

Queries and Minor Notes

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SUSCEPTIBILITY TO FLEA AND MOSQUITO BITES

To the Editor:—All the fleas and mosquitoes in our neighborhood concentrate on me and rarely, if ever, bite my wife. One of my friends states that his wife attracts fleas only, while he is "eaten alive" by mosquitoes and does not remember ever having had a flea bite. Do you know of any explanation for this?
M.D., California.

ANSWER:—In an article entitled Flea Antigen in Prevention of Flea Bites, Cherney, Wheeler and Reed (*Am. J. Trop. Med.* 19:327 [July] 1939) state: "It is well known that there is some form of 'immunity' or resistance to insect bites. California, and particularly the San Francisco Bay region, abounds in fleas which do not encroach on the rights of most of the local population but which are a source of great misery to many newcomers until they acquire an 'immunity.' This usually takes from several months to several years, and in rare instances is never acquired. . . . A similar situation holds true in mosquito districts. Again it is newcomers who suffer most." These authors conclude: "There is definite evidence of some sort of 'immunity' to flea bites, and the fleas' selection of their victims is not a matter of chance."

The nature of this "immunity" is not clear. It is perhaps only analogous to bacterial immunity and is associated with an allergic reaction and a process of desensitization. The situation needs serious study. It is possible to desensitize with flea extracts against the reaction to flea bites, and this desensitization seems to be accompanied by a decrease in the bite rate.

DECAPITATION AND CONSCIOUSNESS

To the Editor:—In the July 10 issue of *Life* magazine are a series of pictures of the decapitation of Wiedman. Can you give me an account of just what processes take place after such an execution? How long do the head and body live after separation? I notice that immediately after the blade falls the body is dumped into a waiting basket; presumably the head is thrown in too. I have seen this in the case of chickens, in which respiratory movements continue for nearly a minute; the body of the chicken jumps about and, in one case, stood up on the feet only to fall again, while the eyes were seen to blink and the mouth to open and close several times as in suffocation. Somewhere I have read of the case in which the victim stood up after the ax had fallen and boxed the ears of the executioner. I would appreciate authentic information on this point. No books seem to mention anything about it.
M.D., New York.

ANSWER:—There has been much speculation as to the possibility of conscious processes going on in the human brain after the head is suddenly separated from the body by the usual processes of decapitation. The only available record of observations to determine the existence or nonexistence of consciousness in a decapitated head seems to have appeared first in the *Républicain orléanais*, June 27, 1905, and is republished in *The Underworld of Paris* by Morain (The Underworld of Paris: Secrets of the Sûreté, Alfred Morain, C.B.E., Préfet de Police of Paris, London, Jarrolds, 1931, pp. 300-302). The authenticity of this record is implied by the fact that Morain's attention was called to it by Monsieur Deibler, executioner in chief of arrested criminals.

In this case, according to the report, when the prisoner's head fell into the tray placed before the guillotine Dr. Beurieux, with the permission of the public prosecutor, took the severed head between his hands and called out the name of the man whose head it was. According to the report, the eyelids opened and the two eyes gave a long stare into those of Dr. Beurieux. Then the lids fell. A second time the doctor called the name, the eyelids were raised and the eyes stared into those of the doctor. Again they closed. A third time the doctor called the name, but there was no response. The experiment, says the report, lasted thirty seconds, during which time the decapitated head quite certainly preserved conscious life. A similar report appeared at the time in *Le journal*. According to that report, however, Dr. Beurieux not only called the name of the prisoner but asked "Do you hear me?" *Le journal* indicates that physicians other than Dr. Beurieux were present and says that they came to the conclusion that vital perception lasted no longer than ten seconds after the execution.

There appear to be no direct experiments on the subject, such as might be done with the aid of the new technic of registering the so-called brain waves. However, the following facts indicate fairly conclusively that conscious processes in the brain of man cease almost simultaneously with the severance of the head from the body:

1. The brain of man is so dependent on oxygen in the arterial blood and the continued removal of carbon dioxide and other wastes by the capillary circulation in the brain that a few seconds of complete inhibition of the heart produces unconsciousness and fainting. Circulation of blood in the brain stops at once with the severance of the head.

2. A blow directed toward any part of the head, even not severe enough to break any bones of the skull or jaw ("the knockout blow") is known to produce unconsciousness of various duration, even without much disturbance of the circulation in the brain, although the most recent investigation of the problem on dogs indicates that the momentary stoppage or slowing up of the circulation in the brain may actually be the cause of this type of unconsciousness. In beheading a man, the jar to the skull and its content from the ax or guillotine crushing or severing the atlas or one of the cervical vertebrae is in all probability as severe as any knock-out blow.

3. The movements of tongue, jaw, facial muscles, eyelids or pupils that may occur after beheading are in all probability due to stimulation of the lower reflex centers in the brain by the state of asphyxia and in no wise indicate conscious processes.

4. In the case of lower vertebrates (birds, reptiles, frogs and fishes) in which the brain is less immediately dependent on the oxygen of the arterial circulation, it is known that ordinary reflexes can be elicited through the brain of the severed head for several minutes after such severance. But the correspondent is mistaken in his description of the behavior of the decapitated chicken. If the head of the chicken is actually severed completely below the medulla, breathing movements stop at once and forever. Irregular muscular movements of legs and wings continue for a few minutes, but the truly decapitated chicken is unable to stand or jump or fly in the accepted physiologic meaning of these terms. These movements in the decapitated body are in all probability induced primarily by asphyxial stimulation of the centers in the spinal cord. If the decapitation in the case of the chicken is improperly made, leaving the midbrain and the medulla still attached to the neck and body, such behavior as described may occur for a few seconds, and respiratory movements really do persist. But this is not true decapitation.

In summary: All available biologic and medical evidence indicates that conscious processes in the human brain cease practically simultaneously with the severance of the head from the body.

DERMATITIS FROM ORTHODICHLOROBENZENE

To the Editor:—I have a case of occupational dermatitis in which orthodichlorobenzene of synthetic varnish is the exciting factor. Can you give me any references to the subject
F. E. Clark, M.D., Ogdensburg, N. Y.

ANSWER:—In synthetic varnishes containing orthodichlorobenzene, other constituents and in particular the synthetic resin base may be more provocative of dermatitis than the orthodichlorobenzene itself. In the absence of the results of patch tests or other similar diagnostic procedures, final acceptance of orthodichlorobenzene as the exciting factor should not be made. In the somewhat meager literature on the toxicity of chlorinated benzenes, scant reference may be found to any action on the skin. Nevertheless this industrial solvent may be regarded as a source of dermatitis if for no other reason than because of its capacity to remove the normal surface fat of the skin. In this respect its action may be like that of carbon tetrachloride, a somewhat similar chlorinated hydrocarbon. Some synthetic resins entering varnishes are well known irritants of the skin, as described by Schwartz (*Dermatitis from Synthetic Resins and Waxes*, *Am. J. Pub. Health* 26:586, 1936). The toxicity of orthodichlorobenzene is described in the following articles, which in turn contain references to other publications:

1. Medical Research Council Report No. 80, "Toxicity of Industrial Organic Solvents" (His Majesty's Stationery Office, London, 1937), cites the Porton investigation of 1928, which concluded that orthodichlorobenzene was too toxic for use as a paint solvent.

2. Special Development Bulletin No. 18 (1932) of the Dow Chemical Company, Midland, Mich., reports that the toxicity on comparison with carbon tetrachloride is on the order of 2.5 to 1.

3. Zangger (*Arch. Gewerbepath. Gewerbehyg.* 1:109 [Feb. 14] 1930) states that orthodichlorobenzene is less likely to produce

intoxication by inhalation than trichlorethylene. Volatility, however, is not a factor of importance when the cutaneous contact is with the liquid material.

4. Flury and Zernik (Schadliche Gase, Berlin, Julius Springer, 1931) summarize the toxicity of this chlorinated benzene and refer to the work of Koelsch (Handbuch der sozialen Hygiene, vol. 2, 1926) for extensive information.

5. With further reference to dermatoses from synthetic resins, reference is made to the work of Dolgoff (*Arch. f. Gewerbepath. u. Gewerbehyg.* 4:643, 1933).

ATHREPSIA IN INFANT

To the Editor:—A 2 months old baby girl who had been ill about six days had been seemingly doing well on a home-improvised formula of evaporated milk, karo and water. At first the mother thought the child had "the flu," as she began to act fretful and to have a fever and diarrhea. It rapidly became worse and in spite of the use of home remedies (aspirin, castor oil and the like) the fever and diarrhea became much worse. When I first saw the infant she had a rectal temperature of 104.4 F., and was passing liquid greenish foul stools every few minutes. She was apathetic, dried out and ill appearing so was hospitalized at once. On admission, in addition to these manifestations, the rectum was highly irritated and a little prolapsed, there was a severe rash about the rectal area and the navel protruded severely. The blood counts showed hemoglobin 79 per cent, red blood cells 3,450,000 and white blood cells 25,000. Kline and Kahn reactions were negative and the urine was essentially normal. Other physical conditions also were not remarkable. Food was withheld for twenty-four hours, and 5 per cent dextrose (from 150 to 250 cc.) was given intraperitoneally and also 5 per cent dextrose in saline solution (from 100 to 150 cc.) three times a day. The admission weight was 8 pounds 4 ounces (3,742 Gm.). Gradually the baby was given S. M. A. and the amount of fluids administered parenterally reduced, so that in about six days the fever was gone, the rectal area became normal and the stools became formed, yellowish brown and smelled sour. On the seventh day in the hospital the baby had no fever, was taking from 3 to 4 ounces (90 to 120 cc.) of S. M. A. every four hours, looked bright and weighed 8 pounds 6 ounces (3,799 Gm.). She was also receiving orange juice (1 ounce) cod liver oil (two teaspoonfuls) and vitamin B. She was passing daily from eight to nine stools of a fairly normal appearing type. Her condition continued in just this manner until the eleventh day, at which time the baby was taken home. On the fifteenth day of her illness she was in practically the same state. Her weight was still 8 pounds 6 ounces. She still looked well, had no fever, took her S. M. A., orange juice, cod liver oil and the like and still passed stools as described from eight to nine times a day. A tuberculin test done at this time was also negative. The baby was put on a three instead of four hour schedule. Today, her twenty-sixth day of illness, she weighs 8 pounds 6 ounces, as before. Her condition to all intents is as before except that she passes only from six to seven stools daily. These are formed, are yellowish brown and have little odor. Neither the spleen nor the thymus or any other gland is palpable. Her general condition seems good but she does not gain weight. I have made a diagnosis of athrepsia. Is this correct? Can you suggest any other therapy?
M.D., Ohio.

ANSWER:—The description strongly suggests the possibility of an infectious or parenteral diarrhea which has progressed into a severe nutritional disturbance. The paradoxical reaction to food, stationary weight and frequent stools are all characteristic or athrepsia. A careful physical check-up and urinalysis should be done to rule out the possibility of any parenteral infection. Stools should be cultured to remove the remote possibility of specific bacillary dysentery. The most important phase of the treatment of this condition is prophylactic. Management of the acute stage of diarrhea should include early starvation and the use of milks low in carbohydrate and fat, such as Finkelstein's eweiss milk or protein milk.

It must be remembered that the athreptic infant does not have the ability to assimilate food properly. The intestinal tract cannot digest and absorb food well. In addition there is a disturbance of mineral metabolism due to the loss of electrolytes in the stools. This leads to withdrawal of mineral from the tissues and plasma with ensuing disturbance of osmotic relationships. This in turn leads to a marked circulatory disturbance with concentration of the blood and decreased volume. A clear understanding of these principles indicates the course of treatment. This includes small feedings of easily assimilated milk mixtures, parenteral fluids and blood transfusions to restore circulatory volume and replenish the supply of electrolytes. A short period of starvation is advisable to begin with—about six hours. During this time small amounts of Ringer's solution, physiologic solution of sodium chloride or weak tea may be given. If the infant cannot take fluids well by mouth or if the tissue turgor is poor, a blood transfusion of about 50 cc. followed by a slow intravenous infusion of 5 per cent dextrose in saline solution should be started. For details of this technic see Brennemann's *Practice of Pediatrics* (Hagerstown, Md., W. F. Prior Company, Inc., 1936, volume I, chapter XV). If this is not feasible, hypodermoclysis of physiologic solution of sodium chloride should be given twice a day.

The feeding of choice in this condition is human breast milk and every possible effort should be made to obtain it. Small frequent feedings should be used at the start, from 1 to 1½ ounces every two hours. One can start with one half ounce for the first few feedings and increase by steps of one fourth ounce with each feeding. Ringer's solution, saline solution or weak tea can be offered between feedings. After forty-eight hours the amount may be increased to 2 ounces every three hours, and as the infant's food tolerance improves it can be raised so that by the end of one week from 3 to 4 ounces may be given every three hours. In the event that no breast milk is available, protein milk is the next choice. One should follow the same principle and give small frequent feedings, using the approximate ratio of one level tablespoonful of the powder to 2½ ounces of water. Carbohydrates should be added to make up 3 per cent. The following is a sample formula:

Powdered protein milk.....	6 level tablespoonfuls
Water	15 ounces
Carbohydrate in the form of one of the maltose-dextrin combinations	4 drachms

The child should be kept on the protein milk until there is a steady increase in weight. The carbohydrate can be increased to 5 per cent after a few days and the protein milk concentrated to one level tablespoonful to 2 ounces of water. Orange juice can be added during the second week and if not tolerated ascorbic acid can be given. Cod liver oil can be deferred until the infant is on a regular feeding. The breast milk or protein milk feeding should be continued until the infant shows a definite gain in weight and the tissue turgor approaches normal. At this point a gradual change should be made to a diluted whole milk or evaporated milk mixture. One can substitute one feeding a day until the feedings are all replaced. It is best to start with the more dilute mixtures, either 2 ounces of whole milk to 1 ounce of water or 1 ounce of evaporated milk to 2 ounces of water and not more than 3 per cent carbohydrates being used.

RAGWEED POLLEN ON MARTHA'S VINEYARD

To the Editor:—Can you supply me with information on the pollen counts for Martha's Vineyard?
Harold A. Abramson, M.D., New York.

ANSWER:—No pollen counts are available for Martha's Vineyard, but, judging from the proximity of this island to Nantucket Island and Block Island and from the conditions prevailing in the latter, it would seem that Martha's Vineyard could not be recommended as a refuge for those sensitive to ragweed pollen. Ragweed pollen concentrations average heavier on Block Island and Nantucket Island than in Boston and New York City.

XANTHOSIS FROM EGGS

To the Editor:—One of my patients, a white man aged 25 with nervous indigestion, consumes raw eggs regularly as a supplement to his daily diet. He watches his weight and when he notices a loss he uses larger quantities of eggs, sometimes consuming from eight to twelve daily. He recently asked me whether there would be any deleterious effects from this regimen. I recalled that several years ago a patient from a rural area was presented at a medical society meeting who showed a generalized yellow pigmentation from consuming large quantities of raw eggs (I do not recall the amount) over a long period of time. Under ordinary conditions would the regimen followed by my patient be likely to result in such pigmentation? Would from eight to twelve raw eggs a day whipped with milk be likely to result in a symptom of this type? What would be the first area of pigmentation that would act as a warning sign? How long would it take such pigmentation to disappear once it began?
M.D., Louisiana.

ANSWER:—The yellow pigmentation described is probably the condition known as xanthosis, the result of xanthemia (carotenemia). Egg yolks contain large amounts of the xanthophyll pigment beta-carotin, and the consumption of from eight to twelve eggs a day would be sufficient to cause xanthosis in susceptible persons. No ill effects are attributable to this condition.

The regions first affected usually are the palms of the hands and the soles of the feet. The condition described in the patient referred to in the inquiry may disappear simply by limiting the egg yolks to not more than two a day, but it may also be necessary to restrict the intake of the green and yellow vegetables. If this is done, attention should be given to the adequacy of the intake of vitamin A, since beta-carotin is the provitamin from which vitamin A is manufactured in the body.

A satisfactory discussion of this subject is contained in the paper of Boeck and Yater (Xanthemia and Xanthosis [Carotenemia]: A Clinical Study, *J. Lab. & Clin. Med.* 14:1129-1143 [Sept.] 1929).

LATE RESULTS OF HEAD INJURY

To the Editor:—A man aged 21, while playing baseball in midsummer 1938, was struck on the right zygoza by a hit ball. He immediately experienced a warm sensation along the region of the sagittal suture back to the occipital region and transitory dizziness. Whereas he states that he had been normal in every respect up to that time, he has since been unable to concentrate, to carry a thought more than momentarily or to distinguish details when attempting to focus his eyes on objects from the size of a wrist watch to that of a basket ball. Attempts at simple mathematics which he had formerly mastered in high school result in utter failure. Watching passing vehicles gives him a sensation of falling in the direction opposite that of the vehicle's motion, of weakness in both knees and calf muscles, "light headedness," and nervousness which never subsides entirely. Bending over forward and then straightening to an erect posture gives the sensation of falling backward. His blood pressure is 120 systolic, 70 diastolic; the temperature, pulse and respiration rate are normal; urinalysis is negative microscopically and for albumin and sugar; the Wassermann reaction is negative; there has been no loss of weight. The patient appears somewhat apprehensive regarding his general condition but especially concerning his lack of power to concentrate. Responses are somewhat delayed as a result of his inability to command the correct words to express himself and the ready flight of most of his thoughts. There are no external evidences of injury to the head or face and no deformities. The external auditory canals were impacted with cerumen, but its removal failed to influence the condition or to reveal any gross abnormalities. Auditory and visual powers seem equal bilaterally. Rotation produces lateral nystagmus in the direction opposite rotation. There is a suggestion of a Romberg sign, but the patient is aware of his rocking motion, which is principally toward the right. The Babinski sign or its equivalent is absent. Can you suggest some further examinations that may aid in reaching a diagnosis of this condition? Amphetamine sulfate tablets daily in divided dosage for a week afforded relief of the "light headedness" only, but I am reluctant to use such a drug over a prolonged period. Can you suggest therapy that might afford relief for this patient? Do you think there has been any damage to the cerebellum or to the vestibular division of the eighth nerve?

Louis C. Stokes, M.D., Coatsville, Pa.

ANSWER:—The problem is whether one is dealing only with a post-traumatic neurosis or if there also has been some actual brain damage. It is assumed that x-ray examination of the head failed to reveal any bone injury. If he has any actual and constant difficulty in finding words and particularly if he often uses wrong words, one would suspect that there has been some injury to the part of the brain that controls speech. If he is right handed, it would have to be a contracoup injury, since he was struck on the right side of the head. The difficulty in concentration and other subjective sensations are well explained by a traumatic neurosis. If there is any claim for insurance or other compensation in connection with the injury, the supposition that one is dealing mainly with a neurosis would be strengthened.

NERVOUS EFFECTS OF ELECTRIC SHOCK

To the Editor:—What are the probable effects on the sensory nerves and muscles of the arm and hand following a rather severe shock from alternating electric current? The shock was not severe enough to produce a burn but was sufficient to prevent the person from releasing his grasp on the iron bar that conducted the electricity.

C. B. Thomas, M.D., Norwalk, Ohio.

ANSWER:—Alternating current is about three times as dangerous as direct current. If a good contact is made there may be little external evidence at the site of contact, yet fatal results have occurred. When the person is not able to release his grasp, the muscles are in tetany. This may cause injury to the fibers (hemorrhages and fragmentation of fibers). The peripheral blood vessels may be in spasm, and effects of ischemia may become evident. The peripheral nerves may even become degenerated. After severe shocks, cases of disseminated sclerosis and amyotrophic sclerosis have been reported. In any of the complications, objective evidence will be present on examination of the affected part; i. e., anesthesia, atrophy and reaction of degeneration to electrical testing. In peripheral damage per se the prognosis for recovery is usually good.

Reference:

Elkins, E. C.: *M. Clin. North America* 22: 1009 (July) 1938.

ANESTHETIC EXPLOSIONS

To the Editor:—Could you give me any information on the relative dangers from explosions of nitrous oxide with ether, ethylene and cyclopropane? I would be interested to know the number of fatal explosions from the use of any of these agents during the last year.

R. K. Finley, M.D., Dayton, Ohio.

ANSWER:—There is a real danger from explosions of nitrous oxide when used with oxygen and ether and with ethylene and cyclopropane. A number of explosions which have occurred are listed in the report of the Subcommittee on Fires and Explosions of the American Society of Anesthetists, Inc. (excerpt from the report of the Subcommittee on Fires and Explosions, News

Letter of American Society of Anesthetists, Inc. 2:3 [April] 1939). Additional information on explosions can be found in the proceedings of the regular meeting of the American Society of Anesthetists, Oct. 20, 1938. However, in all probability this does not represent all the explosions that have taken place. Since it is necessary to use the gas machine in the administration of these anesthetics, precaution must be taken to eliminate the danger of static electricity and also to eliminate the danger of using the cautery or diathermy in close proximity to these agents.

A study of the possibilities of eliminating some of these hazards is being made at the Massachusetts Institute of Technology by Professor Horton.

FACE MASKS FOR LUPUS

To the Editor:—I have recently come across a severe case of lupus erythematosus which is quite refractory to treatment, and I am wondering whether you have any authentic information on recent advances in artificial face masks or plastics. It seems that this patient has used masks which were obtained some ten months ago but which are not at all satisfactory.

J. E. Kaiser, M.D., San Diego, Calif.

ANSWER:—A great many of these masks were used by the French during the war; the Americans have used few of them.

Reconstruction of as much as half the face or more by flaps taken from other parts of the body has been quite satisfactory in the hands of those accustomed to handling this work. It was done in the army for service connected injuries; it is being done now after extensive treatment for cancer, wide cautery destruction for lupus and extensive injuries of other types.

The most satisfactory artificial restorations are being made from a new type of self-vulcanizing rubber latex in which color is introduced into the substance of the rubber. These are glued in place; they are hardly practicable on the cheek or openings into the mouth. This idea was first suggested by A. Pont of the French army, who made them out a gelatin mixture, the soldier heating the gelatin each day, pouring it into the mold and peeling it out.

RATTLESNAKE VENOM

To the Editor:—What are the commercial markets for live rattlesnakes or for the venom?

Rollin M. Falk, M.D., Fall River Mills, Calif.

ANSWER:—About twenty years ago rattlesnake venom was employed in the treatment of epilepsy with more or less success, and quite an extensive literature has been published on this subject. More recent scientific work concerning it has revealed that, irrespective of the possible therapeutic use of rattlesnake or Crotalus venom, it is unstable, decomposing rapidly at room temperature, and that furthermore it is almost impossible to prepare a sterile solution of this drug. For this reason rattlesnake venom is no longer employed by rational pharmacotherapists and is not to be obtained on the market. In addition, it is interesting to note that the toxicity of venom from different species of rattlesnake varies enormously (Macht, D. I.: *Proc. Soc. Exper. Biol. & Med.* 36:499 [May] 1937).

EQUINE ENCEPHALOMYELITIS AND VACCINATION

To the Editor:—I have noticed recently that investigators at the University of California have developed a vaccine against encephalomyelitis in horses. Also there seems to be some evidence of a transmissibility of this disease to man. Have you any information regarding the use of the vaccine in acute or chronic encephalitis in man?

M.D., Florida.

ANSWER:—An effective vaccine consisting of ground infected chick embryo tissue treated with solution of formaldehyde was developed by Beard, Finkelstein, Sealy and Wyckoff (*Science* 87:490 [May 27] 1938). This product has been shown to be highly effective as a prophylactic vaccine in experimental animals and in an extensive use of the material in horses and mules in the field. This product is only a preventive vaccine. It has no therapeutic value.

It has been conclusively shown that man may be infected with the virus of equine encephalomyelitis. It is possible to prepare a vaccine for use as a prophylactic agent in man, although the low incidence of this disease in human beings at the present time would not justify large scale vaccination. Such a vaccine would be of no use in acute or chronic encephalitis. It is only of preventive value. Moreover, the term encephalitis applies to a large group of etiologic conditions. Specific therapy, if such were available, would depend on an exact etiologic diagnosis in each instance.