



In the present article I propose to give merely the experience of those who have used this remedy most frequently in the diseases against which it is regarded as very useful. No attempts will here be made to theorize about or explain any of the results which have been supposed to follow its exhibition. In a future article its effects upon the healthy subject will be carefully elaborated, and a comparison instituted between its actions on the healthy and those which it evinces in the diseased.

In Typhus and Typhoid Fevers.—In the course of twelve years the celebrated Dr. Huss, of Stockholm, treated 3,186 cases of these fevers, in conjunction with Professor Malmsten. As is well known, he relied mainly on the mineral acids, and of phosphoric acid he says: "It is the mildest of all the mineral acids employed in medicine, and approaches in some respects the vegetable acids; its use may be continued longer than other acids, without acting injuriously upon the digestive organs, and it never injures the teeth." A very extensive experience induced him to believe that the phosphoric, besides the effect of acids in general, possesses something peculiar to itself; a more tonic, or renovating, or regulating influence on the central parts of the nervous system. This power he thinks it must receive from its base, phosphorus, in the same way that muriatic acid retains the special power of chlorine, or more evidently still, arsenious acid that of arsenic, or iodic acid, that of iodine. In the treatment of typhus fevers phosphoric acid hence he assumes acts partly as an acid, and partly from its containing phosphorus. His experience led him to place this acid in the first and most eminent rank of all the remedies he had tried in treating these fevers, both on account of the general benefit arising from its use, and the few contra-indications against it. In Sweden it is the remedy most commonly employed in the first stage of typhus, occurring either in the abdominal, petechial, or an intermediate form; no symptom from the gastric organs contra-indicates its use; the tongue may be furred or clean, or bright red, or its epithelium peeled off, or its aspect natural; the abdomen and epigastrium may be tense or not, tender or non-sensitive; there may be diarrhoea or constipation; it will prove of service in all these conditions. It is only in bleedings from the intestinal tube that it may have to be aided, by injections of a weak solution of nitric, sulphuric, or muriatic acid. Neither is it contra-indicated when there is a catarrhal affection of the larger air-tubes; but as soon as it becomes capillary other remedies are required; the same may be said when pneumonia is present. Phosphoric acid appears to be less powerful and useful than the muriatic, as long as the pulse continues quick, full, and more or less tense; but in cases in which the pulse has become weak and small, or was so from the beginning, it is thoroughly indicated. Congestion of the brain and delirium *furiosum* do not more contra-indicate the use of this acid than do undisturbed intelligence, drowsiness or stupor; but should the congestion be considerable and the delirium very violent, other means may have to be added or preferred. Nor does the state of the skin offer any obstacle to its use; it may be dry and hot, soft or perspiring, or the seat of eruptions or not; but when the petechial eruption is of a bluish hue and ecchymotic, dilute sulphuric acid is to be preferred. From what has been said, Huss thinks it is evident how extensively phosphoric acid may be relied upon; cases in which it may be given being the rule, those in which it is inefficient or injurious being the exception. He uses the *solutio acidi phosphorici* of the Swedish Pharmacopoeia, containing 1 part of glacial phosphoric acid to 4 of water; while the dilute acid of the English contains about only 9 parts of phosphoric acid to 91 of water. Huss gave 10 to 15 minims every second hour; while Wood recommends from 10 minims to a fluid drachm per dose, largely diluted with water; I often give from $\frac{1}{2}$ to 1 fluid drachm per dose, and have never noticed any bad effects; Pereira recommends from 20 to 60 drops. Huss considers *marriatic acid* more useful when there is congestion of the brain, with or without delirium, the pulse being not only hard and full, but also more or less tense; this is often the case during the first four or five days of the fever, but under the use of the hydrochloric acid the pulse soon becomes lower and weaker, and with this change the phosphoric acid is indicated. In the second stage, marked by sinking of the strength and decreasing power of reaction, delirium mite, or some degree of stupor, frequent, very weak and small pulse, dry tongue, with or without diarrhoea, dry and burning hot skin, tendency to passive congestions, &c., phosphoric is as useful as in the first stage; Huss treated a great many cases with no other remedy, but sometimes camphor, ammonia, or musk were required in addition.

Consecutive Fever of Cholera.—Dr. Dysdale gave it in one case where there were stupor, difficult speech, deafness, and slow pulse; in another case there was some rolling of the head, fall and rapid pulse, some sighing, semi-stupor, contracted pupils, tongue furred and moist, delirium, and yellowish diarrhoea; in a third case there were frequent whitish stools, vomiting almost every hour, white tongue, quick pulse, pale face, sunken eyes, and warm skin; in a fourth case, on the 4th and 5th day of the consecutive fever, there was great restlessness, semi-stupor, sunken countenance, yellowish diarrhoea, &c.

It will be seen from the following experience that this remedy is not as inefficient in hemorrhages as Huss would lead us to suppose.

Hemorrhages.—A delicate lad aged 8 was left with cough and irregular paroxysms of fever, after suffering with measles and scarlet fever in quick succession. He improved during the summer, but in the fall of the year commenced to have frequent and profuse bleedings from the nose; in the course of the winter all the signs of morbus maculosus werholfi were developed, marked by petechiae upon the skin and mucous membranes, and hemorrhages from the bowels, nose, mouth, eyes and skin; the patient, of course, became excessively debilitated; his countenance was sunken, eyes dull, and voice weak. All kinds of tonics, analeptics, and roborants had been used without avail, when phosphoric acid was tried. Ten, fifteen or twenty drops were given every one-half hour, of a solution of one part of the glacial acid in seven parts of water. The recovery was rapid. Profuse hemorrhage from the nose and great debility were removed in another case, in a woman aged 60.

Metrorrhagia.—A delicate woman was attacked with hemorrhage after an easy delivery; she was relieved with difficulty, and a violent fright brought back the bleeding on the sixth day; the usual remedies seemed unavailing until the patient was utterly prostrate, with a scarcely perceptible, trembling pulse; difficulty of speech and hearing; cold sweats; the skin was very cold, and blanched. Phosphoric acid, one part to six parts of water, was then given in ten-drop doses every one-quarter hour, followed by speedy return of warmth of the body, cessation of the cold sweats, and a satisfactory restoration. The physician who reports the case had often found it useful in asthenic bleedings from the mouth, nose, and rectum. Huder thought it very useful in passive and exhausting cases of menorrhagia, and in scorbutic hemorrhages.

Hæmoptysis.—In several cases of profuse bleeding from the lungs, Dr. Schneider found this remedy useful; he gave table-spoonful doses of a solution of one drachm of glacial phosphoric acid in six ounces of decoct. rad. althææ, and two ounces of syrup of raspberries. One patient was obliged to use two ounces of the acid, but then remained perfectly well, although previously he had scarcely escaped an attack longer than two weeks at a time.

Mucous Fluxes.—Sundelin relied upon it frequently in chronic menorrhœas of the urinary and genital organs.

In Phthisis.—Lentius thought it useful in consumption, and believed that it lessened the quantity of the expectoration, removed its offensive character, and diminished the night-sweats. In a very advanced case of phthisis it diminished the sweats, expectoration, and fever. The doses used were fifteen, thirty, and forty drops of the dilute acid every three hours. Goden thought it more useful against the *æcetic fever* than the other symptoms of phthisis. I have used it frequently and successfully in the latter stages of severe influenzas and tedious coughs; it restores the strength of the patient rapidly.

In Scrofula.—Balman states that he has seen phosphoric acid exert a very beneficial effect in a large number of cases, and he does not hesitate to assert that it is in no degree inferior to cod-liver oil, iodine, and baryta. Its effects are sometimes very marked in obstinate cases of *strumous conjunctivitis*; it not only removes the attacks, but prevents their recurrence. He gave from five to twenty drops per dose. Thinks it acts not only as a tonic, but exerts some specific influence upon the blood and system generally.

Diphtheria.—In two cases, in children, aged about four years, no other remedy was used than dilute phosphoric acid, one drachm in a tumbler one-half full of sweetened water, and used as a common drink; from two to four such potions were used in twenty-four hours; the diphtheric patches covered both tonsils, and more than one-half of the uvula. The patients were comparatively well in four days.

Caries Scrofulosa.—A scrofulous and delicate lad aged 16 was attacked, in consequence of a severe external injury, with caries of the bones, which, in the course of four months, attacked a large part of the tibia, the upper portion of the fibula, the patella, and lower portion of the femur. There was a proportional destruction of the soft parts; the patient was much emaciated; had regular paroxysms of hectic fever; pulse quick; night-sweats and irritative cough. He also had pains in the other leg, and in various other bones. Phosphoric acid was given, commencing with a solution of two drachms of the glacial acid in ten ounces of water, in table-spoonful doses, every

three hours, gradually increased to one-half ounce in the same quantity of water; local injections of the remedy were also used. This treatment was continued for eight months with few and no important modifications, and a cure resulted; the improvement commenced very quickly.

Caries.—A woman aged 60 was attacked with phlegmonous erysipelas of the right forearm, followed by suppurating along the course of the tendons; the fingers were stiff and contracted; two small openings discharging offensive pus were found on the back of the hand and one near the olecranon process at the elbow joint. These openings were enlarged, much pus was evacuated, and the bones of the wrist found carious. Thirty drops three times a day were given of a solution of six drachms of dilute phosphoric acid in one-half ounce of water, and one ounce of syrup of raspberries, and a weak solution was injected into the wounds. Another abscess formed on the back of the hand; in ten days it was opened, and the phosphoric acid increased to tea-spoonful doses. In the course of three weeks the openings on the back of the hand closed, but another had to be made in the middle of the forearm, from which much pus, coming from the neighborhood of the elbow-joint, was discharged. Injections of one part of dilute phosphoric acid in two parts of water were frequently thrown into the sinuses, and the internal doses increased to two tea-spoonful. The patient's general health improved, and all her functions were well performed; at the end of six or eight weeks she was comparatively restored. The military surgeon, Medel, used it successfully in a case of caries of the ribs, both as an injection, and internally, in doses of ten, fifteen, or twenty drops of the dilute acid; also in a case of caries of the elbow-joint, occurring after small-pox, and in a third case of caries of the femur; the remedy was used in injections, and internally. It was also found exceedingly useful in caries occurring after severe felons. Dr. Sander used it successfully in cases of caries of the olecranon process, and in one of the toes, occurring after a frost bite. Against caries of the teeth it has been used mixed with myrrh. Wood says, as a local application, it has been especially recommended in *caries*, in which it corrects the fetor, dissolves and aids in the separation of the dead portions of bone, and otherwise favors the healing process. I have used it very successfully in several cases of felon in combination with morphia; the relief was speedy, and cure rapid.

Incipient Syphilis Scrofulosa.—A dyspeptic man aged 34 had great coldness of the fingers, with a corpse-like, and, at times, livid appearance of the skin, with pains, especially when warm in bed; his appearance was cachectic, without excessive emaciation; he perspired profusely and easily, so that he often had to change his clothes twice a day. His fingers were always cold, and felt doughy and hollow; they were sensitive to touch, and pitted on pressure; the roots of the nails were raised and knobby. The toe-nails were similarly, but more slightly affected. The nail-phalanges were knobby, and partially destroyed, and portions of the skin which remained were brittle, hard, and as if dead or mummified. The patient could bear excessively large doses of arnica, angelica, Peruvian bark and camphor, with little or no general effect. Among the remedies used, phosphoric acid seemed most useful, and finally was given in very large doses; the dead and mummified ends of the fingers were gradually cast off, and a cure followed; he used six ounces of phosphoric acid in the course of six weeks. The toes also recovered.

In Cancer.—In cancer of the womb it removed the offensiveness of the discharge, and the colliquative sweats. Hake, of Malsou, corroborates the above experience of Lentin from his own practice. Wood reports that it is said to have proved beneficial in offensive cancerous ulcers.

Nervous Affections.—Sundelin regarded it with favor in spinal irritation and hysterical affections, especially if there was more or less vascular excitement. Richter used it with confidence against spasmodic menstrual affections, and in spasmodic affections and congestions occurring after suppression of the menses, or during change of life. Wood says it has been supposed to possess the power of greatly reducing vital irritability, and has been employed more or less successfully in hysteria and convulsive disorders.

Facial Paralysis.—In the train of small-pox, which had occurred 20 years before, followed glandular abscesses in the neck and behind the ears; when they healed a complete paralysis of the right side of the face was left. Finally phosphoric acid was prescribed for some other troubles, coupled with a scorbutic state; the patient, a lady, was now 35 years old. Soon after commencing the acid the numbness and coldness of the paralyzed side of the face, which had persisted unchanged for several years, was replaced by a sensation of natural warmth for the first time, coupled with some turgescence and redness of the parts; difficulty of swallowing was removed, and the patient regained some control of the orbicularis oris muscle. The doses were 10 drops, four times a day, gradually increased. The same effects were produced in three several experiments, continued for four weeks at a time, until there seemed a rational hope that the paralysis would be entirely removed; but the occurrence of derangement of the stomach led to a cessation in the use of the remedy.

Impotentia Virilis.—The acid cured a case of impotence apparently caused by the excessive use of sugar of lead. In another case of impotence, 12-drop doses of the dilute acid, three times a day, quickly effected a cure; debilitating night-sweats were also removed. Kopp relied upon it with great confidence in cases of debility remaining after severe gonorrhœas, in irritability and sensitiveness of the testicles, in varicocele and excessive relaxation of the scrotum; he supposed that it exerted great and specific curative powers over some diseases of the prostate, seminal vesicles, testicles, bladder, kidneys, and spinal nerves. It seemed to give tone and remove irritability; he used from 12 to 15 drop doses four times a day.

Case 3.—A young man, addicted to onanism from his youth, who had several pollutions every day and more at night, became very much debilitated in body and mind, and exceedingly dejected in spirits; he was ordered a nourishing diet and active exercise to the point of fatigue in the open air daily, and 1 tea-spoonful three times a day of a solution of 1 ounce of phosphoric acid in 1 ounce of syrup of raspberries, and 6 ounces of aq. rub. idæi. In the course of four weeks the pollutions had lessened considerably, the patient became more cheerful, his complexion more fresh, and his muscular power much increased. The doses were increased to $\frac{1}{2}$ tea-spoonful and a cure was effected, at least the discharges occurred only about every fourteen days. Behrends had much confidence in it in cases of impotence.

In Renal Affections.—Paris thought it with a view of correcting alkaliescence of the urine. Bergelius used it against phosphatic deposits, in doses large enough to produce purging, after which the urine rapidly became acid, and deposited lithic acid sediments. Balman found it more useful in cases of phosphatic disease than nitric, muriatic, or acetic acid; it gave tone to the stomach, and diminished the quantity of ropy mucus. Wood says its property of dissolving phosphate of lime out of the body has led to its employment in cases of phosphatic deposits in the urine, and in ossification of the valves of the heart and blood-vessels, in the hope that it might dissolve the abnormal bony matter and calculeous formations within the body; in the urinary affections he thinks it may operate beneficially. Dr. Sutherland gave it successfully in the case of a boy aged 9, with frequent inclination to pass water, some pain in the back; could not retain his urine well even in the daytime, while the *incontinentia* during sleep was complete. He was well in less than three months. Dr. Chapman has given it with prompt effect in cases of milky, phosphatic urine in children.

In Diabetes.—Paris thought it allayed the thirst so common and excessive in this disease more effectually than any other acid drink.

In Dropsy.—Waring says it has been employed as a tonic in purely chronic and asthenic cases.

In Jaundice and Bilious Affections.—It has been recommended in these disorders by Caleb Miller; he prescribed one drachm in a pint of water, and allowed the patient to use it as a common drink; he says it soon produces increased discharge of urine, and the bilious deposit passes away. I have used it repeatedly, and with great success, in chronic bilious affections, marked by more or less pain or soreness in the region of the liver, constipation, often very obstinate, yellowness of the skin and eyes, coupled with dyspeptic and nervous symptoms. In one case, a lady, with sallow complexion, almost permanently heavily-coated tongue, pain and sense of swelling in the region of the liver, with great distention about stomach and along track of colon, with chronic costiveness, was more perfectly relieved in the course of a few days from taking dilute phosphoric acid, than she had been for three months. A gentleman with very similar symptoms was very much better of his dyspeptic and bilious symptoms while using phosphoric acid; his bowels in particular became quite regular, his kidneys acted better, he was stronger and brighter, his complexion fresher, and he was much less hypochondriacal. I have memoranda of two other similar cases, and indistinct recollections of several more.

In Cardialgia.—Dr. Todd states that he has used it with excellent effect.

Hæmorrhoidal Pains.—A man, aged 40, suffered with the most violent pains in the rectum for hours after each passage from the bowels, even if it was soft or fluid; these pains proved rebellious to all treatment until phosphoric acid was given for an aphthous condition of the mouth; the pains in the rectum were relieved long before any improvement in the state of the mouth was produced. This experiment was repeated frequently with the best results.

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