quantities: As food proper for young infants they are useless and injurious, being merely fine preparations of grain entirely deprived of the husks. When treated with iodine, under the microscope, each particle becomes intensely blue. Ridge's food is supposed to be made of wheat. The barley from which Robinson's groats are made, is supposed to be useful in as far as it contains more of the salts which are necessary to human milk than do other grains.

Farina, maizena and corn starch (which are different names for the same thing) may be used in the same way, their only disadvantage being that they easily become rancid, and contain but little gluten, while, of course, they are subject to the objection raised against all forms of starchy food, that, if used in too large quantity, they cause constipation, with its attendant train of troubles.

Cows' milk alkalized with bicarbonate of soda or potash, is less often vomited than pure cows' milk, and under its use the dejections contain fewer and smaller lumps of casein; but this is not because the coagulation is put off for a very long time. The milk is speedily acidified by the gastric acid which is continually secreted in the stomach, for hard coagula in an acid fluid are often vomited in a few minutes after a meal of alkalized milk. Probably the alkali, by neutralizing the acid temporarily, prevents the too rapid coagulation of the whole mass, and thereby prevents the formation of very large coagula.

Biedert's observation that the coagula of alkalized milk were formed later, but were just as large and hard as those from acid milk, is not really opposed to this idea, for the test tubes used in Biedert's experiments were kept perfectly still, while the contents of the stomach are continually in motion.

Among the poorest people in Boston, one of the most common articles of food for young babies is seed-cakes and milk. The aromatic seeds are supposed to act as a carminative, and to make this form of food peculiarly suitable in cases of colic. The poor victim screams with stomachache, but his screams are only considered cries of hunger, and all he gains is the undeserved epithet of a greedy fellow and another spoonful of seedcake and milk.

No form of pap or porridge is suitable for children under six months. Porridge made of fine flour is very constipating and causes collections of hard feces in the bowels, which are carried off naturally from time to time by an attack of diarrhoea.

Oat meal is not so liable to constipate as much as fine flour, because the irritation caused by the husks of the grain stimulates the bowels continually. Even this irritation will, however, be too severe for the tender mucous membrane of young infants, and be the cause of an annoying chronic catarrh of the bowels. Its action on young babies is also very irregular and uncertain, and not at all as satisfactory as that produced on the digestive apparatus of older children and adults.

Drinks for children of arrowroot, sago, &c., are probably useless, except for the infinitesimal amount of nourishment which they contain, which is worth no consideration. On the other hand, an infant should not be allowed to suffer from thirst. Cool water is often taken with avidity, and after an obstinate attack of crying, a few spoonfuls are often enough to quiet the child completely.

Let us, then, bear in mind that the only proper food for a new-born baby is the milk of its mother; that her place is best supplied by a wet-nurse; that the great obstacle to the use of cows' milk is not the insolubility, but the irritating character of its coagula; that this may be avoided to some extent in many ways, among others by the addition of a little starch and gelatine for the purpose of effecting a mechanical separation of the particles of coagula; and, finally, that for any other purpose starch and gelatine are never to be used.

24 Marlboro' Street.

THE CIRCULATION IN SEA-SICKNESS.

By JAMES J. MACDONALD.

In an article which lately appeared in the *British Medical Journal*, the writer, Dr. Alderson, offers a theory for the explanation of sea-sickness, based on the changes which are said to take place in the circulation of the blood in consequence of the tossing of the ship, and on the effects of these changes on the brain. That an abnormal condition is produced in the brain in consequence of disturbed circulation is unquestionable. That the motion of a ship causes such a disturbance is doubtless true, and that sea-sickness is a result of this disturbance may also be true; but the reasons given to explain this abnormal condition seem very imperfect and unphilosophical. It will be evident upon consideration that the effects produced are not the result of the causes which he assigns.

The statements upon which the theory is

based are as follows: "If a barometer be carried out to sea in a calm, the mercury will rest at the same height as when on shore; but when the ship falls by the subsidence of the waves, the mercury is seen apparently to rise in the tube which contains it." And again, "anyone who has carried a mountain barometer, and has happened to let it descend suddenly, must have been sensible of a concussion of the mercury against the top of the tube, and must have felt and heard the blow. In fact, the mere action of walking is sufficient, by the alternate rise and fall of the hand, to produce this effect." This effect he explains thus: "When the rigid tube falls, the mercury having its own inertia, and not being attached to, or a part of, the tube, remains stationary—at least for a time; thus the tube is pushed down upon or over the mercury, and the concussion takes place." He then says, "exactly the same occurs between the brain and vessels on the one part, and the blood on the other. The approximately rigid brain and vessels are carried downwards, the blood remains by its own inertia, and the consequence is to crowd blood into the vessels of the brain, and so press with increased force, producing a certain shock; this shock and the attendant pressure produces sickness and vomiting." He adds a quotation from Dr. Wollaston that "sickness by swinging is evidently from the same cause as sea-sickness."

This inertia of the blood, then, is the only cause assigned for the congestion or shock of the brain, and the only reasons advanced to prove the existence of such a congestion are, the peculiar kind of vomiting which takes place, the unpleasant sensation accompanying the forward motion of a swing—for then, he says, the blood has the greatest tendency to move from the feet towards the head—and the fact that inspiration during descent gives relief by assisting the return of blood from the brain.

To show that inertia of the blood is not the cause of congestion of the brain, a brief allusion to the natural laws involved in the matter will first be in place. When mercury in a tube is prevented from falling to the earth, it presses down upon the body which sustains it; this pressure is equal to the force of its attraction by gravity and is its weight. If the tube be dropped, it no longer sustains the mercury whose pressure upon it instantly ceases. If the tube be suddenly stopped in its descent, there will be an immediate pressure on it of the weight of the mercury and, in addition, the

momentum which it has acquired during its fall. If again from being stationary it is suddenly pushed upwards, there is an increased pressure on the tube. To illustrate this, let a ball suspended by an elastic rubber band represent the mercury, and the rubber band the tube, if the hand from which the ball hangs be suddenly raised, there will be a greater strain on the cord which will be stretched in consequence, because a force which raises the ball must be greater than that which merely prevents it from falling. Now in the case of a tube partly filled with mercury, if a force in addition to that of gravity causes its descent, the mercury being free, will, though falling towards the earth, rise in its relation to the tube, being impeded only by friction against the sides; under no other condition will it rise, except, when simply falling, the pressure of the upper on the lower layers being removed, it may, in virtue of its elasticity, expand to an infinitesimal degree. By remembering that the force of gravity will, other things being equal, draw all bodies to the earth with equal velocity, and by also reflecting that on a swing or a ship no force is causing the descent, but that of gravity, it will at once be evident that the blood in the vessels cannot be supported by inertia, any more than the rest of the body, and, consequently, that its relation to the containing vessels, will, as far as gravity is concerned, be the same, except that its weight is no longer sustained by them. This briefly, as effectually, disposes of the supposition that inertia of the blood causes congestion of the brain.

Before considering the abnormalities induced in the circulation by the rise and fall of a ship at sea, I will briefly allude to its natural condition. The heart, in forcing blood to the brain, has to overcome a downward pressure exerted by the column of blood above it. At the same time, the returning current of venous blood is accelerated to a degree, the equivalent of the resistance to its ascent; these two effects, then, may be said to balance each other. It is the same with the circulation below the heart; gravitation assists the downward current and opposes its return. Now if the body, when erect, be allowed to drop, the blood is no longer pressed downward in relation to its vessels by gravitation, because the vessels themselves descend with equal rapidity. In this condition the heart has to overcome no weight of blood above it; hence, owing to this diminished resistance, the blood will be propelled upwards with increased force; at the same time the

downward venous current, having no longer the assistance of gravity, would tend to become more sluggish, and must depend entirely for its flow on the *vis a tergo*. This pressure from behind, and the resistance to the venous flow, being both greater than normal, the pressure on the cranial vessels must be much increased, causing distention and congestion. In the part of the body below the heart, the descending arterial and ascending venous blood is affected in like manner. If the vessels were inelastic tubes the difference would equalize each other; but they are, on the contrary, very elastic, and under normal circumstances are distended by the weight of this contained blood, as well as by the impelling force of the heart. Now, however, the latter cause alone operates; and, as a consequence, they are to a certain degree contracted; the immediate result of which would be an acceleration of the venous current and resistance to the flow of arterial blood, and a final arterial obstruction alone. In other words, there is an anæmia in those dependent parts whose vessels normally sustained a weight of blood, and a hyperæmia somewhere else. This impediment to the circulation below the heart would tend to increase the fullness of the brain, and also of the lungs. A hyperæmia of the lungs would explain the "instinctive deep inspiration" during descent, which Dr. Alderson attributes to another cause, for an increase of blood would demand an increased amount of air for its oxygenation.

Besides the above conditions, there is also another cause operating to produce a "shock" on the brain. When the descent of the body ceases, and it commences to rise with the ship, the weight of the blood, as well as the momentum acquired by its fall, must increase to a considerable degree the pressure on both arteries and veins, distending them, and causing a congestion which would be most marked in the lower parts, with a consequent partial anæmia of the brain. When the ship again falls, the excessive pressure on the lower vessels is removed; they contract on their contents, become comparatively empty, and the upper parts are again suddenly overfilled. The abnormal pressure on the lower veins, which are the peculiar seat of varicosity, would here naturally suggest the inquiry as to whether sailors are particularly liable to this disease, if indeed it may be caused by pressure.

The reasons here shown for a congestion

and shock of the brain, and the changes described in the general circulation, must necessarily be modified by many causes; for example, the extent and rapidity of the rise and fall of the body, the tortuosity of the bloodvessels, and many variations which might occur in the propelling power of the heart, or in the condition of the vessels; as, for instance, venous congestion of the heart, impeding its action, or a vascular constriction through nervous influence. It is impossible to determine, theoretically, the extent of these modifications. The actual state of the circulation in such cases, being subject to so many varying influences, can only be accurately demonstrated by experimental observation. If sea-sickness is really caused by the abnormal action of blood on the brain, the public is indebted to Dr. Alderson for calling attention to the fact, and a trial of the remedy suggested by him will doubtless prove very beneficial.

Harvard Medical School, June, 1872.

Reports of Medical Societies.

SELECTIONS FROM THE RECORDS OF THE OBSTETRICAL SOCIETY OF BOSTON.

SECRETARY, W. L. RICHARDSON, M.D.

JAN. 13th, 1872.—*A Case of Labor in which Long Forceps, Turning, Craniotomy, Decapitation and Cranioclastism were each, in turn, resorted to before Delivery was effected.*—Dr. Sinclair reported the case.

"Mrs. —, æt. 38, married seven years, in her first pregnancy, having a long body, short lower extremities, fleshy, strong and active, never sick, was seized with slight labor pains and a considerable *show* early in the evening of December 8th. These pains continued at intervals, from ten to fifteen minutes, for the next twenty-four hours, without any descent of the foetal head. She was then examined, under ether, by Dr. Read and myself. Although a pretty sharp sacral promontory and an unusual firmness of the foetal head were found, yet there appeared nothing to warrant immediate interference, as the pelvic cavity seemed sufficiently large. The os was soft and dilated, so that the hand could be passed into the uterus. An opiate was given, hypodermically, which averted the pains for some hours, with the hope that on their return they might be sufficiently strong to effect delivery. Tolerably strong labor pains did recur as expected, but failed to