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**E. W. SCHAUFFLER**

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**Observations on the Corrective Influence Exerted by the Bromide of Ammonium on the Action of Quinia.**

By H. C. Beall, Coloma, Mo.

The bromides are generally conceded to possess the property of diminishing the supply of blood to the brain, and the peculiar sedation which that exhibition produces on the nervous centers, in some irritable conditions of the cerebro-spinal system of nerves, has long been known and appreciated by the medical profession. Yet the corrective influence exerted by them on the deleterious action of other agents seems to have been little studied. True it is that Dr. Da Costa, of Philadelphia, has studied to a considerable extent the corrective influence exerted by the bromide of potassium on the action of opium and its alkaloids, yet he seems to have confined his observations to those two agents alone. He has ably shown, by a series of carefully conducted experiments, the undoubted increased influence for good exerted by the two drugs when given in combination; and has clearly established the fact, that the union of these two seeming incompatibles exerts a sedative influence on the human system that neither of them accomplishes when given alone. The result of his observations may

be found in the *American Journal of the Medical Sciences* for April, 1871.

This fact being established, does it not follow, as an axiom of therapeutics, that two agents possessing the same general properties of the two drugs in question may be combined with advantage? Acting upon the principle just stated, I commenced about two years ago the study of the effects of quinine and bromide of ammonium, with a view of determining, if possible, whether the combination would have the effect of alleviating the distress following the use of quinine. I have found that in many cases, by the use of the two agents in combination, I have succeeded in entirely preventing the cinchonism that usually follows the use of quinine in quantities sufficient to destroy the malarious influence; and, in cases wherein it did not entirely succeed, its influence was clearly seen, the intensity of the cerebral excitement being sensibly diminished. I have also found that the bromide of ammonium exerts less influence on those cases that had repeatedly taken quinine in quantities sufficient to produce severe, and often repeated, cinchonism; yet even in such cases it has not proved entirely powerless. In no case has it apparently diminished the effect of the quinine, but, on the contrary, has seemed rather to serve as an auxiliary to its action, by holding in check the nervous system, equalizing the circulation, and thereby affording a more favorable condition of system for the action of the anti-periodic. I have invariably used the bromide of ammonium in preference to the potassium salt, for the reason that a smaller dose is sufficient, its effects are sooner obtained, and the liability to gastric irritation is much less. I have never found that the ammonium added, in any degree, to the nausea and vomiting usually seen in such cases; but, on the contrary, it frequently seemed to act as an efficient gastric sedative, allaying the nausea and vomiting, and thereby enabling the stomach to retain quinine when otherwise, perhaps, it would have been rejected. I will now give the history of a few cases as they occurred in practice, treated in this manner.

Geo. R—, æt. 13. First saw him July 6th, 1871; found him suffering from an attack of remittent fever, this being the

second day. There was great febrile excitement, intense headache, some delirium during the exacerbation of fever. His father, an intelligent Presbyterian clergyman, informed me that it was no unusual thing for him to be delirious when he had fever. Gave at once, without waiting for a remission, the following prescription—that is, as near as I could guess, it being in the country and having no means at hand of weighing: R Quiniae Sulphatis, gr. xij.; Ammonii Bromidi, grs. viij.; Pulv. Opii et Ipecacuanhae, gr. ij.; M. ft. Chart., No. viij. Dose—one every three hours. Other treatment as indicated—cold water to the head, etc. 7th—Has had a remission, but still has considerable fever; has been somewhat delirious; still continue treatment. Complains of none of the symptoms usually attributed to quinine. 8th—Had a well marked remission last night, but to-day has considerable fever; no symptoms of cinchonism; still continue the treatment. 9th—Has had a remission of greater length than at any time during his sickness; still has fever; no signs of cinchonism; still continue treatment. 10th—Feels very comfortable; but little fever since the day before; complains of nothing that resembles the unpleasant effects of the quinine in the least—no dizziness, no ringing in the ears nor deafness. Now here was a case, presenting the cerebral symptoms of remittent fever in a clearly marked degree, recovering without any of those untoward effects which usually follow such cases. Had I treated him with quinine, to the extent which I did, without the addition of the bromide, I think I should have had a series of unpleasant effects following the free use of the quinine that would have been very troublesome.

CASE No. 2.—Benj. P.—, Jr., æt. 22. Saw him first August 14th, 1871. Found him suffering from remittent fever, attended with nausea and vomiting, severe headache, fever running high, he being rather plethoric. Gave at once the quinine and bromide in about the proportion of three grs. of quinine and one of the bromide, a powder every three hours, without waiting for a remission. Gave such other treatment as seemed to be appropriate. 15th—Has had a remission, but now at the time of my visit, has considerable fever; still complains of headache, but no symptoms of cinchonism; continue treatment. 16th—

Had a good remission last night, but has some fever to-day; does not complain of the quinine; treatment continued. 17th —Has had but little fever since yesterday; feels very well; does not complain of cinchonism. Now, during the three days of active treatment, this young man must have taken at least one drachm of quinine, at a time when he was parched with a raging fever, without complaining of the cerebral excitement usually attending the free exhibition of this drug.

I could give the history of other cases, bearing testimony as to the correctness of my conclusion, but I think these amply suffice. Although, like all other human things, I have not found it to be infallible, yet I am fully persuaded that in the combination of these two drugs, we have the means of accomplishing much good. I have thus briefly given the result of my observations upon this matter. Living, as I do, in a malarious district, I have been a frequent witness of both the good and evil effects of quinine; and while I regard it as being one of the most useful agents in the *Materia Medica*, yet, in truth and justice, I am constrained to say that it, too, has its faults; and it is the province and duty of every physician to endeavor to render the known and reliable therapeutical agents as nearly perfect in their action as possible. I hope that the attention of the profession will be directed toward the study of the corrective influence exerted by these two agents upon one another, believing, as I do, that by that means much good may be accomplished.

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### The Causes, Pathology and Treatment of Epidemic Cerebro-Spinal Meningitis, or Spotted Fever.

By Robert F. Smith, M. D.

Having seen a good many cases of this disease at the hospitals and College clinics in New York, during the late epidemic, I offer to the profession the results of my observations thereon, together with the views of some of the leading medical men on the subject.

In regard to the etiology of the disease, it cannot be denied that the profession is still somewhat in doubt, though many



physicians are disposed to attribute it to malaria, and treat it accordingly. This origin, however, has not been clearly proven, and it is, I think, exceedingly doubtful. Some French writers, I believe, look upon it as a peculiar form of typhus, and it must be admitted it does present some symptoms common to typhus. The disease is considered by the leading men of the day to be a specific blood poison of miasmatic origin. In our reading we must carefully distinguish between the words "miasma" and "malaria," for notwithstanding that the derivation of the two words gives them the same definition, they are not generally used as synonyms by writers, the one being used to signify a bad air tending to produce peculiar forms of disease, such as intermittent and remittent fevers, and the other being applied to bad air in general, without reference to the nature of the disease it tends to produce. Though the source of the poison producing cerebro-spinal meningitis is by no means clearly settled, I think it most probable that the emanations arising from decomposing organic matter in filthy localities, cesspools, sewers, etc., exert a decided influence in inducing the disease. Let us for a moment consider the claims of these different theories of causation.

1st.—With reference to the malarial.

It is admitted that spotted fever, both in our country and in Europe, has prevailed to a far greater extent in winter and early spring than in summer and fall; therefore, if we accept the opinion that a temperature of at least 60° F. is necessary for the production of malaria, the question need be no further discussed. The idea of the influence of malaria exerted the previous fall might be deemed worthy of discussion if we did not find the disease prevailing to as great an extent in non-malarious districts as in those where ague is frequent, attacking persons who have lived long in malarious countries without being affected, and occurring during winters that have not been preceded by a marked prevalence of malaria. Dr. Radcliffe says, "there is no sufficient ground for believing the malady is of malarious origin." He states that certain cases distinguished by intermissions and remissions have taken place in a district free from malaria, and after some remarks relative to its prevailing in winter, when malaria is frozen up, says: "the infallible

test of malarious disease, quinine, by its inutility in cases of this epidemic which assumed an intermittent and remittent character, showed the non-malarious nature of the affection." Again, the fact that it is most frequent among children from one to five years old, who are comparatively exempt from malarial fevers, while older persons are least liable to it, is another argument opposed to malaria as a cause. Other facts to prove its non-malarious origin could be cited, but it seems that these are sufficient.

2d.—With reference to its being a form of typhus, a view which seems to have originated and remained with the French, Niemeyer says, "the idea has been entirely disproved during the late epidemic in Germany;" and Radcliffe says, "differing in all essential particulars, doubt can only arise when the two diseases prevail together; the difference in duration, course of temperature, form of cerebral affection, anatomical lesions, and rate of mortality, may all be observed as proofs that the disease is not of the nature of typhus."

3d.—Regarding the influence of deleterious gases arising from cesspools, sewers, etc.:

That the emanations from such places exert some influence either in exciting or determining the character of this disease, will be readily inferred if we look into the residences of those mostly affected. Without detailing the condition of those brought to the clinics, I will give the report of the city Sanitary Inspector to the Board of Health of New York, showing the conditions existing in a tenement where a number of children had died in rapid succession of cerebro-spinal meningitis, the longest period of illness in any case being seventeen hours. After detailing the particulars of the sickness and death of these children, the report continues:

"That there was a blood poison which had produced these results there could be no doubt; that there should be found a direct cause there seemed no question. It was diligently searched for and found. Upon a careful examination of the system of drainage belonging to these premises the following conditions were discovered:—This house, No. 445, and the adjoining house, No. 443, were found to have a common privy vault and one sewer connection therefrom to the sewer in the street, all the house drainage from kitchen sinks of both houses connecting with it. The drain was of earthenware pipe, and entered the cellar of the rear wall of the house No. 443, closely adjoining the partition between it and 445. This pipe had an elbow at the point where it entered the cellar, extending about two feet above the cellar bottom. The

lower opening of the elbow was loosely fitted into the shoulders of the next length of pipe, which passed downward and underneath the ground of the cellar bottom, thence to the sewers in the Eleventh Avenue. At this loose joint of the elbow there was no cement to prevent the escape of sewer gases, which passed outward and upward through the lath and plaster partition, base board and loose flooring of the rooms above the cellar.

"It was on this floor, level with the street and yard adjoining, that Mr. Brown's family, consisting of himself, wife and six children dwelt. This floor was divided into four rooms, as follows:—The front room was used as a tin-store, a rear room used for all the ordinary family purposes, being kitchen and living room, with two small bed-rooms intervening, one having doors from front and rear rooms, the other having an entrance from the store in front. In the rear room in one corner there is a closet without lining, simply shelves. Upon questioning the inmates they described a most offensive odor as issuing from this closet, frequently so bad as to produce nausea, and as the sick girl of thirteen years said, when she heard the inquiries about this stench, 'Oh, sir, it's awful; smells like dead dogs and rats; it has often made me sick.'

"The investigation of the sewer pipe before mentioned disclosed the fact that this loose-jointed elbow was almost directly underneath this closet, being in the cellar adjoining, close to the partition wall. At the top of this wall was an opening under the floor and communicating with the open lath and plastered partition dividing the houses. Again, there was found an enclosed wood bin, boarded up to the floor above from the cellar bottom, in which this elbow was located, preventing in a great measure the escape of these sewer gases into the cellar, but causing them to pass almost directly upward, through the openings above, into the closet, through the flooring and base-boards. In the history of these cases it will be observed that each child was attacked at night, and with nearly identical symptoms—pain in the head, vomiting, sometimes a chill, great prostration and rapidly fatal. What can illustrate more positively cause and effect? With the rooms closed at night, ventilation entirely obstructed, inhalation of poisonous sewer gases, in constitutions vitiated by want of proper nourishment, (the family being very poor,) what other results could be anticipated—either a slow fever of a typhoid kind, or, as in these cases, with an active poison, sudden death? Immediate steps were taken by notifying the owner of the premises to remove these earthen sewer pipes and substituting an iron pipe, with tightly leaded joints, and placing stench-traps under each sink in the waste pipe."

Those who have noticed that sulphuretted hydrogen and gases of a similar nature, produce in animals some of the very same symptoms observed in cerebro-spinal meningitis, after reading the above report, if they accept the generally received opinion, that similar causes produce similar effects, will be led to think that possibly these emanations may be the source of the infection. We know that animals confined in these gases die very quickly, and that the rapidity of the effect is in proportion to the concentration of the poison, and the report of Dr. Morris shows that when confined in these gases, as the children were at night, with the doors closed, and the dilution of the poison with pure air, therefore, prevented, persons are