Thesis

On the Value of Sulphide of Calcium as a Therapeutic Agent with Introductory Remarks on the Modes of Therapeutics

Inquiry

By

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Introduction

As understood by the public, the primary duty of the medical man is essentially to provide means for the cure of the various diseases to which the human body is liable. And it is no doubt, in view of this opinion, that medical men are held in a position of esteem that their individual merits do not always entitle them to. This may seem a very narrow view of the functions of the physician, but in a utilitarian age, the scientific investigator in fields of Anatomy, Physiology, Pathology, and Clinical Medicine, fails to obtain the recognition he deserves unless he can prove to the public satisfactory that the immediate result is the discovery of some remedy for disease. It is too often only in the ranking of the medical profession that such work is recognized, and even there it is frequently only after being the object of jealous or antipathy to an almost insuperable degree that the industrious scientific innovator can establish the value of his additions to the sum of human knowledge. In days of greater enlightenment it is to be hoped that these
statements will admit of modification, and that it will become more generally appreciated that the investigator of the nature of disease is the Honoured Friend of the Sanitarian whose study is its prevention and of the Therapeutist whose aim is its cure.

Meanwhile the practice of Therapeutics has been carried on under various difficulties such as the ignorance of the elements of difference between physiological and pathological life, the influence of tradition, the too great reliance on the action of drugs on the one hand, the too expectant dependence on his mediæval practice on the other. Too evident theorists have by over-laudation brought excellent remedies into disrepute.

Superficial Therapeutists have from disappointments inevitable in the treatment of such variable elements as the constitutions of human beings been led to throw aside those means which in their proper time and place might have produced most valuable results. It is essential under such circumstances that our a priori reasons for belief in a particular remedy should give us as firm a basis as possible, otherwise the variations in result just indicated will lead us into unutterable depths of uncertainty and disappointment. At the same time the fallacies
surrounding the invention of a theory must be carefully kept in view and a large-minded and unprejudiced judgment must be brought to bear on the results. In this way only can Therapeutical Truth be approached, not to say attained. The workers in the field of Therapeutics may be fairly classified in four groups:

I The experimental on lower animals in a State of health
II The experimental on human beings in a State of health
III The early empirics
IV The scientific Clinical Investigators.

Group I consisting of really and conscientious investigators whose results are becoming daily more and more confirmed by the clinical enquiry, give us the most valuable light we can hope for, whether in the shape of artificially produced disease, or in the display of the effects of hitherto untried drugs on the corpus vile. Their progress must be slow and while a motherly government answering the cry of all lovers of the lower animals (among whom we hope all medical men are numbered) has thrown certain hindrances in the way of indiscriminate and purposeless Frid.

In this direction, we feel sure that in the hands of liberal-minded administrators...
the appeals of all the courses of their fellow-creatures (among whom still more frequently we rank ourselves) will find respectful attention and thus all reasonable and earnest persons, whether lay or professional may have reason to feel satisfied that the best interests of the race and of its dependents will be considered.

This method is like all others open to fallacies and its results have from time to time to be reconsidered in the light of more advanced knowledge. The results of the late Prof. Bennett Committee of investigation on the action of Mercury have to be reconsidered in the light of Prof. Rutherford's more extended experiments on the action of Cholagogue, and although on a superficial view they seem incompatible, on closer examination each is found to add value to the other, but the advances on the earlier experience made by those of the more recent date are beyond all question.

The verification of these on the human subject by trained clinical teachers or students (the latter including all the former) is, however, essential before they become the stock-in-trade for legitimate use by the general medical advisers of the working and paying public. A late professor of Medicine was fond of saying "none of my patients is a proof"
The clinical basis had here carried him to the extreme limit of sound judgment, possibly, almost beyond it.

Group to The experimenters on human beings in a state of health. This group has, to a large extent, been represented by the homoeopaths and their followers, but can not say worthily. These "proving" conducted loosely by persons of questionable powers of observation, hampered by the well-known difficulties inherent to self-inspection and apparently unable to separate the essential from the merely accidental are in general an undigested conglomeration of irrelevant and useless observations, a mere mass of chaff from which it is hardly possible to extract a modicum of therapeutic wheat. The usual method seems to be to throw together the whole mass of symptoms observed by various persons, and to rearrange these under regional headings according to an anatomical-physiological scheme. To quote Dr. Hulse, a homoeopathist of the freest style, "it is as though the features of some half-dozen English landscapes were brought together within one frame, all the trees put in one panel, all the clouds in another, all the pieces of water in another, and so on; and then the spectator called upon to identify the particular bits of scenery which the original paintings were intended to represent"
Speaking of them in the introduction to his work, he says, "I have written strongly on this subject, not only because I feel bitterly the injury inflicted on homeopathy by this process, but because I am anxious to anticipate the disappointment and even disquiet you will almost inevitably feel when it comes before you." This method may yet lie, in the hands of good scientific investigators, a valuable means of advancing our therapeutic knowledge.

Group III. The true empirics. Those who have found certain drugs useful in certain diseases and give them accordingly. The members of this group have done good service in the treatment of disease and the use of the agents adopted by them has in very many cases been confirmed by the scientific clinical investigator. Though it is not unusual to point to the empiric as unscientific in his method and therefore unreliable in his teaching and practice, it is undeniable that many physicians who teach on the most scientific principle in the lecture hall prescribe on the most empirical lines at the bedside, sinking their ideals in view of the interests of the patient and comforting themselves with saying, "I have seen this treatment do good in many similar cases, although I can give no very good reason for it doing so."
The time seems far distant when we shall be able to give such practice the joy. No amount of investigation conducted on the so-called scientific principle will make up for the loss of the results of the sensible experience of keen heads and cultivated faculties of observation. The "personal equation" of the individual practitioner is therefore the first element of consideration. Humanness of feeling and honesty of purpose being, of course, presupposed.

Chapter IV. The Clinical Investigator must combine the qualities of all those other physicians also. He must keep a watchful eye on every opportunity for observing the natural course of disease. They must discount as far as possible the tendencies to spontaneous recovery so as not to attribute to drugs results due to nature. Scrupulous adherence against any intrusion of the principle of "primum non nocere". They must not substitute an injurious drug for a possibly less injurious disease. But they must do as they would be done by and not withhold from suffering under their care the palliation of mental as well as bodily distress which a well selected plan of treatment however empirical is in good hands generally safe to procure. Beyond this the scientific clinician must call induction in...
the fruits of the labours of the pathological investigator and bring them with him to the bedside to aid in the elucidation of the so-called anomalies which so constantly present themselves, seeking their place they will regularly hold when a more extended series of observations shall have proved their essential position in the picture of the disease. When employing remedies he will keep himself well acquainted with the physiological actions they have by experiment in lower animals or in human beings, so as not to be taken aback by the effects of an overdose nor to misinterpret it for the further development of the disease, but to be ready to recognise restraint or if necessary to counteract it. We thus see that the clinician must utilise the labours of all the other groups of investigators already referred to, but their labours are at present far from being completed and he is not at liberty to defer the use of drugs which may have been thrown through the means of some principal theory however long exploded, but whose beneficial effects have stood the test of prolonged empirical observation. The beneficial results of the action of Mercury in Syphilis though only empirically discov-
would surely far outweigh any hesitation we might feel about using it on account of the great uncertainty still existing as to whether or not Syphilis is due to the presence of a germ which the Mercury in its antiseptic capacity would scientifically be counted on to destroy. Similarly the drug known usually as the Sulphide of Calcium in the introduced and long used by the followers of Hahnemann under the name of Hepar Sulphurhas been found to be of such value apart from any fanciful therapeutic law that we may no longer overlook its good effects, but give them a patient investigation.

II. Preparation

"Sulphide of Calcium is found native but may be prepared artificially by calcining in a closed vessel, equal parts of sublimed Sulphur and powdered organic shell (a pure form of Lime Carbonate)."

III. Properties

"Greasy white or yellowish powder, gradually altered by exposure to air, exhibiting a faint odour of hydro-sulphuric acid, it is slightly soluble in water insoluble in alcohol. The drug as used is a mixture of Sulphide and Sulphate of Calcium in varying proportions but with not less than 36 per cent of Sulphide of Calcium."
If one gm of sulphurised Lime be gradually added to a boiling solution of 1.25 gm of sulphate of Copper in 50 cc. of water, the mixture distilled on a water bath for 15 minutes, and filtered when cold, no colour should be imparted to the filtrate by one drop of test solution of Ferro-cyanide of Potassium presence of at least 36 per cent of real sulphide of Calcium. Thus showing that all the copper has been precipitated.

V. Physiological Action

Stomach. When sulphide of Calcium is taken into the stomach in its simple form, the speedy liberation of Sulphurised Hydrogen is manifested by characteristic irritations, is evidence of the decomposition of at least a portion of the dose into that gas. In small doses the sulphide excites a sensation of warmth at the epigastrium, but in large doses it produces acute inflammation in the digestive canal (Ringa). Decomposition. Whatever portion is not decomposed into Sulphurised Hydrogen is gradually converted into sulphates of which the action in such small quantity as would be given is practically nil.

What becomes of the Sulphurised Hydrogen? Absorbed into the portal circulation it will, if necessary, produce physical & chemical effects of a sufficiently obvious character.
It has been shown by Antrochet (quoted by Cline "The Nervous System") that the presence of sulphuric acid in the solidd fluid on the one side of a dialysis. The septum of a dialysis causes a very considerable acceleration of the passage of that fluid through the membrane. Hence an increased exudation of the blood in the portal vessels would be naturally expected. This shows itself by an increase of flow from the bowels during the exhibition of sulphuric acid.

Blood

In the next place it is easily intelligible, in view of the case with which sulphuric acid unites with iron to form a sulphide of great stability, that the gas finds out the iron in the corporcles and works their destruction by forming with the iron an almost inert combination. That this takes place is affirmed by Roth of Weilbach (quoted by Cline opec.)

Two observations of importance tend to confirm this view.

Firstly: "Persons habitually breathing air impregnated with sulphuric acid are certainly prone to suffer from great anemia." (Roth) This might to a certain extent be accounted for by the sulphuric acid diluting or taking the place of the necessary oxygen in the respirial air. But that this is not the only etiological fact is shown by the following
Secondly:—Conformably with the decrease of
the liver (in cases treated by the sulphuretted
water of Weilbach) an anaemic condition
manifests itself, in spite of plentiful
nutrition:” (Braun “On the Curative effects of Bath
wells” 1875 p. 414)
This is further confirmed by darkening
of the faces owing to the presence of a
combination of sulphuretted hydrogen with
iron derived from the haemoglobin of the
blood, though in part—no doubt with
the iron in the food—which is thus
lost as far as haematinic purposes are
concerned.

Another effect referred to by Ringer is that
“the gas appears to cause great functional
depression,” and that “taken in overdose
the sulphides produce insensibility and
speedy death” (p. 135). He suggests that
this latter result cannot be due to the
effect of those substances on
the stomach, seeing from Bernardo's ex-
periments that sulphuretted hydrogen in-
jected into a vein is so quickly
eliminated by the lungs so that the
arterial blood is uncontaminated by
this gas and consequently the nervous
centres cannot be affected by it.
This idea seems untenable when we
consider the ample evidence of the elimina-
tion of the substance by the Kidneys
and hence of the perversion of the whole
blood-system. Moreover there is much
reason to believe that a sedative action on the tissues is inherent in this gas.

We have the following opinion given by M. M. Drouaceau & Picton (Traité de Therapeutique).

"It is certain that the nervous system and the blood are particularly influenced by this gas which has a very manifest stupefying power." This stupefying power has been shown by Brown to extend to the vegetable kingdom, as in the case of a plant exposed to the action of sulphurised hydrogen, when the leaves begin to droop and the plant did not recover when removed from the action of the gas (Practitioner Oct. 1838).

Dr. Blaine of Harrogate in whose work on "The Harrogate Waters" the sources of many of these observations are indicated, ingeniously points out the analogy between the sedative action of sulphurised hydrogen and that of its companion, seleniumised hydrogen.

The inhalation of one bubble of which deprived Bergelius of the sense of smell for several hours. We might remember in the same way the sedative effects of other analogous combinations, hydrocyanic acid, hydrocyanic acid, phosphorised hydrogen, carbonised hydrogen. That some of the sulphurised hydrogen is eliminated by the skin is evidenced also by the fact that metallic articles become tarnished if kept in contact with the fumes of these, taking the drug.
Although...

The influence is shown by the sound of the traffic.

And the sense of three feeling.

It will be cultural that the tendency.

The epistemic cluster of phenomena. The phenomena are identified. The phenomena are identified. The phenomena are identified.

It is not only due to the climate. It is also due to the skin. It is also due to the climate.

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By the way of testing this property, I have recently made the following experiment. In each of two bottles I placed about two ounces of fresh urine and to one of them I added about 10 grains of Sulphate of Calcium. The bottles were allowed to remain undisturbed for eight days. The urine in which the sulphate had been injected was almost odorless and under the microscope was found to be swarming with vibrios moving about in all directions. The urine in which the sulphide had been injected was almost odorless and under the microscope showed a few refractive granules displaying Brownian movement but no active vibrios.

To resume, we have to note:

1. Increased excretion of fluid from the vessels
2. Destruction of blood corpuscles producing anaemia
3. Sedative action in general
4. Determination to the skin, the lungs and the kidneys
5. Antiseptic action.

IV. Therapeutic Action

In clinical therapeutics the principles of Inductive Reasoning ought preferably to be carried out chiefly by the Method of Difference i.e. by removing the circumstances of the observations in as many
ways as possible so as to differentiate the accidental from the essential facts bringing about the result. However in practice the difficulty arises of getting a sufficiently large number of cases for safe generalization and medical men are driven to form "impressions" as to the action of drugs by comparing cases similar in severity and other characters treated with and without the drug under investigation. It is chiefly by such a process that the value of Sulphide of Calcium in the treatment of the following diseases has been detected.

**Scabies.** The parasiticidal effect of the drug is used for the destruction of the Cleavers. It is recommended by Ringer to be used by means of a solution prepared according to a formula of Dr. Bowdichman, which is made in the following way: "Boil one part of quick lime with two of sulphuric sulphur in four parts of water, until the sulphur and lime combine; let the solution stand and afterwards decant the clear part. After the patient has bathed and wiped himself dry the liquid solution is to be poured over the body."

**Suppression.** The most remarkable feature of this sulphide (and of those of Sodium and Potassium) is their effect on the suppurative process when taken internally. The thin watery discharge of unhealthful sore
is alleged by Ringer under its influence to acquire the characters of 'harmless' pus, becoming at first more abundant, afterwards diminishing and throughout continuing thicker and healthier.

"If given early enough in inflammation threatening to end in suppuration, they reduce the inflammation and arrest the formation of pus" (Ringer).

Many instances of illustrating this statement have come under my notice, but the following cases seem particularly confirmative of the position.

Case I Abscess of Chest wall arrested.

J. P., a bricklayer, came complaining of a painful swelling about the size of a large walnut projecting from the side of the chest in front of the axillary fold. It was of a reddish tint but hard and hot to the feel, and had been noticed for a few days. He was ordered sulphide of calcium 6 to every hour. Two days later the swelling was much about the same size but had softened and looked as if eventually it would require opening. The sulphide was continued and the patient was directed to return in two days. He did not come and when seen sometime after paid the swelling had disappeared entirely giving him no trouble so that he had returned to work.
Case II. Palmar Abscess cut short.

T.C., a girl 12 years old, was brought to me on Feb. 11th, 1844, with a swelling in the palm of the hand about the size of a small hen's egg. There was a certain amount of fluctuation to be felt, but the swelling was not uniformly soft. I felt doubtful whether to open it at once or not. However, I determined finally to have it poulticed for a few hours with a view to softening down the parts that were still indurated. At the same time I gave a cat. of sulphure of calcium every half hour, hardly hoping, that considering the state of the swelling, anything short of the lanceet would reduce it, but consoling myself with the idea that if it did not cut short the inflammatory process it would at any rate promote the formation of laundette fluid, in accordance with the views enunciated by Ring (ed. 1, p. 136).

The following evening the child was again brought up to my assistance, and there was a distinct diminution in the size of the tumour. The treatment being continued for another 24 hours the swelling entirely disappeared.

Case III. Prevention of dischis-rectal abscess.

This case was curious and of great interest. A gentleman, after some hard riding on a hard saddle, was attacked with difficulty in micturition, ultimately resulting...
in spasmotic state requiring chloroform
of the passage of a soft catheter before the
bladder could be relieved. A week after
this he began to complain of pain in
the rectum for which no cause could
be assigned. The introduction of the
finger caused intense pain and re-
treated tenderness on the left side of
the bowel. A week later there was an
indurated swelling in the left ischio-
rectal fossa. This swelling followed a
week later by orchitis on the same
side. But it is only the ischio-rectal
induration that made one concerned with.
Half a grain of sulphide of Calcium was
given every two hours, and an ointment
of lodide of lead rubbed freely over the
area.
The progress in this case was very slow
and for some time it seemed uncertain
what the result would be, but finally
the swelling entirely disappeared.
In these cases all the circumstances favor
the opinion that the formation and sub-
sequent discharge of pus was inevitable.
The result following the administration
of the sulphide of Calcium was apparently
due to the influence of that drug.
After the formation of pus the influence of
this group on the suppuration process is
still more conspicuous; then the sulphides
hasten maturation considerably, whilst
at the same time they diminish and circumscribe the inflammation, promote the
passage of pus to the surface, and the evacuation of the abscesses." (Elphur)

Ringler gives a typical case the counterpart of which occurred in the practice of
Dr. Dundas Grant, who described the case to me as having been under his notice
seven years ago.

Case IV. Glanular Abscess of very slow course.

Matured rapidly under Sulphide of Calcium.

A child two years of age of seroputrid habit was brought suffering from the presence of
a lump under the left angle of the lower jaw.

It was evidently inflammation and was be-
coming fixed. The ordinary stomachic tonics
and diaphoretics were administered, iodine was
applied and relinquished in favor of fomentics,
and for several weeks there was little or
no change to be detected. The Sulphide
of Calcium was then thought of, and the
iodine and Ringler were exactly home out.

The pain and constitutional disturbance
began to diminish, the swelling became
smaller, the pus reached the surface
in four or five days, leaving when it was
evacuated a wound which quickly
healed.

Boils & Carbuncles. The beneficial action
of the Sulphide is preeminently conspicuous
in the case of Boils & Carbuncles, and as
this is now accepted with scepticism
than its action in any other disease, it
must only be referred to. Many cases have
occurred in my own and their practice.
Illustrating the limitation of suppuration, diminution (generally, but occasionally temporary increase) of tension + pain, rapid softening + satisfactory evacuation of already advanced boils, drying up + disappearance of those in an earlier stage of formation ("blind boils") and an immunity from the development of fresh crops unexplained by the results under any other treatment.

Furuncle in the ear - the occurrence of furuncle in the auditory passages and the frequency of the erroneous diagnosis of acute middle ear disease gives this condition a serious importance on account of the violence of the pain accompanying it, its intensity and the inevitable tendency to recur when it is unrecognized and the appropriate treatment is withheld.

A Dundas Grant informs me that his invariable treatment is to administer the bulla and internally, to insufflate powdered Boracic Acid, and to incise the furuncle if matured. Under this treatment he finds relief quickly acknowledged and recurrence unknown. Serulous glands and abscesses. The secretion may be compared for pathological purposes to the quinta-pulp, which were found to be susceptible to tuberculosis infection from any unspecific as well as specific inoculation, and we are not far wrong in affirming that such glandular enlarge-
and inflammations are always excited by some focus of irritation (wound, ulcer, vesicle, parasitism) in the area or tissue drained by the lymphatic vessels leading to the affected glands (compare Lewis "On Serpulous Glands," London). Now in these cases this is usually much thickening of the edges of the opening, after a slight and tedious maturation and evacuation, the discharge is thin and the tendency to heal is very slight. I have repeatedly seen the process become more septic and healing take place as described above. On many occasions I have seen simple enlarged glands (simple only in so far as the irritating focus was not perceptible, though probably existing) diminish under the proper treatment. All these observations led me to the idea of the need in the gravest form of serpulous glandular disease—Tubes Mesentericae.

I will narrate two cases in which I was driven to believe the gratifying results were due to the drug.

Case 1—Tubes Mesentericae with recovery in 7 days: At 15 months old was brought to me on the first January 1884. His mother stating that he was falling away to a shadow except his stomach which was much distended, he had a moracious appetite which was never satisfied by what he took—stinking tarry motions
In examining him I found great emaciation of upper limbs, extremities, and thorax. The face was pinched, and the abdomen greatly distended. The temperature slightly elevated. On telling her the nature of the disease, she said to avoid expense she would take it to a hospital as long as possible. Knowing that in the end she would have to call me in to attend it, she accordingly took it to the Hospital for Children in Great Ormond St. London, where my diagnosis was confirmed, and I saw nothing of it for about six weeks, when the mother came requesting me to go and see the child, as she had been told no longer to bring it to the hospital. On seeing it I found exsanguination of all the former symptoms, and in addition cough, sickness, and enlargement of the cervical glands. The child was so weak that it could not raise itself, and was obviously suffering from hectic fever—owing to the great distension of the abdomen enlarge glands could not be felt. I first attempted by giving a carminative to relieve the distressing cough and vomiting, when that had been done I gave the Compound syrup of the Phosphates of Iron and Lime and ordered Cod Liver Oil by injection. No good results followed, on the contrary the child got into such a low state that we gave up all hope of recovery. It then occurred
to me that if Sulphide of Calcium was good for pulmonary ailments elsewhere, why should it not be good for enlargement of the mesenteric glands? I accordingly gave the child a bit every four hours and continued the Cod Liver Oil. Marked improvement followed, in a few days the stools became less offensive, then the child began to look brighter & the stomach which was always more distended at night ceased to swell to such an extent as before. It was not however until the Sulphide had been taken for about three weeks that any distinct improvement such as would justify us in hoping for recovery took place. From that time the progress was more rapid and after the treatment had been continued for two months the child was gaining flesh rapidly, began to run about & play. At this time I went away for a change and my locum tenens who saw the child gave it again the signs of the Phosphates 4 said it would require no more medicinal treatment. Three months later there being signs of a slight relapse I again put the child on Sulphide of Calcium for a fortnight with the most satisfactory result, for with the exception of a few accidents it has been in good health ever since & now shows no signs of its former illness.
Case VI. S. P. remittive with recovery.

Soon after the above case another child was brought to me, the symptoms and physical signs being identical with those of Case V at the stage when first brought under my notice. These being in this case also troublesome could go in the former, after reliving the constipation I gave the sulphide of calcium, and after a fortnight's course of that this was such marked improvement that the mother ceased to bring it to me. However, on my advice she gave it small doses of the syrup of the phosphates, and the child is now a very plump little fellow.

Acne.- The successful treatment of Acne Vulgaris is only to be attained by attention to the clinical causes predisposing to the disease in the various subcutaneous Acne is in its local respect no exception to the general benefit derived from the sulphide in sublimation. Under the action of the sulphide (internally) the advanced Pustules (caused by the action of Staphylococci) coalesce, mature and break, and those less developed usually if touched with Tincture of Sulphur and Cinnamon dry up and disappear.

Case VII. Miss X aged 21 had been since puberty completely disfigured with Acne Vulgaris et cindermata. Matrimonial prospects induced her to repeat her hitherto unsuccessful full endeavors to obtain a cure, and she again sought advice with small
Hope of success. They were prescribed for
her an alkaline fluent & three daily a
pill containing to grain of Calcium sulphide,
iodide of sulphur ointment & steam as required.
In a week improvement was already
apparent & shortly afterwards the discharges
were hardly perceptible.
Minor cases in considerable numbers have
yielded to the same treatment.

**Diseases of the Throat**

I am for these experiences indebted to
my brother Dundas Grant, whose large
field for observation at the Central London
Throat & Ear Hospital gives him an
amount of scope for the study of these
complaints that no private practice and
few general hospitals could afford.

**Tonsillar Abscesses** The knowledge of the ef-
fect of sulphide in other abscesses led
to its test and corroboration in the case
of Sainsy where suppuration seemed inevitable.

**Follicular Tonsillitis**. The grief was gradually
used earlier & earlier in the cases of tonsillitis
until now it has become with him the
routine treatment quite displacing
Mercurius, Chlorate of Potash and the
Salicylate of Soda (which invaluable antiseptic
long afforded admirable results though too
often furnished by unpleasant physiological effects from which the Sulphide is free).
With its great constancy and therapeutic power
of the follicles (the original seat of most-
tonsillar abscesses) evacuate their contents,
and specially preserve their normal appearance.

Diphtheria — with some degree of anxiety.

The same practitioner applied this treatment to a case of Diphtheria enumerated by the recommendation of it expressed by Titta Phillips (Materia Medica Therapeutics) Elisha St uart in recommending local applications of "precipitated sulphur" with success in six cases owed that success very probably to the sulphide of Calcium with which sulphur as precipitated can hardly be free.

Case VIII. Diphtheria treated with Sulphide of Calcium

Pia Gentie C, aged 10, after a deep illness preceded by several days of increasing emaciation, attributed to the habitual drinking of water contaminated by excretions from a swine clover, developed a severe sore throat. The submaxillary lymph glands were enlarged, the fever moderate, the tonsils were covered with a white multilocular membrane which could not be brushed off and the breath was exceedingly fetid. Next day the membrane continued on to the uvula.

She was ordered a tenth of a grain of Calcium sulphide in a tumbler of milk every two hours and took a little port wine in water. The next evening a distinct laryngeal stridor was audible and as she was found to have omitted to take her medicine alleging that the taste was too offensive the sulphide was simply suspended.
in a little syrup and cinnamon water. In this form she took it perfectly well before morning she confided up a Relaxing shread and lost the stridor. The membrane gradually dissolved away from its edges and in a week this well marked case had terminated in recovery.

Bronchitis—Phillips quotes Dr. Grove as recommending sulphur in Bronchitis and Bing as suggesting that sulphurised hydrogen excreted by the bronchial mucous membrane may narcotise the terminals of irritated bronchial nerves. He says further: I have seen cases marked by loud wheezing, profuse but difficult expectoration, troublesome palpitation and nocturnal spasms of severe dyspnoea improve quickly with 5 to 10 grains of sulphur three times daily (Op. cit. p. 40).

Dr. Grant mentioned to me a case in which a patient with bronchial cough & dyspnoea was ordered Calcium Sulphide with a view to the treatment of peri-anterior suppuration, and in which a most remarkable increase in the quantity and facility of the expectoration manifested itself.

Hepatic Disease—Dr. Phillips states that "chronic enlargement" of the liver with obstructed to the portal circulation accompanied with ascites is by antimonials is often much benefited by a course of sulphur, 1/2 of calcium sulphide or potassium sulphate.
The results described above are attainable by means of the sulphide cannot in all cases be directly deduced from the physiological actions, but it is satisfactory if absolutely indispensable to endeavour to build the therapeutic theories upon a sound basis of physiological observation.

The antiparasitic action of the drug is to be accounted for by the sedative action which has been already considered.

The good effects found in Hepatic Cholera, especially of a conjunctive character are intelligible in the light of the increased exosmosis and dilatation of blood corpuscles. As regards the influence over the supplicative processes, the apparently contrary action in sometimes preventing, sometimes encouraging suppuration, finds its parallel in the case of poultices, which prevent suppuration when employed early enough, and favour it when the time for production is past. On what principle do poultices prevent suppuration? Is it doubtless the sedative action of heat dispelling the spasm of the extreme capillaries and allowing the blood stasis to come to an end. How do poultices favour suppuration? By drawing blood to the part, softening the tissues & promoting proliferation.

In sulphide of Calcium we find the sedative element, the increased exosmosis effecting derivation, and in addition the antiseptic element whose influence
over suppulsive processes and their constitutional effects is so much more
manifest in surgery than in medicine.
In respiratory affections the sedative,
exaemetic and antisepctic properties
should all come into play with mutual
specific effect on a mucous memhrane
which sulphuretted hydrogen
doost strongly determines itself.
The anaemia described above is certainly
a most rare result, but there is unquestionable evidence of its occasional
occurrence, and in cases where
a very long continued course of
sulphides in medicine or mineral waters
is given it must be kept in view so
that a substitution of Chalybeates for
sulphuretted compounds may be made.

The Dose. In most acute cases the
does is from the third to fifth of a grain at
intervals varying from half to four hours.
In scorbutous cases it may be necessary
(internally) to increase the dose up to a

Grain or two grains.
It may be administered when the general
effect is desired in the form of a
coated pill, but when a local effect
on the throat is desired it is best
given in powder with sugar or milk and
then the minimum dose is sufficient.
If more convenient it may be suspended
in a syrupy mixture flavored with
Cinnamon, peppermint or both, or partially
dissolved in a large quantity, but in liquid it can only be kept for 24 or at most 36 hours.

The untoward symptoms attending overdose have been already specified.

The knowledge of the Physiological action of Calcium Sulphide is evidently incomplete, but we may hope that in time it will enable us to explain the valuable Therapeutic results. Meanwhile, recognising these results we are surely called upon to march forward with the Therapeutic advances rather than to lag behind while waiting for Physiological confirmation.

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