or excessive use of corrosive sublimate in antiseptic surgery. Criminal poisonings form about one per cent. or less of the cases recorded; while attempted suicide by means of mercurial products will claim about two per cent.

In the ordinary practice of a physician, poisoning from the following compounds of mercury may be encountered:

Metallic Mercury. Recent researches show that mercury vaporizes at all, save exceedingly low, temperatures. Even when in the solid state (— 39.4° C.) vapor is given off. Vaporization is not, however, readily detected until the temperature has risen to about + 5° C. Poisoning through breathing the vapors of metallic mercury is not uncommon, but cases of acute poisoning are rare. As examples of extensive poisoning by vapors of metallic mercury two famous cases may be cited. The first, that of the crew of H. M. S. *Triumph*, has become classical. This frigate sailed in 1810 with a cargo consisting chiefly of Cadiz mercury bound for the gold mines of South America. The ship having encountered rough weather part of the receptacles containing the mercury ruptured and several tons of the metal leaked into the hold. All animal life on board exhibited symptoms of mercurialism. The ship was picked up at sea in a helpless condition and towed into a French port. The crew of the rescuing vessel detailed to the *Triumph* were poisoned, as were also the men employed in cleaning her up when in port. In all two hundred men were afflicted with mercurialism; two died. The other case is that related by Kumnitz. In 1802 a fire broke out in the workings of the mercury mines at Idria, and as a result of the vaporization of mercury it is estimated that over nine hundred persons were afflicted with tremor mercurialis. One of the most remarkable cases of poisoning by vapors of metallic mercury is recorded by Faucher. A man and his wife in charge of a Parisian shooting gallery slept in a small room directly over the gallery, after having been in attendance all day. From two thousand to five thousand "Flobert" cartridges were shot daily. In the explosion of the fulminate of mercury with which these little cartridges are chiefly charged it is probable that mercury is set free and vaporized. The constant breathing of this mercury-charged atmosphere eventually led to chronic poisoning.

In connection with this discussion of cases of poisoning by vapors of mercury it is of interest to note that it is a quite well-established fact that persons exhibiting a tendency to phthisis are very susceptible to the action of these vapors and rarely recover from its effects, dying either from mercurialism or from tuberculosis.

The *pure* metal in the form of liquid seems to have only very slight action, often none at all. Fröhner has shown that dogs and swine can easily support doses of 250 to 500 gm. (½ to 1 lb.) without exhibiting any symptoms of toxic action. Similarly, enormous doses have been administered to man, in the early days of medicine, to remove obstructions in the bowels and as a cure for constipation, without any recorded evil effects. On the other hand, Gibb (*American Journal Medical Sciences*, 1873, p. 280) relates a case in which four and one-half ounces of metallic mercury were taken to procure an abortion (which, however, did not result) with the exhibition of serious symptoms of mercurial poisoning. Although liquid metallic mercury is generally inactive, if the metal is taken in a finely divided condition, as, for example, emulsified in fats, oils, etc., it becomes a most violent poison. The careless use of "blue ointment," "gray oil," "blue pill," etc., has led to numberless cases of serious illness. Leibling cites the case of three persons affected with the itch who rubbed into the body a mercurial ointment containing 270 gm. of finely divided metallic mercury. Death resulted in twenty-four hours from acute mercurial poisoning.

Mercuric Chloride. This salt, known under a variety of names, of which the most common is corrosive sublimate, occurs in the form of heavy, colorless, transparent, glistening, orthorhombic prisms which have an acrid, disagreeable, metallic taste. It is responsible for by far the larger number of cases of acute poisoning by mercury. It is soluble in water, the solubility increasing with the temperature, more soluble in ether, and still more soluble in alcohol and in glycerin. The solubility of mercuric chloride in water at ordinary temperatures is greatly increased by the presence of many substances, chief among which are the chlorides of ammonium, sodium, potassium and the alkaline earths, by camphor, etc. Practitioners are often too careless in the use of solutions of mercuric chloride in the dressing of wounds and in obstetrics. The excessive use of the usual strength of solution (1 to 1,000) has led to many sad accidents. Some patients are very susceptible to the action of mercury. The fatal dose of corrosive sublimate is not well established because of the variability of the intensity of its action on different individuals. It is probably safe to set it as low as 180 mgm. (2.78 grains). The variability of the fatal dose and fatal period is well shown by the following case quoted by Wormley. Three children were accidentally poisoned by mercuric chloride dispensed by mistake for calomel; one, seven years old, took eighteen grains (1.16 gm.) and died in three hours; another, two years old, took six grains (0.4 gm.) and died in eleven hours; the third, aged three, took twelve grains (0.78 gm.) but did not die until the twenty-third day. Severe symptoms have followed a dose as low as from one-third to one-half of a grain. Recovery has followed such enormous doses as 31 gm. (about ʒ i.), when there has been prompt and violent vomiting and subsequent treatment of the victim by a physician. Opium eaters are peculiarly resistant. Rigler states that a certain individual addicted to this habit was able to take 1.8 gm. (gr. xxviij.) daily without illness.

Mercuric Cyanide. This salt is met with in the form of more or less transparent, colorless, prismatic crystals, often slightly darkened by exposure to light. It is odorless and has a bitter, metallic taste. It is soluble in water and in alcohol, but only very slightly soluble in ether. This salt has occupied a relatively insignificant place in the toxicology of mercury until the recent Molineux case in New York City forced it into prominence. The fatal dose of the salt is probably less than that of the chloride because of its greater solubility in water and the ease with which it is decomposed with the formation of hydrocyanic acid. In some of the cases recorded death seems to have been due to the action of cyanogen compounds rather than to that of mercury. Death is not, however, always rapid. In one instance 600 mgm. caused death in nine days; in another instance 1.2 gm. also caused death in nine days.

Mercurous Chloride. Calomel occurs in commerce as a heavy, white powder with a yellowish tint, without odor or taste, almost insoluble in water, insoluble in alcohol and in ether. It is slowly acted upon by light and slowly decomposed by boiling water, metallic mercury and corrosive sublimate being among the products formed. Its solubility in water is increased in the presence of alkaline chlorides, corrosive sublimate being formed. Perfectly pure calomel is of very low toxicity in the case of man, but Fröhner has shown that with herbivorous animals, especially ruminants, this salt is quite poisonous: 8 to 10 gm. (ʒ ij.–iij.) produce very serious effects on young cattle; a dose of 20 gm. (about ʒ v.) is toxic to horses; 5 gm. (gr. lxxvij.) are toxic to sheep; while dogs and swine are relatively resistant per kilogram weight, the toxic dose being from 2 to 10 gm. (gr. xxxi.–cliv.). Because of the ease with which calomel is acted upon by many substances, with the formation of the actively poisonous mercuric salt, accidents due to such incompatibles are not rare. There are also on rec-