

That which is very dark colored internally, or breaks with a horny fracture (showing too much heat used in drying), should be rejected.

The seeds are of more modern use, having been introduced about sixty years ago. They are sub-globular, about 2 mm. ( $\frac{1}{16}$  in.) in diameter, very slightly pointed at the hilum; surface reddish brown, finely pitted and dull; internally whitish; odor none; taste bitter and acrid; texture very hard, bone-like between the teeth, at the hilum a soft caruncle.

**COMPOSITION.**—The corms, in drying, lose two-thirds of their weight, and when about dry consist largely of starch, in fine rounded, by mutual pressure polyhedral, and sometimes compound grains. Sugar, gum, resin, fixed oil, etc., are other common substances contained in them. The seeds also contain sugar, resin, fixed oil, etc., as incidental constituents. Both contain, as their peculiar principle, the intensely active substance *colchicine*, in small quantity—in the "root" about 0.5 per cent., in the seeds about 0.3 per cent. It is also present in the leaves. Colchicine ( $C_{15}H_{21}[OCH_2]_3[NHC_2H_5O][CO_2CH_3]$ ) is a very bitter and extremely poisonous alkaloid, occurring as a yellow, crystalline powder, soluble in both water and alcohol. It yields *colchicine*, or aceto-trimethyl-colchicine acid, in yellowish needles, soluble in alcohol. This also occurs free in the drug, and is poisonous. It is believed that these substances are not active until after oxidation has occurred in the alimentary canal.

**ACTON.**—The actions of colchicum, colchicine, and colchicine differ only in degree.

All the effects are chiefly, and perhaps wholly, referable to local irritation. The skin is somewhat irritated, all mucous membranes powerfully so, sneezing, coughing, running at the eyes and nose being prominent symptoms of exposure to the dust. Its internal effects are very slow in developing, some hours usually elapsing, thus strengthening the theory of preliminary oxidation of the colchicine. Then nausea and pain in the stomach, with lassitude and salivation come on. If the dose is large enough, vomiting and purging follow, and these are characteristic of great irritation, the stools being mucous and perhaps bloody. Varying, and mostly slight, symptoms of reflex stimulation may be observed. In severe poisoning paralysis quickly follows, beginning at the lower extremities, proceeding upward, and killing by asphyxiation. It is generally believed that the latter effects are entirely dependent upon the irritation. Even if given hypodermically, the principle is excreted into the stomach and intestines, and the *modus operandi* is the same. In any case, the practical facts are that the characteristic effects of over-dosage are severe abdominal irritation and severe depression, both of which are to be avoided as much as possible in its medicinal employment. The effects upon the kidney are very irregular, depending apparently upon stimulation by small quantities, depression by larger ones. Lastly it may be noted that the irritant effects of colchicum are cumulative. They may be produced quickly by large doses, or gradually by continued small ones, so that its administration has always to be performed with watchfulness and care.

**USE AND ADMINISTRATION.**—All the study of the action of colchicum is devoid of therapeutic value, as no relation can be seen between the former and its therapeutic use, which is almost exclusively in the treatment of gout. We only know that gout and all its sequelae and dependent functional disturbances are markedly relieved by the administration of colchicum, which has for very long been regarded as a specific for that disease. All cases are not equally benefited, acute and the early stages of chronic ones being much more amenable. With long-continued administration, the drug gradually loses its effectiveness, and at the same time undesirable effects become more troublesome. The desirability of cautious administration thus becomes apparent. As soon as abdominal disturbances begin, the administration should be stopped for a while.

The forms of administration are very numerous. The powdered drug is often given in doses of 0.1 to 0.5 gm.

(gr. ij.—viij.). The Pharmacopœia offers us an extract of the root, dose 0.03 to 0.13 gm. (gr. ss.—ij.), fluid extracts of each, dose  $\mathfrak{m}$  ij. to viij., a 15-per-cent. tincture of the seeds, dose 0.6 to 2 c.c. ( $\mathfrak{m}$  x. to xxx.), a 40-per-cent. wine of the root, dose 0.3 to 1 c.c. ( $\mathfrak{m}$  v. to xv.), and a 15-per-cent. wine of the seed, dose the same as of the tincture. The presence of these two wines, of such dissimilar strength and dosage, is barbarous, and it is even to be hoped that the seeds and their preparations may be entirely dropped, or the strength of the preparations so adjusted that the dosage will be uniform. This could easily be done by alkaloidal standardization, as it is now certainly known that the two substances do not differ in kind. Colchicum corm and fluid extracts should contain one-half per cent., the extract two per cent., of total alkaloids, the other preparations proportionately with their strength. Colchicine is frequently given in doses of 0.0005 to 0.0022 gm. (gr.  $\frac{1}{200}$  to  $\frac{1}{45}$ ), colchicine occasionally in maximum doses about half as large. Tannate of colchicine is somewhat used in doses about twice as large as those of colchicine itself. *Henry H. Rusby.*

**COLCHICUM, POISONING BY.**—Colchicum autumnale, or meadow saffron, order *Liliaceae*, is a biennial plant, a native of Europe. It is not found in America. It is nearly related to veratrum. All parts of the plant are poisonous, but only the corm and the seeds are used medicinally, being most active in the second season. This plant is said to have been known to Dioscorides and to have been first used by Medea. The active principle is the intensely bitter and poisonous alkaloid colchicine, discovered by Pelletier and Caventon. Its usual form is a white or yellowish, amorphous powder; sometimes it occurs as crystals. It is alkaline in reaction, and is soluble in water, acids, spirits, ether, chloroform, and benzene. It is frequently an ingredient of quack medicines for rheumatism and gout and is sometimes put into beer. Of the preparations, those of the seeds are the more reliable. There are in the United States Pharmacopœia: an extract of the root, a fluid extract of the root and of the seeds, a wine of the root and of the seeds, and a tincture of the seeds.

**Fatal Dose of the Alkaloid.**—Casper quotes this to be from 25 to 30 mgm. (gr. 0.385 to 0.463). However, according to Blyth, there is a recorded recovery from 70 mgm. (gr. 1.08).

**SYMPTOMS.**—The poison is slowly absorbed, and the symptoms generally continue after the drug has been stopped, while relapses are not uncommon. The patient usually feels a burning pain in the gastro-intestinal tract, with great abdominal pain, griping, nausea, vomiting, and diarrhœa, although cases have been noted with no diarrhœa. The stools abound in bile and are sometimes bloody. Dysuria and hæmaturia have been recorded. The respiration and pulse are much depressed. The temperature falls, and muscular weakness supervenes. There may be cramps in the feet and calves. The brain is rarely affected. In severe cases, however, stupor occurs followed by early collapse and death. Convulsions sometimes take place. As indicated above, death does not occur at once, the symptoms in many cases lasting as long as six or seven days and even longer. If the patient recovers, it is only after a tedious convalescence. In certain cases the patient suffers from chronic diarrhœa after the other symptoms have passed away.

**TREATMENT.**—The use of the stomach pump is indicated, or emetics may be used, e.g., ipecacuanha, zinc sulphate, mustard; or apomorphine, administered hypodermically in doses of four or five drops. Mucilaginous drinks and abundance of water are beneficial. Tannic acid neutralizes the poison and is an antidote. The bowels should be cleared out by castor oil, while the abdominal pain is quieted by morphine or opium. Heat applied to the extremities and abdomen also relieves pain. For the depression, stimulants should be employed.

**Test.**—If to the alcoholic solution of the alkaloid, ferric chloride be added there will result a garnet red; while

if an aqueous solution be used, the color obtained will be green or brownish green. If a combination of the solid substance and nitric acid be made, a violet hue will develop. Colchicine may be extracted from a feebly acid aqueous solution by chloroform.

**Post-Mortem Appearances.**—Hyperæmia is the most striking of these, and has been observed in the mucous membrane of the gastro-intestinal tract, in the kidneys, lungs, articular joint surfaces, bone-marrow, brain, and cord. Degeneration of the liver has been reported. As in sulphuric-acid poisoning, the large veins are filled with thick dark-red blood. The stomach contents give an acid reaction. The pathological changes, however, are not constant.

**Separation of Colchicine from Organic Matter.**—Obolouski's method: The viscera are finely ground with powdered glass, and the mixture left in alcohol for twelve hours, after which the liquid is removed and the residue is washed in alcohol. This extract is heated to a temperature not above 80° C. The concentrated product is cooled and mixed with enough alcohol to equal the original quantity. The liquid is filtered and evaporated as before, and this process is repeated until, on the addition of water, there is no further separation of clots. The final residue is dissolved in water, purified by shaking with light petroleum, and at last the colchicine is extracted with chloroform. *Emma E. Walker.*

**COLD, EFFECTS OF.** See *Camp Diseases*.

**COLD IN THE HEAD.** See *Nasal Cavities, etc.*

**COLD SULPHUR SPRING.**—Rockbridge County, Virginia.

**POST-OFFICE.**—Goshen Bridge. Hotel.

**ACCESS.**—Via Chesapeake and Ohio Railroad to Goshen, thence a drive of 2 miles to springs. Hacks meet all trains.

The Cold Sulphur Springs are located in the mountains of Virginia, at an altitude of two thousand feet above the sea level. The situation is near the centre of the celebrated mineral-spring region, so long noted for the beauty of its scenery and the salubrity of its climate. Recent additions to the hotel building have greatly increased its capacity, and many improvements have been made for the comfort of guests. The location is encompassed on every side by lofty mountains of rare loveliness and grandeur, and the beautiful lawn, with its vast shade of primeval oaks, forms a picture of alluring restfulness and tranquillity. Within a few minutes' drive is the west entrance to the Goshen Pass, the gateway through which the north branch of the James River finds its way to the sea—a spot famous for its wild and magnificent scenery. The water of the Cold Sulphur Springs is clear and slightly sparkling from the gases which it contains. It has a temperature of 50° F. as it flows, and the presence of a large amount of free carbonic acid renders it peculiarly light and grateful both to the taste and to even a delicate stomach. The water has been analyzed with the following results by a chemist whose name is lost:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Calcium sulphate	2.90
Magnesium sulphate	0.58
Aluminum sulphate	2.46
Sodium sulphate	0.65
Calcium carbonate	1.85
Magnesium carbonate	1.78
Iron carbonate	1.22
Sodium silicate	1.48
Calcium chloride	0.42
Lithium chloride	Trace.
Phosphates	Trace.
Organic matter	0.33
Total	13.67
Gases.	Cubic inches.
Sulphureted hydrogen	253.00
Carbonic acid	5.65

This analysis shows a mild alkaline-chalybeate. If the figures are correct it contains an unusually large quantity

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of sulphureted hydrogen. The effects of the water are tonic and sedative. It is used with good effects in diseases of the stomach, bowels, liver, and kidneys. The resort is well provided with facilities for the accommodation, comfort, and amusement of guests.

*James K. Crook.*

**COLD, THE THERAPEUTICS OF.**—Heat and cold are two relative modes of molecular motion. We call an object warm or cold when it possesses more or less molecular motion than our bodies contain. According to a fundamental law of physics, motion takes place in the line of least resistance, and since a greater quantity of motion offers more resistance than a smaller quantity, it follows that motion, unless impeded, always tends in the direction of lesser motion, or, in other words, from heat toward cold. If the animal body, therefore, comes in contact with a colder medium, it loses a certain amount of its heat; and if the surrounding temperature is sufficiently low and if it remains so for a sufficient length of time, enough heat is extracted to threaten and even to extinguish life. We may hence conclude that while cold acts as an antipyretic, it also acts as a depressant. On the other hand, when cold is applied fugitively, or for a short time, it has a stimulant and tonic effect. This duplex action of cold is demonstrated by the following observations: Liebermeister ("Beobachtungen und Versuche über die Anwendung des kalten Wassers bei fieberhaften Krankheiten," Leipsic, 1868), and Kernig (Reichert's *Archiv*, 1860) found by actual experiment that brief exposure of healthy persons to cold baths elevates the temperature, while on the clinical side it has been abundantly proven that prolonged exposure of fever patients to cold invariably reduces the temperature.

That a healthy body may have its temperature elevated by transient exposure to cold, and that a fevered body may suffer depression of temperature if exposed to cold, are facts which accord with another physical law, viz.: that action and reaction are equal. A healthy body is momentarily thrown out of its accustomed equilibrium by the aggressive force of cold, but in virtue of its greater inherent strength and resistance it is soon enabled to react on and to neutralize the influence of this disturbance, and while undergoing this greater activity its temperature is elevated. On the other hand, the fevered body possesses less resistance and is too feeble to offer much resistance to the aggressive action of cold, and hence the latter readily depresses the abnormally augmented activity of the body. Cold may, therefore, be an antipyretic or a stimulant according to the circumstances under which it acts; thus showing that, like all our therapeutic agents, its effects are controlled by the dose and by the length of time during which it is administered. Additional cold also contracts and condenses bodily tissue, and thus incidentally it has the power of contracting blood-vessels—a property of considerable therapeutic importance.

Physiologically it may be said then that cold acts (1) as an antipyretic; (2) as a tonic or stimulant; and (3) as a contractor of the blood-vessels, by which means it lessens the supply of blood.

**METHODS OF APPLYING COLD.**—It has already been shown that the effects of cold depend on the manner in which this agent is applied, and it is therefore necessary briefly to consider the different modes of its application together with the physiological effects of each.

**Wet-Sheet Application.**—A cotton or linen sheet is wrung out of water having a temperature of 80° or 90° F.; it is then wrapped around the patient's body, and is allowed to remain for two, three, or four minutes. If the patient is in a feeble condition, vigorous friction must precede and follow the application of the sheet. The temperature of the water may be gradually lowered as the patient becomes accustomed to the influence of cold. Used in this way the wet sheet takes the place of a cold bath in a certain class of invalids, relieves fatigue and nerve depression, and invigorates vital energy.

**Spinal Bath.**—Water at a temperature of 80° F. and gradually cooled is poured from a jug or can, or pressed



from a large sponge, along the spine as the patient sits on a stool in the bath tub. It is to be continued for from five to ten minutes at a time and may be repeated once or twice every day. In a short time the patient will be able to bear the water entirely cold. The spinal cord, as well as the peripheral and visceral nerves, is stimulated, and it is claimed that the abdominal organs are influenced favorably.

**The Pail Douche.**—This method of bathing consists in throwing three or four bucketfuls of cold water over the front and back of the patient's chest while he is sitting in a bath tub. The exact temperature of the water is to be graduated by the feelings of the patient. A vigorous rubbing with a dry, coarse towel follows the douching. This form of bath is available only for those who possess a rather vigorous constitution, but in such cases it acts as a powerful invigorator.

**The Spray Douche.**—No other form of bathing produces such powerful stimulation as that of the cold spray douche. The effects of the cold are enhanced by the mechanical impact of the water on the body, and they vary, of course, in accordance with the size, force, direction, and duration of the column of water which is employed. The size of the latter may be from one to three inches in diameter and may fall from a distance of from a few to ten or twenty feet; or it may be directed in a small stream at right angles against the patient's body. The stream may also be broken up into fine jets and allowed to fall on the patient's body, or be directed against it at an angle. It may be used alternately with hot or tepid water, and in beginning to use it, in cases in which the power of vital resistance is not very pronounced, it is a good plan to employ water with a temperature of about 80° or 85° F. and gradually lower it to the desired point of coldness. If cold water is used from the outset in the treatment of such persons it is best first to spray the extremities and then the trunk. In persons possessed of robust reaction the spray should be allowed to fall from the desired height on the head, shoulders, and back, and should be continued for from one to three minutes. It is important that it should not be continued for too long a time, for if it is, the patient will fail to obtain its full exhilarating property.

**The Plunge Bath.**—In this form of bathing the person jumps into a pool or tub of cold water, remains there for a few minutes, and is then dried and rubbed with towels. The effects of such a bath are similar to those of the douche, although not so pronounced. The plunge bath is the final stage of the Turkish bath, and to it the latter owes much of its agreeable and stimulating property. As in the douche, a sudden chilliness, a deep inspiration, and a roughening of the skin are some of its prominent effects, which in a few minutes are followed by a sense of warmth and exhilaration.

**The Prolonged Bath.**—Here the patient is immersed in a tub of water the temperature of which ranges from 65° to 70° F., or slightly lower. It abstracts heat in febrile diseases, soothes the irritable nervous system, and provokes sleep. The duration of a bath of this kind is governed by the influence which it exerts on the fever. This is its chief object. If the fever falls to the level of 102° F., or still nearer the normal, the bath is discontinued and the patient is returned to bed. This method of treating fever was introduced by Currie and Brand about a century ago, but fell into disuse some time later. It was revived by Liebermeister, von Ziemssen, and others in Germany, and has latterly found strong advocates in America, among whom are Wilson, Tyson, and Baruch.

**Ice Applications.**—The application of ice to the human body is the most concentrated form in which cold may be employed. Its physiological action, which differs somewhat from that of the other forms already described, has been investigated by various observers. Thus, Mosler (*Virchow's Archiv*, 1873, Band lvii., 1) found that by applying an ice bag over the spleen of a dog its length diminished from 17 to 14 cm., and its breadth from 5 to 4.6 cm., in the course of an hour. Dr. Schlikoff (*Deutsches Archiv f. klin. Med.*, Bd. xviii., p. 577) made a series of

observations on man, in the course of which the thermometer was introduced into various cavities of the human body, and ice bags were applied to the exterior. For example: 1. A thermometer being placed between the gum and the cheek, and an ice bag applied to the outside, the temperature fell 5.1° C. in one hour. After removing the ice bag, the temperature returned to the normal in half an hour's time. 2. When the thermometer was held in the hollow of the hand, and an ice bag applied to its dorsum, in seventy minutes the temperature fell 5.8° C.; an hour after the removal of the ice bag the temperature had not attained its original elevation. 3. In an empyemic patient the thermometer was introduced into the pleural cavity firmly against its inner wall, and the ice bag was placed immediately over it; in an hour the temperature fell 3.7° C. The original temperature was regained in fifty minutes after the thermometer was removed. The thickness of the thoracic wall was 3.2 cm., which gives the distance between the bulb of the thermometer and the ice bag. 4. Introduction of a thermometer into the intestine through an intestinal fistula, and the application of an ice bag over the abdomen reduced the temperature 2.3° C. in the course of half an hour—the distance between the thermometer bulb and the ice bag having been about 4 cm. 5. When the thermometer was placed in the vagina, and the ice bag over the pubic arch—the distance between the two being 7 cm.—the temperature fell nearly 1° C. in a little less than an hour and a half. 6. Introducing a thermometer into a fistulous passage leading to a carious tibia—the soft parts being inflamed, thickened, and oedematous—and placing an ice bag over the same, reduced the temperature 0.5° C. in eighty minutes. The distance between the thermometer and the ice was about 4 cm.

These experiments demonstrate, therefore, that when cold is employed in the manner indicated it has the property of diminishing the volume of bodily organs, reducing temperature very actively, and showing sufficient penetrating power to influence deep-seated organs.

**THE THERAPEUTIC APPLICATION OF COLD.**—Next in order will be considered the various affections in which the remedial value of cold is indicated.

**Nervous Debility.**—In cases of nerve exhaustion without serious change in any of the vital organs, a condition often found among men of intellectual pursuits, the douche applied daily is a most valuable adjunct in the treatment. If possible the douche should be commenced during warm weather, and after being begun it should be used every day throughout the year.

**Hemorrhoids.**—When ice in a bag or wrapped in a towel is applied in the early stage of this affection it will give relief quickly. When the disorder is of several days' standing, moist heat is probably preferable; although it is a good plan to test the influence of cold first.

**Acute Orchitis.**—Surrounding the inflamed testicle with ice bags, or allowing a stream of ice water to flow on it, will frequently cut short the pain and relieve the swelling.

**Acute Tonsillitis, Diphtheria, and Croup.**—Application of cold to the neck in these diseases, either in the form of ice bags or in that of compresses, preferably the former, has a most comforting and quieting influence on the patient. It allays fever and pain, and prevents infiltration of the cervical glands.

**Measles.**—In strange contrast to the medical teaching of half a century ago, that patients suffering from measles should be kept in a warm room, remain unwashed, and be protected from all cold air draughts,—it is now a well-established fact that the application of cold externally in one form or another, and the administration of an abundant supply of cold water internally, is a most serviceable method of treating this disease. When the fever is mild, sponging of the whole body with cool water will suffice to reduce the temperature. If the fever rises to 103° or 104° F., the cold pack is to be applied, or the patient is to be tubbed. In case there is swelling of the glands of the neck, as often occurs, the application of an ice bag over the tumefaction will have a counteracting effect.

**Scarlatina.**—No other exanthematous disease is so prone to develop a high temperature as scarlet fever, and in no other are the remedial effects of cold applied externally more marked. In mild cases cold sponging is all that is necessary. When the temperature rises to 105° or 106° F., and is accompanied by stupor and delirium, when the rash is dark and not well marked, and when the urine is loaded with albumin, nothing seems to be more effective in reducing fever, in quieting stupor and delirium, and in bringing out a well-marked eruption than a cold tub bath or the cold pack. For the throat affection the ice bag is to be applied externally to the neck, from the beginning of the attack, and the patient is to be encouraged in holding small pieces of ice in the mouth until they are dissolved. Cold water is to be allowed as a drink.

**Cholera Infantum.**—In affections of this kind, when the diarrhoea becomes an almost continuous serous discharge, when the abdomen and head are very hot and the extremities are cold, coupled with a tendency to coma, an ice bag or two applied to both the abdomen and the head, and hot-water bags or hot poultices to the arms and legs, are frequently followed by the very best results.

**Cerebral Congestion and Cerebro-Spinal Meningitis.**—In these diseases the application of a number of ice bags to the head and neck is a most useful therapeutic measure. The action of the cold thus employed is enhanced by the application of mustard or hot water to the extremities.

**Sun-Stroke; Heat-Stroke.**—The former is merely an intensified form of the latter, and both conditions require the same treatment. The patient should be stripped, laid on a canvas cot, covered with a sheet, and a stream of iced cold water allowed to play on his whole body, while at the same time the head is packed in ice. The stream of water may come from a hose or from the mouth of a large can. When the high temperature is reduced and approaches the normal point, his body should be wrapped in warmed woollen blankets, while the application of cold to the head is to be continued.

**Typhoid Fever.**—The use of cold in various forms and at different temperatures is one of the most approved methods of combating typhoid fever. In mild cases of this disease, or in cases in which the general tub bath is not well borne, frequent or almost constant sponging of the whole body with cool or cold water, slightly acidulated with vinegar, is usually sufficient to restrain the temperature and to reduce it to a proper point. In case the fever makes a stubborn resistance the patient should be placed in a tub bath the temperature of which may range from 60° to 80° F. If it is well borne, it is best to begin with a bath temperature of 65° or 68° F. Sometimes it is a good plan to begin with a bath temperature of 80° and gradually lower it to 60° by the addition of ice water. The patient should remain in the bath for five, ten, or twenty minutes, or longer if necessary, to reduce the fever to 102° F.; and the bath is to be repeated as often as the temperature rises above the latter point. Between the baths ice bags should be used over the abdomen and head, and in cases of intestinal hemorrhage or of marked tympanites the ice bags should be applied continuously to the abdomen. Placing an ice bag over the region of the heart also serves to allay the irritability of that organ. In cases in which tubbing is inexpedient and the temperature remains high the cold pack may be resorted to, or the patient's body may be rubbed with small lumps of ice. After the patient leaves the bath his body must be rubbed dry and wrapped in a warmed blanket in order to secure good bodily reaction.

Cold water should also be freely used internally. This is of great importance. It should be given systematically whether the patient asks for it or not.

**Appendicitis.**—Application of the ice bag over the right iliac fossa is a useful measure to afford relief in this affection. It is superior to the hot poultice, although in some instances the alternate application of the two is beneficial. When vomiting is present the patient should be allowed to dissolve small pieces of ice in his mouth.

**Acute Rheumatism.**—Professor Esmarch, of Kiel, as far

back as 1861, drew attention to the great utility of ice locally applied to the involved joints in the treatment of acute articular rheumatism. The results, as compared with those derived from the application of heat, blankets, blisters, etc., were most striking both in regard to the shortening of the attacks and the diminution of the pain. Dr. Wilson Fox (*Lancet*, vol. ii., 1871) reported two cases of rheumatic fever in adults, one with a temperature of 110° F. and the other with a temperature of 107° F., which were treated with cold applications and both made prompt recoveries. The ice was placed on the chest, abdomen, and along the spinal column, and iced water was rapidly poured over the patients' bodies at the same time.

From all the practical evidence at our command there is no more reason why cold should be contraindicated in acute rheumatism than it is in any other acute inflammatory disease; and the day is not far distant when it will be employed as frequently in this disease as it is now used in typhoid fever.

**Acute Pneumonia.**—The principal indications in the treatment of acute pneumonia are: (1) reduction of the volume of blood in the lungs, (2) reduction of fever, and (3) support of the function of the heart. From his own experience, the author believes that all these indications are fully met by the application of ice to the chest immediately over the seat of inflammation in both croupous and acute catarrhal pneumonia, and that this agent checks the extension of the inflammatory process, constricts the pulmonary capillaries, promotes resolution, disperses the products of exudation, reduces fever, strengthens the pulse, alleviates difficult breathing, abates pain in the chest, and gives general comfort to the patient.

The number of ice bags which are to be applied in any case depends on the degree of fever which is present and on the size of the area which is inflamed. If the fever is not very high and the inflamed area small, one or two bags will answer. If the fever is high and the involved area large, as many as eight or ten may be applied, it being always borne in mind that the head should monopolize one or two constantly. The length of time during which they are kept on also depends somewhat on the range of fever. If the temperature falls near the normal, it is good policy to remove some, but not all, of the ice bags, unless the crisis is at hand. If they should be removed too early and before the crisis-period, the temperature will rise again, and as a rule it is brought down with greater difficulty the second than the first time.

**Acute Pleurisy.**—There is no other external application that will relieve the painful breathing of acute pleurisy more quickly than that of the ice bag; and when this is coupled with suitable internal treatment it will soon cut short the disease.

**Acute Pericarditis.**—In this affection the ice bag, when applied directly over the heart, gives relief to the pain, reduces fever, and quiets the action of the heart.

**Hæmoptysis.**—Whether hæmoptysis is of pulmonary or of cardiac origin, it is always benefited by the application of one or two ice bags to the chest. It is important, of course, that a differential diagnosis in regard to the source of the bleeding should be made as soon as possible, so that each case may be treated with appropriate internal remedies in connection with the external use of ice.

**Pulmonary Phthisis.**—The cold douche has been used in Germany and in this country in the treatment of this disease, and is highly recommended in cases in which the temperature of the body is at or very near the normal point. The patient, previous to the bathing, is rubbed with a dry coarse towel, and is then exposed to the douche for ten or fifteen seconds, or even longer, after which he is again rubbed until the skin becomes red. He is then allowed to take a brisk walk for a short period, after which he takes a rest. This is repeated every day. In cases of acute phthisis one or two ice bags should be applied over the affected area and retained there. It is very good practice to allow phthisical patients with irritable hearts to wear an ice bag continually over the cardiac area. It quiets the heart and checks the temperature.

Thomas J. Mays.