rectal alimentation for from eleven to sixteen and twenty-one days. He was the first who suggested the use of defibrinated blood for this purpose.

Very shortly afterward W. Bodenhamer[11] published an instructive monograph on rectal medication, in which he also laid stress upon the practical value of rectal alimentation as deserving much more frequent application than heretofore.

Stillman,[12] in his paper on rectal alimentation, says: "The clinical fact remains that certain foods, digested or undigested, are taken into the system when thrown into the rectum; that the power of absorption there may be good when the stomach is weak and rebellious; that it is assimilated, for the body gains in flesh and power, and that there may be merely the customary evacuation as an excretory resultant. As far as I am aware, no danger attends feeding by the rectum, when conducted with ordinary care and intelligence on the part of nurses or attendants." In this paper Stillman calls attention to the use of supplementary rectal feeding, *i.e.*, to the use of nutrient enemata while the stomach is yet performing its functions to quite a considerable extent, as, for instance, in chronic gastritis, gastralgia, nausea, etc. He used principally enemata of milk according to the following formula: 5 grains of Fairchild's pancreatic extract and 15 grains of bicarbonate of soda to a pint of milk.

The writer has had extensive experience with rectal alimentation and is fully convinced of its great practical value. The indications for this mode of alimentation may be summarized as follows:

1. In conditions in which the passage of food from the mouth to the stomach or to the small intestine is impeded or made impossible (strictures, benign or malignant, of a high degree of the œsophagus or cardia, spasmodic or paralytic conditions of the œsophagus, pyloric or duodenal stenosis).

2. In ulcer of the stomach accompanied by considerable hemorrhage, or when the usual methods of treatment have failed.

3. Incessant vomiting, no matter to what cause it be due.

4. In all conditions in which absolute rest for the stomach seems to be imperative (intense pains soon after ingestion of food; persistent hyperchlorhydria of a high degree; intense chronic continuous gastro-succorrhœa; pronounced ischochymia).

5. In typhoid fever and other severe lesions of the small intestine necessitating a complete rest of this portion of the bowel.

For how long a period rectal alimentation should be administered depends upon the condition necessitating it. In ulcers and irritating affections of the stomach, rectal alimentation should be administered alone, without any additional nourishment through the mouth, for a period varying from one to two weeks, when the natural mode of nutrition may be cautiously resumed. In cases in which there is an organic obstacle within the œsophagus or at the pylorus preventing the passage of food into the intestine, rectal feeding must be carried on as long as the impediment exists (in operative cases until a few days after the operation has been performed; in inoperable cases, indefinitely). Here, whenever possible, besides the enemata, small quantities of liquid foods may also be given by way of the mouth.

Shortly after operations on the œsophagus, stomach, and small intestine, rectal alimentation must be administered for a period varying from four days to a week or ten days.

Mode of Administration.—Before administering the feeding enema, a cleansing injection (consisting of a quart of water and a teaspoonful of salt) should be given early in the morning, in order thoroughly to evacuate the bowel. One hour later the first rectal alimentation may be administered. The feeding enema is best injected by means of a fountain or Davidson syringe, or a plain hard-rubber piston syringe, and a soft-rubber rectal tube, which is introduced into the anus for a distance of about five to seven inches. The injection should be administered slowly and without much force. After the withdrawal of the tube from the rectum, the patient is told to lie quietly and to endeavor to retain the enema. The quantity of the feeding enema may be from five to ten ounces. From three to five such enemata may be given daily.

The following substances may be used as feeding enemata:

(*a*) The different kinds of peptones and propeptones in the market (Rudisch's or Kemmerich's peptone, somatose, sanose), of which about two to three ounces dissolved in from six to eight ounces of water are to be injected. The different beef juices (Valentine's beef juice, bovinine, Mosquera's beef jelly, etc.) may also be dissolved in water and injected in corresponding quantities.

(*b*) The milk and egg enemata; these are the most commonly used. Their composition is as follows: six to seven ounces of milk, one or two raw eggs well beaten up in it, one teaspoonful of powdered sugar, and one third of a teaspoonful of common table salt.

Pancreatin (one tube of Fairchild's pancreatin) may be added to such an enema, to facilitate its assimilation.

(*c*) Meat pancreas enema. Leube[13] employs enemata consisting of well-chopped meat (five ounces), fresh pancreas (two ounces,) one ounce of fat (butter)—all these ingredients being thoroughly mixed with about six ounces of water.

Instead of always using one and the same nourishing enema, the above combinations may be alternately administered.

In conjunction with these food enemata, injections of water into the bowel are made in order to increase the amount of fluid in the system. These injections of water for absorption are of great importance. Usually saline solutions are employed, in quantities varying from a pint to a quart, which may be given twice a day.

*Max Einhorn.*

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**ALKAKENGI.** See *Solanaceæ*.

**ALKALIES, ANTACIDS.**—These are medicines which are administered for the purpose of correcting acidity. The terms are almost synonymous, but it will be found that the drugs arrrange themselves into two groups, according to their solubility, which in a great measure determines their therapeutic uses. In one we have potash, soda, and lithia; in the other lime, magnesia, cerium. The former are generally employed as alkalies, the latter as antacids. Ammonia is intermediate; its character would place it in the first group, but its therapeutic use makes it belong rather to the second.

Potash, soda, and lithia salts are very soluble, and are readily absorbed and as readily excreted; they pass from the system in a very short time. They are normal constituents of the blood, and their presence in increased amount tends to render the plasma more alkaline.

The second group, comprising lime, magnesia, and cerium, are much less soluble, and even their more soluble salts (as the sulphates of magnesia, etc.) are but slowly





absorbed. In consequence their action is almost entirely limited to the digestive tract. Such portions as do enter the circulation act upon the blood in the same manner as do the more soluble alkalies, and are excreted by the same channels. Their power of rendering the blood alkaline is so inferior to that of the more soluble alkalies that they are never selected for this purpose. Many of their soluble salts, as the chlorides, phosphates, and hypophosphites, are only mildly alkaline, and are of value more for the acids in combination than for the alkaline base.

The action of alkalies upon the secretions of the stomach, as formulated by Ringer, has been confirmed by subsequent experience. His view is that the contact of weak alkaline solutions with glands secreting an alkaline fluid causes a lessening of the secretion, while on acid-secreting glands the effect is to cause an increase of the acid secretion. Advantage has been taken of this in gastric disturbances, when there is a deficiency of acid during digestion. The administration of alkalies just before meals has proved most serviceable in relieving this defect. They must be given well diluted and in moderate doses. The bicarbonate of soda or the bicarbonate of potash is generally selected; it is to be given in five-grain doses. Ammonia, in the form of the aromatic spirits, is often combined with some stomachic, as tincture of rhubarb, tincture of cardamons, capsicum, ginger, or peppermint, and in addition a vegetable bitter. This combination has been found to be valuable. In addition to the local effect thus produced upon gastric digestion, a further benefit is derived by the action of alkalies after absorption. They rapidly pass into and improve the blood, and during excretion they cause a general stimulation of all secreting organs. As alkalizers of the blood, they are used in gouty and rheumatic conditions, in lithiasis, and in many disorders of the skin in which there is supposed to be an excess of uric acid or allied acids in the blood. Their purpose is to keep these morbid products in solution until they are carried out of the system. The potassium salts are preferred, as their rapid absorption renders the blood more quickly alkaline, while their equally rapid excretion prevents any accumulation. For immediate action the solution of potash or the bicarbonate salt is selected; but when a prolonged use is required, the citrate, acetate, or tartrate is preferred, as these salts produce less irritating effects upon the stomach. Sodium salts are more slowly absorbed and are less powerful alkalies. The normal alkaline state of the blood is due chiefly to sodium salts, and as they are less depressing than potassium salts, they offer many advantages when a prolonged course of treatment is necessary. In treating rheumatism with the alkalies, they require to be given freely until the urine becomes alkaline, and then they should be reduced, enough being given simply to maintain this reaction. There may be given a drachm and a half of bicarbonate of soda and half a drachm of the acetate of potash every three or four hours, well diluted, for four or five doses; following this, fifteen or twenty grains will usually be sufficient. Lithia is very similar to potash in the rapidity of its absorption and excretion. It has been extolled as superior to the other alkalies, and is now very generally used. Later observations, however, tend to lessen this estimate. It has been shown that its solvent action is not remarkable, and it is probable that its value lies in its diuretic properties. The action of ammonia is very evanescent; it is never employed to replace the other alkalies, as its effect is to increase the acidity of the urine.

The alkalies are excreted rapidly by all the secreting organs. Their effect is most evident on the kidneys, and during excretion they render the urine alkaline. At the same time they augment the watery flow through an increased activity of the renal cells. The secretion of all organs is increased, as is also the secretion of the mucous surfaces.

The action of alkalies upon the blood and tissues is as yet imperfectly understood. We know that they promote tissue change and favor elimination. We also know that they prevent the deposition of uric acid in the tissues. How this is effected is uncertain, but their action depends upon something more than simply rendering the blood alkaline. Until the true cause of gouty and rheumatic affections is discovered, an explanation will be difficult. We seem further from a solution than ever, now that the existence of any excess of uric acid in these attacks is being called in question.

Alkalies are all powerful depressors. Potash and lithia are the most injurious, and soda is the least. They reduce the blood corpuscles and the protoplasmic tissue. In large doses they are cardiac poisons, and their prolonged use in moderate doses causes anæmia, loss of body weight, and loss of muscular power.

The alkalies are also of benefit when applied to the surface of the body. In rheumatism a hot lotion of carbonate of soda with opium often affords relief to the painful joint. In all forms of cutaneous disease accompanied by a troublesome itching, an alkaline wash of carbonate of soda or potash, half a drachm to the pint, is of service, and in eczema during the early stage, with an alkaline watery discharge, the same solution is curative. Burns and scalds may be treated in the same way, the solution being constantly applied. The alkali removes the heat and pain and allays inflammatory action. The bites and stings of insects and the urticaria produced by poisonous plants are also benefited.

The oxides and carbonates of lime and magnesia are the most serviceable salts as antacids, on account of their insolubility. If these drugs are given in small quantities their action may be limited to the stomach; when they are freely administered, their action is continued into the intestines. They neutralize all acids with which they come in contact, and by contact with the mucous surface they exercise a soothing and sedative effect. In addition to neutralizing the local acids, they are of value as antidotes in poisoning by acids, and also in poisoning by vegetable poisons, the alkali precipitating the poisonous alkaloids and retarding their absorption. In the intestine the antacid action is continued, but the ultimate effects of lime and magnesia differ; the former acts as a mild astringent, while the latter becomes converted into the bicarbonate and acts as a laxative.

The soluble alkalies are not so useful as antacids, and are of little service when an effect in the intestines is required. Sodium bicarbonate, however, is a well-known antacid. Its disadvantages are that it tends to generate a large amount of carbonic acid gas, and is stimulating instead of soothing to the mucous surface. The aromatic spirits of ammonia is similar in its action and more rapid. Cerium oxalate and bismuth are both useful antacids, their chief value being due to the local soothing action which they exert upon the mucous membrane. The cerium salt has probably a sedative action on the terminals of the nerves.

*Beaumont Small.*

**ALKANET.**—(*Orcanette.*) The fleshy root of *Alkanna tinctoria* (L.) Tausch. (fam. *Boraginaceæ*), a small perennial herb of Europe and Asia Minor, largely cultivated for its coloring matter. The dried root, a foot or more in length and about a half-inch in thickness, its bark purple red without, deep red within, its wood pinkish white, is sometimes marketed entire, but more frequently as a stringy, shredded, tough mass. Its only value is for coloring purposes, the coloring matter being *alkannin* or *alkanna* red.

*Alkannin* is a dark, brownish-red, resinous mass, insoluble in water, but soluble in alcohol and ether. Acids intensify the red color, alkalies convert it to a bluish green, in which respect it acts like *hæmatoxylin*.

*H. H. Rusby.*

**ALLANTOIS.**—(From N. L., *allantoides*; Greek, ἀλλᾶς (ἀλλάντ), a sausage, and εἶδος, form: sausage-shaped.) The allantois is one of the fœtal membranes peculiar to the group of higher vertebrates in which the embryo is enveloped in an amnion, the Amniota.

It is homologous with the highly vascular urinary bladder of the Amphibia.

In the Amniota the embryo is formed from a comparatively small part of the blastoderm (see *Area Embryonalis*). At an early stage of development the mesoderm becomes divided into two layers of cells, with

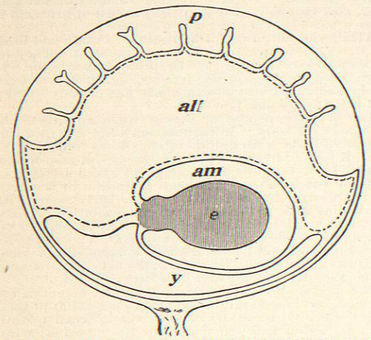


FIG. 81.—Fœtal Membranes of the Mole. *e*, Embryo; *am*, amnion; *all*, allantois; *p*, placenta; *y*, yolk sac. (After Strahl.)

a cavity between known as the *cœlom*, a part of which becomes the body cavity. The outer layer unites with the ectoderm to form the *somatopleure*, which gives rise to the body wall, the amnion (see *Amnion*) and the false amnion, or chorion; while the inner layer unites with the entoderm, or hypoblast, to form the *splanchnopleure*, which gives rise to the wall of the digestive tract and its appendages and to the wall of the yolk sac (see *Fœtus*). During the formation of the tail fold of the embryo, the splanchnopleure folds in more rapidly than the somatopleure, so that a cœlomic space is left between the two beneath the newly formed posterior end of the intestine. From the ventral wall of this part of the intestine a pocket grows out into the cœlom. This pocket is the *allantois*. It is made up of two layers of cells, entoderm and splanchnic mesoderm. It grows out rapidly as a thin-walled sac between the amnion and the yolk sac, and blood-vessels develop in its mesodermal tissue. In the placental mammals the distal portion of the allantois fuses with the chorion and forms the essential part of the fœtal portion of the placenta (see *Placenta*), while the proximal part becomes dilated to form the urinary bladder, and a part of the middle portion finally loses its lumen and persists as the urachus, connecting the bladder with the umbilicus.

In regard to the details of its origin, its structure, and its relations to adjacent parts, the allantois varies greatly in different groups of animals. Among the mammals the most diagrammatic arrangement is to be found in the mole, one of the Insectivora, a group that shows many primitive characters. According to Strahl, in a cross section of a gravid uterus of the mole, *Talpa europea* (Fig. 81), one may see the embryo surrounded by the amnion, except on the ventral side, where the yolk sac and the allantois are attached. The allantois has a large lumen, which occupies the greater part of the space between the embryo and the chorion. Its outer wall fuses with the chorion, and the greater part of it gives rise to the thickened placenta. On the opposite side the smaller yolk sac spreads out in a similar way and likewise fuses with the chorion, but its outer surface does not become vascular like that of the allantois. Except for the increase in the size of the embryo and the corresponding reduction in the lumina of the allantois and yolk sac, these relations persist until the end of gestation.

Going downward in the scale from the Insectivora to the Marsupials, in which the young are born in a very imperfect condition and no true placenta is formed, we find the relation between allantois and yolk sac reversed. In this group the allantois remains comparatively small, and in the opossum, according to Selenka, it does not even touch the chorion; and it begins to degenerate before birth. The yolk sac, on the other hand, is large, filling most of the space between the embryo and the chorion. It fuses with the latter, becomes highly vascular, and serves during fœtal life both as an organ of nutrition and as one of respiration.

In the most primitive of living mammals, the Monotremes, which lay eggs, the relation of the fœtal membranes is essentially similar to what obtains in the Sauropsida, the birds and the reptiles.

We may take the common hen as a type of the Sauropsida. At about the thirty-sixth hour of incubation the rudiment of the allantois first appears as a shallow pocket

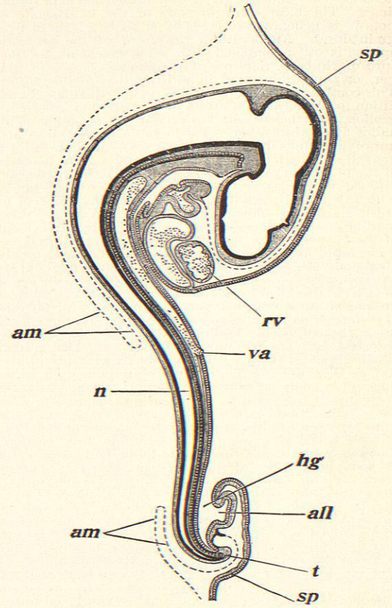


FIG. 82.—Median Longitudinal Section through a Chick Embryo at the End of the Third Day of Incubation. × 20. *all*, Allantois; *am*, amnion; *hg*, hind gut; *n*, neural canal; *rv*, right ventricle of the heart; *sp*, splanchnopleure; *t*, tail. (After Marshall.)

in the entoderm, at the extreme posterior end of the embryo. As the formation of the tail fold progresses, this comes to lie on the ventral side of the hind gut (Fig. 82). By the end of the fifth day it has grown out between the yolk sac and the amnion, as a vesicle of considerable size. It then grows rapidly until, uniting with





the chorion, it spreads out as a large, thin-walled, highly vascular sac, and completely surrounds the amnion and yolk sac. It serves as the organ of respiration for the embryo. Finally a part of it nearly surrounds the remnant of the albumen and probably assists in its absorption (Fig. 83). A short time before hatching, its vessels are cut off by the closure of the umbilicus, it dries up, and is left behind when the chick emerges from the shell.

The allantois has essentially the same history in most reptiles. In a lizard (Lacerta), according to Strahl, confirmed by Corning and Janosík, it arises in a peculiar way independently of the gut and comes into connection with it secondarily. And Giacomini found that in another lizard, which brings forth its young alive, *Seps chalcides*, it probably has a nutritive as well as a respiratory function. In this species both the allantois and the yolk sac fuse with the chorion, forming an allanto-chorion and an omphalo-chorion. The egg is very small, without envelopes, and the allanto-chorion becomes folded into a series of ridges and hollows which fit into corresponding inequalities in the wall of the oviduct, forming a kind of placenta. A similar but less perfect connection is formed by the omphalo-chorion.

Starting again from the diagrammatic form of allantois found in the mole, and going upward in the scale, we find in the Ruminants a large allantois of comparatively simple structure.

According to Bonnet, the rudiment of the allantois appears in the sheep at about the end of the fifteenth day after copulation. The tail fold has not yet formed, and the allantois appears as a sac-like posterior prolongation in the axis of the enfolding gut. With the development of the tail fold the allantoic stalk gradually assumes its

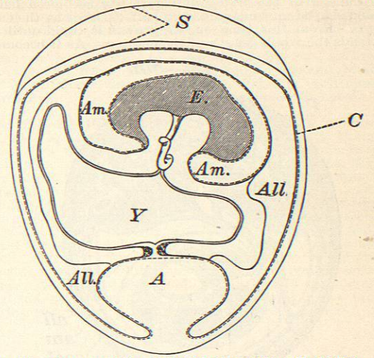


FIG. 83.—Diagram of the Fœtal Membranes in a Hen's Egg. *A*, Remnant of the albumen; *All*, allantois; *Am*, amnion; *C*, chorion; *S*, shell membrane; *Y*, yolk. (After H. Virchow, from Strahl.)

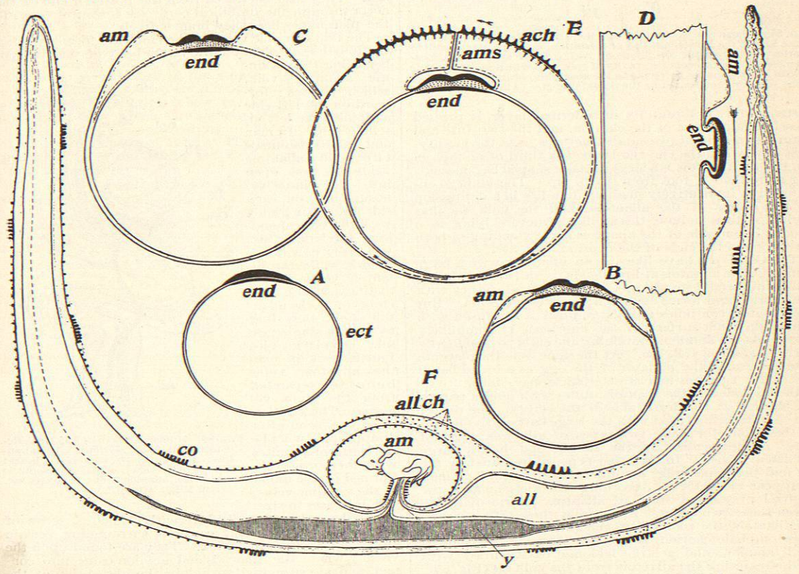


FIG. 84.—Diagrams Showing the Development of the Fœtal Membranes of the Sheep. *A*, Transverse section on the twelfth day after copulation; *B*, thirteenth day; *C*, about the same age; *D*, longitudinal section about the same age; *E*, transverse section of an older embryo; *F*, diagram of the fœtal membranes at the end of the first month; *all*, allantois; *all ch*, allanto-chorion; *ach*, amniogen chorion; *am*, amnion; *ams*, amnion stalk; *co*, cotyledon; *ect*, ectoderm; *end*, entoderm; *y*, yolk. (After Bonnet.)

normal position as an appendage of the hind gut. Very soon the young allantois begins to spread latterly, so that by the end of the sixteenth day it has become a half-moon-shaped appendage nearly half as large as the embryo. From this time on, its growth is rapid until it extends the whole length of the chorion. As it becomes

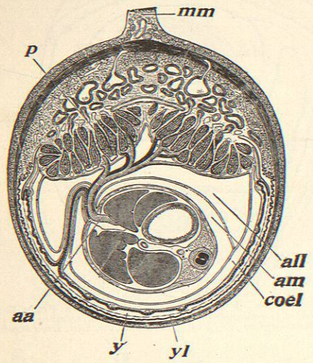


FIG. 85.—Transverse Section through the Gravid Uterus of a Rabbit at the End of the Nineteenth Day of Gestation. × 1¾. *aa*, Allantoic artery; *all*, allantois; *am*, amnion; *coel*, cœlomic space; *mm*, mesometrium; *p*, placenta; *y*, cavity of yolk sac, which is continuous with the uterine cavity owing to the absorption of the lower wall of the yolk sac represented by the dotted line *yl*. (After Marshall.)

distended with liquid its mesodermal layer is pressed closely against that of the chorion, and the two fuse and form the important placental structures. At the twenty-first day, when the embryo is about a third of an inch in length, the allantois is a large sausage-shaped bag measuring more than a foot from tip to tip. The embryo enveloped in its relatively small amnion lies in a depression at the centre of the allantois, and the yolk sac has dwindled to a hollow, thread-like structure lying in a groove in one side of the allantois and extending in both directions to the ends of the chorion (Fig. 84 *F*).

The Carnivora have likewise an allantois with a large lumen. The allantois at first bends dorsally and enlarges into a mushroom-shaped sac. Its outer wall unites with the chorion and forms at first a discoidal placenta. But the allantois continues to enlarge until it has fused with the whole inner surface of the chorion. It completely surrounds the amnion, containing the embryo, and finally encloses also the yolk sac. At the same time the placenta extends around the equator of the egg as a broad band, and finally acquires its characteristic zonary form.

In the Rodentia the allantois unites with only a part of the chorion on the dorsal side of the embryo, the rest of the chorion being fused with the large flattened yolk sac. In this group there are two types of allantois. One of these is represented by the rabbit, and has a large persistent lumen. In the other type, represented by the rat and the guinea-pig, the lumen is very small or may disappear altogether. According to Fleischmann, the squirrel presents a form of allantois intermediate between these two types. Aside from these differences in the allantois, the rodents are generally alike in having a large omphalo-chorion, a smaller discoidal placenta, a small amnion, and a large cœlomic cavity filled with fluid, separating the allantois from the yolk sac (Fig. 85).

In man the allantois is a highly specialized structure, and the first stages in its development occur at a very early period. When the amnion is fully formed and separated from the chorion, the posterior end of the embryo remains attached to the chorion by a thick cord of mesodermal cells, in which the allantoic vessels are formed, and which may be regarded as the precociously developed wall of the allantois. The early stages are not well known, but eventually the lumen of the allantois is developed within this cord as a narrow tube lined with entodermal cells, extending backward from the end of the hind gut to the chorion. It is formed, then, in the same position as in the sheep, but its subsequent history is very different, for it persists as a small tube usually until the end of fœtal life; while the allantoic vessels spread far from the lumen into the mesodermal lining of the chorion and supply the fœtal circulation of the placenta (Fig. 86.)

The allantoic fluid of the cow has been shown by Döderlein to differ from the amniotic fluid in being poorer in salts of sodium and richer in nitrogen. The latter increases with the age of the fœtus, indicating that it is an excretory product; and according to Foster and Balfour urates are abundant in the allantoic fluid of the chick by the sixteenth day.

The circulation in the allantois takes place primarily through two pairs of blood-vessels, the allantoic or umbilical arteries, and the allantoic veins and their branches. The allantoic arteries arise as direct prolongations of the primitive forks of the aorta. When the hind limbs bud out, the external iliac arteries arise as branches of the allantoic arteries. In the chick the right allantoic artery does not grow so fast as the left, and it finally dwindles and disappears altogether. In man the two arteries persist. They may be traced from the posterior end of the aorta through the umbilical cord (see *Umbilical Cord*) to the placenta, where they branch freely.

The two allantoic veins in the chick are formed during the fourth day. They unite in the body of the embryo, becoming there a single allantoic vein, which passes forward on the left side and joins the left vitelline vein. In man and other mammals the two allantoic veins at first open into the sinus venosus, one on each side, in company with the corresponding Cuvierian and vitelline veins. Later, while the allantoic veins remain distinct within the embryo, in the allantoic stalk they fuse to form a single vessel. During the fourth week in man the allantoic veins become separated from the sinus venosus. The smaller, right one soon after disappears, while the left one unites with the portal vein (formed by the union of the vitelline veins) and increases in size.

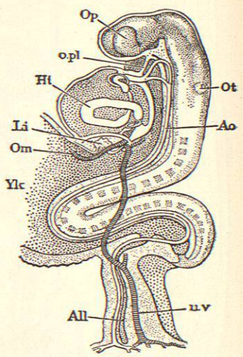


FIG. 86.—Human Embryo of 2.15 Mm., Reconstructed from Sections. *All*, Allantois; *Ao*, aorta; *Ht*, endothelial heart; *Li*, liver; *Om*, omphalo-mesenteric vein; *uv*, allantoic vein; *Yk*, yolk sac. (From Minot, after His.)

Creighton has described recently (1899) a series of lymphatic cylinders and capsules surrounding certain allantoic vessels in the chick. They are found upon the vessels where the allantois and amnion come into contact, and are supposed to aid in the absorption of the yolk and albumen. (For a description of the circulation in the placental portion of the allantois, see *Placenta*.)

The principal adult structure developed from the allantois is the urinary bladder. Of that part of the allantois which lies within the body of the embryo, the proximal portion begins to enlarge during the second month to form the bladder, while the tapering distal portion finally loses its lumen and becomes the urachus, or ligamentum vesicæ medium, connecting the bladder with the umbilicus. The portions of the allantoic arteries within the embryo are called the hypogastric arteries, and are more or less homologous with arteries of the same name in lower vertebrates. At birth the distal part of the hypogastric on each side loses its lumen and becomes a solid cord enclosed in the superior ligament of the bladder, while the proximal part persists as the common iliac, internal iliac (as far as the bifurcation), and superior vesical arteries. The remaining allantoic, or umbilical, vein loses its cavity at birth and becomes the ligamentum teres, or round ligament, connecting the liver with the umbilicus (see *Fœtus*).

*Robert Payne Bigelow.*



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POST-OFFICE.—Alleghany Springs.

ACCESS.—Via Norfolk and Western Railroad to Shawsville station, thence by carriage or omnibus three and a half miles to springs. Hotel and cottages.

This well-known resort is located on the eastern slope of the Alleghanies, on the head waters of the Roanoke River. The hotel and principal range of cottages occupy smooth and undulating hills, gently sloping to a broad, grass-covered lawn of forty acres, extending to the banks of the river. The accommodations here are first class, affording every convenience and comfort to the pleasure seeker as well as the invalid. The hotel is large and spacious, and is supplied with all requisite improvements. Contiguous to the hotel are one hundred and fifty double cabins, arranged with a view to the comfort and good health of the guests. The scenery in the vicinity is not excelled for picturesque loveliness and variety at any watering place in the Old Dominion. Only one spring, which flows about thirty gallons per hour, is in use at the present time. The water is limpid, and has a temperature of 56° F. The following analysis was made some years ago by Dr. F. A. Genth, of Philadelphia:

ONE UNITED STATES GALLON CONTAINS:

| Solids. | Grains. |
|---|---|
| Calcium carbonate | 3.61 |
| Magnesium carbonate | 0.36 |
| Lithium carbonate | Trace. |
| Strontium carbonate | 0.06 |
| Barium carbonate | 0.02 |
| Magnesium carbonate | 0.06 |
| Iron carbonate | 0.16 |
| Cobalt carbonate | Trace. |
| Zinc carbonate | Trace. |
| Copper carbonate | Trace. |
| Lead carbonate | Trace. |
| Sodium sulphate | 1.72 |
| Calcium sulphate | 115.29 |
| Magnesium sulphate | 50.88 |
| Potassium sulphate | 3.70 |
| Magnesium nitrate | 3.22 |
| Aluminum nitrate | 0.56 |
| Aluminum phosphate | 0.03 |
| Aluminum silicate | 0.21 |
| Sodium chloride | 0.28 |
| Calcium fluoride | 0.02 |
| Antimonium oxide | Trace. |
| Silica | 0.88 |
| Crenic acid | Trace. |
| Apocrenic acid | Trace. |
| Organic matter | 2.00 |
| Total | 183.06 |
| | Cub. In. |
| Gases. Carbonic acid | 0.56 |
| Gases. Sulphureted hydrogen | Trace. |

According to the author's classification, this water may be denominated a magnesic-sulphated saline. It is distinguished for the great variety of its mineral constituents. When taken in large doses it is actively diuretic and cathartic, operating with special activity on the mucous membrane of the lower intestines. In smaller doses its action may be described as tonic, alterative, and detergent. The water has been found particularly beneficial in the treatment of dyspepsia, for which it has a wide reputation. Excellent effects are also observed in nervous affections and in diseases of the liver and kidneys. It is recommended in small doses by many physicians in the treatment of anæmia and chlorosis, general debility, and other conditions in which tonic and reconstructive effects are sought. The water is used commercially.

*James K. Crook.*

**ALLEN SPRINGS.**—Lake County, California. These valuable springs are situated in the Coast Range Mountains, three miles east of Bartlett Springs, and some forty miles west of the town of Williams. The location is in a cañon at the head of Cache Creek, at an elevation of eighteen hundred feet above the Pacific Ocean. The grounds are delightfully shaded by huge oaks and towering pines and surmounted by evergreen hills. The usual excellent climatic conditions of Lake County prevail here. Good hunting and fishing will be found in the neighborhood. There are five springs on the place, two containing considerable iron, while three are of the alkaline saline type. All the waters contain carbonic acid gas and are cool and sparkling. The following analysis of the soda spring was made by Dr. Winslow Anderson in 1888:

ONE UNITED STATES GALLON CONTAINS:

| Solids. | Grains. |
|---|---|
| Sodium chloride | 23.16 |
| Sodium bicarbonate | 4.25 |
| Sodium sulphate | 0.78 |
| Potassium chloride | 1.90 |
| Magnesium bicarbonate | 27.40 |
| Potassium bicarbonate | 0.75 |
| Magnesium chloride | 63.00 |
| Calcium bicarbonate | 20.14 |
| Calcium phosphate | 0.55 |
| Ferrous carbonate | 0.93 |
| Organic matter | Trace. |
| Total | 142.86 |
| | Cub. In. |
| Carbonic acid gas | 36.00 |

According to Professor Wenzell's analysis, silica is also present. These waters are gently aperient in action, and have gained considerable reputation in chronic hepatic and renal affections, associated with dropsy. The resort has ample accommodations for guests, besides good bathing facilities.

*J. K. C.*

**ALLIGATOR PEAR.**—(*Avocado; Abogate; Palta; Midshipman's Butter.*)

The above are the names of the fruit of *Persea gratissima* Gaertn., a large tree of the *Lauraceæ*, and they are also applied to the seeds, which have distinct medicinal properties. The genus is very closely related to that yielding cinnamon. It contains about a dozen species, which grow in the tropics of both continents, but the one under discussion alone possesses the properties here described. It is native in many parts of the American tropics, and is largely cultivated in all tropical countries for its fruit, which is common in northern markets. This is inequilaterally elongated-pyriform, and as large as the very largest pears. The skin has a leathery, rusty-green appearance. The solitary ovoid seed fills half of the interior, the remaining space being occupied by a creamy white pulp, penetrated by numerous gray or greenish veins, of the finest and smoothest fatty texture, highly nutritious and of peculiar flavor. On first trial, it is disgusting to most persons, but they usually become extravagantly fond of it on continuing to use it. The juice of the seeds makes indelible stains on linen, and is used for this purpose. The seeds are largely used in the tropics as a local application in rheumatism and neuralgia, and some physicians have thus found the fluid extract of service. They are also credited with anthelmintic properties, and doses of fl. ʒ i. of the fluid extract have been used to expel tænia.

*H. H. Rusby.*