spread with a layer of blue ointment. Another division that has been made recognizes a superficial form, including the blue and the black forms, and a deep form, embracing the white and the red varieties, in which there is destruction of the deeper underlying tissues. Several of these forms may and do occur together in the same individual.

PATHOLOGY.—"The scales contain a white, highly refracting mycelium, and black spores which are round or oval in shape. The spores contain a yellow fluid in which abundant pigment is found. The mycelial filaments are short, non-branching, and taper from a broad base to a blunt point, by which each filament is attached to a single spore" (Manson).

DIAGNOSIS.—Pinta may be distinguished from anæsthetic leprosy by the facts that the sensibility of the patches is not impaired, and that the mucous membranes are not attacked; from acquired leucodermia or vitiligo by the fact that in the latter there are no changes of structure or of sensibility in the affected skin. From chromophytosis, ringworm, and erythrasma pinta may be distinguished by the history of the disease and the color and localization of the lesions.

PROGNOSIS.—As to life the prognosis is very good, but the disease is very rebellious to treatment; and in spite of all treatment it usually lasts a long time.

TREATMENT.—Absolute cleanliness and the local applications of chrysophanic acid, sulphur, iodine, the salts of mercury; in fact, all the stronger parasiticides are indicated. *N. J. Ponce de Léon.*

**PIPERAZIN** (*Diethylene-Diamin. Ethlenimin*). — A synthetical compound primarily intended to replace spermin, but found to be a different body, both in chemical and in physiological characters. It is now utilized only as a solvent for uric-acid deposits in the place of lithia salts.

It is formed from the action of ammonia on ethylene bromide, which produces a mixture of compounds from which diethylene-diamin is separated by fractional distillation at a temperature between 130° and 180° C. When separated by a patented process it is supplied to the profession under the name of piperazin. It is a solid which melts at 104° to 107° C., and boils at 145°. It forms in bright, lustrous tables. When exposed to the air it absorbs water and carbonic acid gas, and becomes liquefied. It is very soluble in water, and forms a tasteless, alkaline solution without being in the least corrosive.

Experiments with solution of piperazin upon uric acid and upon calculi formed either of uric acid or of uric acid with phosphate of lime, prove that it exerts a powerful solvent action. When placed in a one-per-cent. solution at a temperature of 90° F., the stones are rapidly acted upon, the sharp edges are removed, and the surface becomes smooth and slippery; within twenty-four hours the mineral portion is dissolved and a soft mucoid skeleton only remains. All forms of urinary deposits are said to be more or less acted upon. Compared with carbonate of lithium it dissolves twelve times as much uric acid. Tests have been made of the relative solubility of fragments of a stone in one-per-cent. solutions of piperazin, lithia carbonate, borax, and sodium carbonate. In the piperazin solution the fragment was dissolved in six hours, the lithia solution did not dissolve the fragment until after forty-eight hours, the borax dissolved only a very small portion in forty-eight hours, and the sodium solution had no effect whatever after the lapse of the same period of time. In each case the residue was placed in the piperazin solution, when it entirely disappeared.

The action of the drug when administered to a person in health is perfectly harmless. It does not disturb the digestive, circulatory, or respiratory organs. After its administration and absorption it is not decomposed or acted upon, but passes through the system and is excreted by the kidneys unchanged. Piperazin may be detected in the urine two hours after its administration, and it continues to be excreted for a prolonged period. The urine is not rendered alkaline, nor in any way altered by its prolonged use.

Piperazin is theoretically a very valuable drug for the treatment of all conditions in which uric acid is formed in excess. Numerous cases are reported in which it has been used with very marked success—in gout in all its forms, in lithiasis, renal calculi, and vesical calculi, and in many forms of rheumatism of a gouty character. In these conditions it is supposed first to saturate the uric acid that remains dissolved in the organism, and then to attack all deposits of uric acid. The soluble urate of piperazin that is formed is readily excreted with the urine. The piperazin that is not neutralized in the system comes in contact with calculi and deposits in the kidney and bladder and there exerts its specific properties. On account of its freedom from any irritating action on the mucous membrane, it may be made to act directly upon the deposits in the bladder, by injecting a one-per-cent. solution, which assists in the decomposition of the larger calculi that would otherwise require operative treatment.

The results of its use have not always been so favorable. Prof. H. A. Hare reports having employed it in some cases of well-marked gout and in gouty rheumatism without any beneficial effects. He administered it internally and by hypodermic injection in the usual doses without relief. Sir William Roberts, in the "Croonian Lectures for 1892," on the treatment of the uric-acid diathesis, states that piperazin in blood serum or synovia had not the slightest effect in adding to the solvent powers of these media on sodium biurate, nor the slightest effect in retarding its precipitation from serum and synovia artificially impregnated with uric acid. He concludes that if piperazin has any beneficial action in gout it is not due to its solvent powers on the material of gouty concretions.

On account of its hygroscopic properties it must never be prescribed in powder or pill form. It is supplied in bottles containing 5 gm., which is sufficient for five days' use. This is to be dissolved in a definite quantity of water, and one-fifth given each day in divided doses. The quantity employed by all observers has been 1 gm. daily, in solution, well diluted. The effects of the drug are rapidly manifested. After the subsidence of the attacks a smaller dose of eight to fifteen grains may be given every third day, and continued for months. When administered hypodermically, fifteen minims of a ten-per-cent. solution may be used. The injections are to be made in the neighborhood of the affected joints. The drug is to be given internally at the same time. The effects of this method are reported to be very gratifying; the swelling and pain subside and the deposits are absorbed and greatly reduced in size. In some cases it is reported that deposits of gouty material in the pinnæ of the ears and in the eyelids were removed by two or three injections. The following solution is also prepared for local application to the affected joints: Piperazin, gr. xv.–xxx.; alcohol, ʒ v.; water, ʒ iiss.

*Beaumont Small.*

**PIPERONAL**—heliotropin, methylene ether, protocatechuic aldehyde, $C_6H_3.COOH.O.CH_2$—occurs in small white crystals with a strong odor of heliotrope, and is soluble in alcohol and ether and insoluble in water. In dose of 0.5–1 gm. (gr. viij.–xv.) it is antiseptic and antipyretic. It is also used in perfumery.

*W. A. Bastedo.*

**PIPSISSEWA.** *Chimaphila. Bitter* or *False Wintergreen, Prince's Pine.* "The dried leaves of *Chimaphila umbellata* (L.) Nutt. (*Pyrola u.* L.; *C. corymbosa* Pursh. —fam. *Pyrolaceæ*)."

This very pretty little plant, native of dry woods throughout the cooler regions of almost the entire North Temperate Zone, is an herb-like undershrub, having an erect stem a few inches in height, arising from a short, prostrate portion. The leaves are crowded near the ground and the scape bears several very pretty, five-





merous, wax-like, white, subpendulous flowers, about a half an inch broad. The leaves are from 2.5 to 5 cm. (1 to 2 in.) long and 1 to 1.5 cm. (⅜ to ⅝ in.) broad, oblanceolate, the lower half cuneate and entire, the upper coarsely and sharply serrate, acute or obtusish, thick and rigid, brittle, above dark-green or brownish-green, and slightly shining, the veins strongly impressed, underneath paler, the veins very prominent; odor very slight, tea-like; taste astringent and bitterish.

Their constituents are almost identical (as are the properties and uses) with those of *Uva Ursi*. There is between four and five per cent. of tannin, arbutin, sugar, gum, etc., and a small amount of the yellow, crystalline, neutral substance, *Chimaphilin*, which is inodorous and tasteless, soluble in alcohol, ether, and chloroform, but only slightly soluble in water. For its mildly astringent and diuretic properties and uses, see *Uva Ursi*. The Pharmacopœia provides a fluid extract, the dose of which is 2 to 4 c.c. (fl. ʒ ss. to i.). *Henry H. Rusby.*

**PITCH, BLACK.**—Common pitch. See *Turpentine.*

**PITCH, BURGUNDY.**—*Pix Burgundica* (U. S. P., B. P.); *Poix de Bourgogne, Poix des Vosges, Poix jaune* (*Codex Med.*). This opaque resin is nominally, and properly, obtained in Europe from the Norway spruce, *Abies Abies* (L.) Rusby (*Pinus* A., L.; *P. Picea* Du Roi—fam. *Pinaceæ*), a magnificent evergreen with a pyramidal head reaching 40 metres or more in height, and having branches even down to the very ground. Its cones are large and pendent, its foliage is close, and of a brilliant green color. It is an abundant forest tree of Northern Europe and Asia, and a frequent ornamental one here.

Burgundy pitch is not an empyreumatic product like common black pitch, but a turpentine which has been exposed to hot water or steam, and has in consequence taken up enough of it to become opaque. It is collected by making rather deep incisions in the trunks of the trees, scraping off the resinous sap that flows out, boiling it in water, and straining it through cloths. The collection is carried on in Austria and Switzerland, but not to a very great extent, and is diminishing. In the place of this genuine article, the turpentine of other European Pinaceæ, prepared in the same way, is frequently substituted, and is sanctioned in most countries; and besides this, an entirely spurious preparation of common American rosin, mixed with oil or fat and water, is the common (false) Burgundy pitch of the market. That sold in this country is said to be almost never genuine. The following is the official description:

Hard, yet gradually taking the form of the vessel in which it is kept; brittle, with a shining, conchoidal fracture, opaque or translucent, reddish-brown or yellowish-brown; odor agreeably terebinthinate; taste aromatic, sweetish, not bitter.

It is almost entirely soluble in glacial acetic acid, or in boiling alcohol, and partly soluble in cold alcohol.

The principal portion of this substance—eighty per cent. or more—is *resin*, amorphous and opaque until the water is evaporated off, then clear; from three to five per cent. of *essential oils* is also present, and from five to ten of *water*.

It is a mildly stimulating substance when applied to the skin; taken internally it has the properties of common rosin, or, in a mild degree, those of turpentine; stimulating in small doses, irritating in large ones; but it is milder in its taste and action than common turpentine. Its very limited medicinal use is almost entirely confined to its presence in a few plasters, of which the following are official here: Burgundy pitch plaster (*Emplastrum Picis Burgundicæ*, U. S. P.). Burgundy pitch, 80 parts; yellow wax, 15 parts; olive oil, 5 parts, melted together. It may be used as it is, or as the basis for other more active medicaments. The pitch plaster with cantharides is more stimulating; it consists of: Burgundy pitch, 92 parts; cerate of cantharides (thirty-two per cent.), 8 parts, melted together after straining the cantharidal cerate through a very fine strainer. *W. P. Bolles.*

**PITCH, HEMLOCK.**—*Pix Canadensis* (U. S.), *Canada Pitch.* This is a product of the *Hemlock Spruce, Tsuga Canadensis* (L.) Carr. (*Pinus C.* L.; *Abies C.* Mx.—fam. *Pinaceæ*), collected and prepared in much the same way as the preceding. It appears often to have been boiled for a greater length of time, and is frequently very dark, almost black in consequence. It is described as follows: "Hard, yet gradually taking the form of the vessel in which it is kept; brittle, with a shining conchoidal fracture, opaque or translucent; dark reddish-brown; having a weak, somewhat terebinthinate odor." Canada pitch has essentially the same composition and properties as the preceding, and is used for the same purposes. A plaster is made of it in exactly the same way as the Burgundy pitch plaster (see above). *W. P. Bolles.*

**PITUITARY GLAND.**—(*Hypophysis Cerebri*; Ger., *Hypophyse*; Fr., *Gland* or *Corps Pituitaire*; Ital., *Glandula Pituitaria*; Span., *Ghiandola Pituitaria.*) Vesalius was the first to describe this organ, and in his "De Corporis Humani Fabrica" (1553) he calls it the "glans pituitam excipiens," due to the mistaken idea that this organ secreted the nasal mucus (pituita). Soemmering (1778) described it more fully and called it "hypophysis cerebri." Both thought that the pituitary was a gland, but as they could not find any duct, they considered it a part of the nervous system. Rathka (1838) pointed out the significant fact that the organ is developed from two *Anlagen*, one arising from that part of the fore-gut which later forms the pharynx, the other arising from the base of the third ventricle. These views were disputed for some time, but Mihalkovichs (1874) agreed with Rathka, and his proofs were so conclusive that but few have disputed them since that time. Pathological changes were noticed by many of the early observers. Wepfer, Bonnet (1679), and Morgagni found colloid cysts; Greding (1771) and Melcarne (cited by Mechel) found "enlargements of the pituitary gland"; and Wenzel claimed that diseases of the pituitary caused epilepsy. The physiology of this organ has been neglected much, and it is only recently that its physiological action has been given much attention.

ANATOMY.—The pituitary body is an oval, glandular organ, consisting of two lobes and a connecting part. It rests in the sella turcica, and is enveloped by a layer of dense connective tissue, which is a prolongation of the basal dura. The average weight of the pituitary is 0.5 gm. In a series of one hundred cases Schönemann found that the average weight was 0.63 gm. between the ages of twenty and thirty, but that the weight diminished after that time until the average at fifty was 0.6 gm. Boyce and Beadles examined the pituitary glands from fifty female insane and found that the weight varied from 0.384 to 0.896 gm., the average being 0.6 gm. In fifty male insane the weight varied from 0.712 to 1.302, with an average of 0.453 gm. The ages of these cases varied from twenty-two to seventy-eight, none having presented symptoms referable to the pituitary. According to these authors the weight of the pituitary has no definite relation to that of the brain or to the age of the patient. The organ measures about 14 mm. in its lateral diameter, 7 mm. in its antero-posterior, and 6 to 7 mm. in thickness. The color of the pituitary is a dark brown or a bluish-red. The consistency of the organ is about that of the normal liver.

HISTOLOGY.—The microscopical structures of the two lobes differ markedly, the anterior being made up of glandular elements, and the posterior of a tissue resembling, with ordinary stains, a modified glia. From the connective tissue surrounding the gland, fine trabeculæ carrying the blood-vessels run into the interior and separate the cords of epithelial cells. These epithelial cells are rather hexagonal in shape and are of two kinds. One contains a round or oval, deeply staining nucleus embedded in a large amount of granular protoplasm which stains deeply with eosin ("eosinophilic cells"). The other cells are somewhat smaller, more granular, and they do not stain with the acid dyes ("cyanophilic cells").

The posterior lobe is enveloped by a capsule of connective tissue from which the fine septa carrying the blood-vessels enter the lobe. Immediately beneath the capsule are several layers of cells, which, according to Gemelli, react with certain stains like glio-epithelium. Beneath these is an indefinite layer of secretory cells of the epithelial type, which are often arranged into distinct alveoli separated by the fine connective-tissue septa. The central zone of this lobe contains small round, polygonal, and few pear-shaped cells together with a small amount of connective tissue. The pear-shaped or nerve cells possess either one or two neuraxons. These cells are of two types, the large and the small pear-shaped cells. The large cells have many branching dendrites ending in feathery tufts. The neuraxons of these cells come off close to the cell bodies, have few collateral branches, and end by breaking up into fine threads, some of which are lost near the cell, while others end in networks among the epithelial cells along the border of the lobe. The other type of nerve cell or the small pear-shaped cell has dendrites, all of which are short, except one which is covered with hair-like processes. All the dendrites come off close to the cell body and terminate as clubbed ends.

The cells which possess more than one neuraxon are flask-shaped. Each cell has three or four dendrites which gradually grow finer and terminate free, and from two to four neuraxons which apparently terminate about similar cells. Most of the neuraxons run toward the infundibulum, but Berkley, who has worked much on this subject, has been unable to trace them into the infundibulum. Gemelli has described nerve fibres in the pedicle; they enter the posterior lobe and branch in the shape of a fan under the glio-epithelium. From there he was unable to trace them to any cell in this lobe which he could call a nerve cell.

The infundibulum or the pedicle consists of a loose connective tissue which is composed of anastomosing stellate and spindle-shaped cells, and which holds in its meshes blood-vessels and nerve fibres and encloses small blind spaces lined by cubical epithelium, the remains of the neural central canal.

Embryology.—The pituitary gland is developed from two *Anlagen*, one coming from the midbrain ectoderm and the other from the entoderm of the posterior pharynx. At the angle formed by the pharynx and mouth a solid bud of cells is given off from the median area of the upper wall of the posterior pharynx. These cells grow out into the thin layer of mesoblast separating the brain from the pharynx, and the bud as a whole becomes hollowed out to form a duct-like communication with the pharyngeal cavity. About the time when the pharyngeal bud begins to develop the brain sends another bud downward until the two *Anlagen* come to lie side by side. About this time the mesoblastic cells surrounding the *Anlage* from the pharynx grow into this hollow flask-shaped mass, and the wall of the once smooth cavity becomes folded inward upon itself. These papillæ become divided and interlaced to form the mature gland. While this has been taking place the canal communicating with the pharynx has become occluded and absorbed, and the base of the sella turcica has ossified.

When the *Anlage* for the posterior part of the gland is given off, it contains few embryonic ganglion cells, which are found as cells less developed than their corresponding cells in the base of the third ventricle. Along with these cells glia cells are found, some of which disappear and others remain as the cells described by Berkley.

Pathological Anatomy.—Because of the location of the pituitary body pathological conditions at the base of the brain are apt to cause secondary changes in it. These secondary changes may or may not be marked enough to produce symptoms. Usually before symptoms on the part of the pituitary appear, the primary condition at the base of the brain has produced its effects, which have either killed the patient or have masked the symptoms caused by the pituitary lesion.

*Circulatory Disturbances.*—General *congestion* of the brain, either active or passive, produces a similar condition in the pituitary. Anæmia of this organ occurs in general cachectic conditions such as result from malignant neoplasms, tuberculosis, general arteriosclerosis, etc.

Two instances of hemorrhage into the organ have been reported: one by Bailey, in which the lesion was due to endarteritis, and a second one by Anders and Cattell, which occurred in a case of pernicious anæmia.

Infarct of the pituitary has not been reported as yet.

*Retrograde Changes.*—Atrophy of the pituitary body results from the cachexias of malignant tumors, tuberculosis, syphilis, and pernicious anæmia. Senile atrophy occurs physiologically in every individual over fifty.

Necrosis. Necrosis of any form involving the whole organ has not been reported, but localized simple, liquefaction, and coagulation necrosis may be present under certain conditions. General infection may produce a simple necrosis of the gland cells of the anterior lobe of the pituitary body. Liquefaction necrosis may follow infection of the organ by the pus-producing germs, and coagulation necrosis may be present under similar conditions.

*Degenerations.*—General cloudy swelling and fatty degeneration may result from the general intoxications of infections or from inflammations of the tissues surrounding the pituitary. By far the most common retrograde change in the pituitary is colloid degeneration, which is, up to a certain degree, a physiological condition, similar to that of the thyroid. Accompanying an overproduction of colloid, there are often formed cysts, which are due to the inability of the organ to excrete the colloid. These cyst walls are lined by the cuboidal cells which are the remains of the parenchymatous cells.

*Progressive Changes.*—Hypertrophy. The most common progressive change, if not the most common change of any form, is hypertrophy. This change is confined usually to the glandular portion of the organ, and occurs in a large number of cases of acromegaly. The parenchymatous cells of the anterior lobe are increased both in size and in number, the connective tissue being relatively increased also.

Inflammations. Inflammation of the pituitary gland is usually secondary to a meningitis and, in pyæmia, secondary abscess may develop in the organ. Secondary inflammation may in rare cases result from an abscess of the pharyngeal vault.

Chronic Inflammations (Granulomata); Tuberculosis. In 1901 Baldwin reported tuberculosis of the pituitary gland in a case of general miliary tuberculosis; that this was a true case of tuberculosis cannot be doubted since the germs were found in stained sections. A careful study of the literature at that time failed to give another case of true tuberculosis of the pituitary. Weigert had reported a case of "tuberculous-like granuloma" of the pituitary, but he was not positive as to its identity since he could find no germs in this granuloma, and he could find no tubercles in any other part of the body. Boyce and Beadles, and Wagner have reported cases similar to that of Weigert, but were unable to demonstrate germs.

Syphilis. Lancereaux says that the hypophysis may be enlarged in hereditary syphilis, such enlargement being due to increase of the connective tissue. Weigert, Barabacci, Birch-Hirschfeld, Hunter, Sokoloff, Frasier, and Hektoen have reported gummata of this organ which resembled in structure gummata found elsewhere in the brain.

Tumors. The only mature connective-tissue tumors which have been reported are two cases of lipoma, and one of fibroma. The lipoma in both cases arose from the fat tissue about the organ, and not from the gland proper. Chiara published the case of a woman, aged sixty-three, in whom a fibroma the size of a bean was found in the pituitary.

Many of the tumors of the pituitary gland which have been reported have been called large, round-celled alveolar sarcoma or endothelioma, other varieties of the sarcomata being very uncommon. However, when the structure of the normal pituitary body is borne in mind, it is probable that many of the so-called round-cell sarcomata





were adenomata. One case of lymphosarcoma of the pituitary, and another of spindle-cell sarcoma have been published, the former by Heusser and the latter by Hoffmann. Of the mixed sarcomata and those showing degenerations or deposits some of the large round-cell sarcomata have been alveolar and consequently mixed. To these may be added the angiosarcoma of Walton, the myxosarcoma reported by Whitwell, and the gliosarcoma of the posterior lobe published by von Graefe.

Of the epithelial tumors various forms have been described. As stated before, small retention cysts are common in the anterior lobe and in the infundibulum of the pituitary. These may become very large and may replace the greater part of the organ. They may be lined by a single smooth layer of rather flattened cuboidal cells or the inner surface may be folded slightly. In every case these cysts contain a substance very similar to the colloid of thyroid, if not identical with it. Unless the retention cysts are classed as tumors, adenomata of the pituitary are the most common variety of epithelial tumor. It is possible, however, that many of the so-called adenomata have been examples of hypertrophy. In both hypertrophy of the pituitary and in adenomata the anterior lobe is the only part of the organ which is affected, and it becomes often a matter of personal opinion whether a given case represents a condition of hypertrophy or one of adenoma. In those cases which are genuine instances of adenoma all the elements of the anterior lobe are increased in number and many of the epithelial cells are enlarged. The lymph spaces between the cords of cells are broader and in many the colloid secretion may be slightly increased. These tumors are malignant only by position. Cases of carcinoma of the pituitary have been described.

The possibilities of inclusions of foreign embryonic cells into the *Anlage* of the pituitary and the subsequent formation of dermoid cysts from these cells are great. Nevertheless, very few of these tumors have been reported. Engel (1839), Rippermann (1864), Arnold (1875), Baart de la Faille (1875), Wasserthal (1875), Beck (1885), White (1885), Sanisburg (1886), and Beadles have described teratomata of the pituitary gland.

Most of these teratomata have been composed of small cysts containing semi-solid pultaceous material. The connective tissue surrounding these cysts contained small pieces of bone. Many of these tumors have been found accidentally at autopsy and have produced no symptoms during life. Others have been found in a fœtus, and these have shown a more complicated structure. Some have contained cortex, ganglion cells, liver, parts of the intestinal tract, hair, teeth, and bone, and they may have represented a parasite engrafted upon an autocyte; others of these teratomata have arisen from the remains of the pharyngeal diverticulum.

Of the parasites found in man Sömmering has reported a case of echinococcus cyst of the pituitary gland.

Physiology.—The physiology of the pituitary is not fully known. Before 1886 this organ was supposed to represent some evolutionary remains. In 1886 Marie found that it showed marked changes in so many cases of acromegaly that the old idea that it was non-functional was reconsidered.

Oliver and Shäfer have injected into animals intravenously a saline extract of the pituitary, and have found that it produced a rise in blood pressure. Howell confirmed this work, and found further that a second dose did not have so marked an effect as the first, unless considerable time had elapsed between the two injections. Shäfer and Vincent were able to extract from the pituitary one substance which depressed and one which increased the blood pressure. The substance which possessed the power of increasing the pressure was found to be soluble in salt solution and insoluble in absolute alcohol and ether. The other substance, however, was soluble in all three of these reagents. The experimenters injected the salt-solution extract and found that the blood pressure rose, but soon fell. They explained this by the fact that the depressive substance acted more slowly than the stimulating one. Osborne and Vincent extracted from the infundibular lobe a depressive substance which resembled that obtained from the cortex of the brain, and consequently they are not sure that the depression effects may not be due to the nerve elements of the infundibular lobe.

That the pituitary gland is similar in structure to the thyroid had been known for some time. Michel (1860) and Peremeschko (1866) were among the first if not the first to note the similarity and, in describing the pituitary gland, they compared it to the thyroid. It remained for Rogowitsch, in 1886, to prove that this supposed similarity was a fact. Since this time many workers have observed in diseases such as myxœdema, cachexia thyreopriva, and cretinismus, that the hypophysis is increased in size. The cells of the glandular lobe are larger than normal, and the amount of colloid material found in the organ is increased. Hence these writers have assumed that when the thyroid is diseased, the hypophysis attempts to assume the function of the thyroid. On the other hand, cases have been reported in which the hypophysis has been abnormal either in structure or in function, the thyroids and in some cases the parathyroids have been increased in size. In such cases it has been assumed that the thyroids and parathyroids attempt to compensate for the diseased pituitary bodies.

The experimental evidence on this subject is not uniform at present. Casseli has been able to produce a condition exactly analogous to cachexia thyreopriva by removal of the pituitary; and he states that arrest in development of the pituitary retards the growth of the organism as a whole. Freedmann and Maas removed the pituitary bodies from cats, and could not obtain the same results. Nevertheless, the great weight of clinical evidence and the larger part of the experimental study tend to show that the relation is very close between the pituitary body and the thyroid and the parathyroid glands.

*Pathological Anatomy of Acromegaly.*—In all the cases studied, Israel says (1901) that Virchow was able to find only five cases in which the pituitary was not enlarged. In sixty-nine cases which the writer has had the opportunity of analyzing the pituitary is found "not enlarged" in only one case. In all other cases this organ shows some pathological change.

The following shows the changes found as they were diagnosed:

| | |
|---|---|
| Colloid degeneration and hemorrhage | 2 |
| Hypertrophy (anterior lobe) | 22 |
| Hypertrophy (posterior lobe) | 1 |
| Vascular hypertrophy | 2 |
| Fibrosis with atrophy of follicles | 1 |
| Tumor | 4 |
| Hypertrophy (?) or sarcoma (?) | 1 |
| Glioma | 1 |
| Glioma (?) sarcoma (?) | 1 |
| Neuroglioma sarcoma | 1 |
| Adenoma | 10 |
| Adenoma (?) | 3 |
| Sarcoma, round cell | 19 |
| Sarcoma (?) or lymphadenoma (?) | 1 |
| | 69 |

In 29 of these cases the thyroid was examined, and in only 5 was this organ reported normal.

The conditions found in this organ are as follows:

| | |
|---|---|
| Normal | 5 |
| Atrophy | 1 |
| Atrophy with interstitial fibrosis | 2 |
| "Chalk-like" deposits | 1 |
| Colloid degeneration | 3 |
| Cystic degeneration | 1 |
| Hypertrophy | 11 |
| Hypertrophy with colloid cyst | 2 |
| Hypertrophy with interstitial fibrosis | 2 |
| Interstitial fibrosis | 1 |
| | 29 |

In this connection it may be well to note that in 18 cases in which the thymus region was examined, the thymus was reported absent in 7; persistent in 7; both lobes were enlarged in 3, and in 1 case only the left lobe was enlarged.

The relations of the pituitary to the thyroid and thy-

mus glands in acromegaly have not been demonstrated. That pathological changes of the pituitary occur in almost every case of acromegaly is true, but pathological changes are also found in this body in cases in which there has been no overgrowth of the bones or any other symptom or signs of acromegaly.

*Frederick A. Baldwin.*

**PITYRIASIS.**—Pityriasis is an affection of the skin in which there is slight redness accompanied by a branny desquamation. The term was formerly used to describe many scaly conditions of the skin, but it is gradually passing out of use, as the conditions are now described under other headings.

Pityriasis of the scalp is described in the article on *Eczema;* it is the dry form of dandruff in which the scales do not adhere, but fall whenever the hair is brushed.

Pityriasis of the face and neck is usually found as ill-defined slightly scaly patches with very little redness. This condition is described by most authors under seborrhœa or seborrhœic eczema. (See article on *Seborrhœa.*)

Pityriasis rosea, Pityriasis rubra, Pityriasis rubra pilaris, and Pityriasis versicolor are described elsewhere. (See the articles on *Pityriasis Rosea, P. Rubra,* and *P. Rubra Pilaris,* in THE APPENDIX, and that on *Tinea* in Vol. VII.)

*Howard Morrow.*

**PIXOL** is a cheap substitute for lysol made by mixing one pound of green soap with three pounds of liquid tar (Pix liquida) and slowly adding a solution of three and one-half ounces of potash in three pints of water. The resulting liquid is miscible with water, and is used, in five-per-cent. dilution, for disinfecting the hands, linen, etc. It is claimed to be about as strong as carbolic acid.

*W. A. Bastedo.*

**PLACENTA, ANATOMY OF.**—The placenta (ὁ πλακοῦς, a cake) is a discoid, spongy body attached during pregnancy to a portion of the inner wall of the uterus. It is connected by means of the umbilical cord with the fœtus, and forms for it the organ of respiration, nutrition, and excretion. After the expulsion of the child, it becomes separated from its area of attachment, and together with the fœtal membranes is cast off as the so-


FIG. 3810.—Decidua Vera, Fourth Month. × 16. (From J. Whitridge Williams' "Text-book of Obstetrics," Appleton & Co., New York, 1903.)

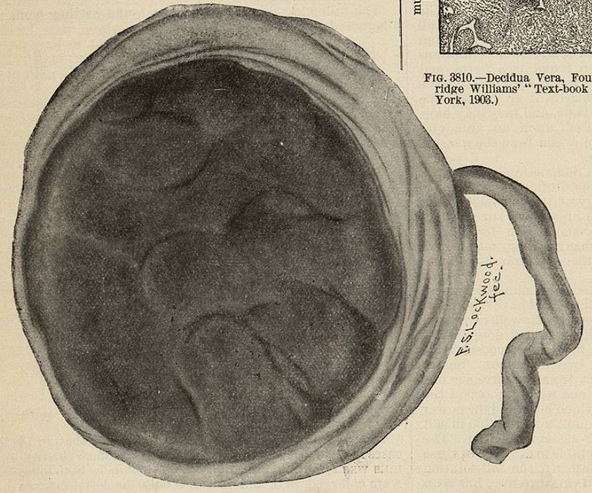

FIG. 3809.—Maternal Surface of Mature Placenta, Showing Cotyledons; Membranes Turned Back. × 2/5. (From J. Whitridge Williams.)

called *after-birth* (Nachgeburt, l'arrière-faix). The portion of the placenta which is attached to the uterine wall is rough and irregular and is known as the maternal surface, while that facing the fœtus is smooth and covered by the thin glistening amnion, which overlies the smooth surface of the chorion and is closely applied to it.

The recently delivered placenta at term is smaller, but at the same time somewhat thicker than it is when in utero, the change resulting partially from the compression to which the organ has been subjected during labor, and partially from the escape of the greater part of the blood contained in its interior. The organ is spongy in consistence, and varies considerably in shape, size, and color. In single pregnancies,





as a rule, it is more or less rounded, though it may be ovoid or oval, reniform, crescentic or lobulated. It measures from 15 to 20 cm. in diameter, and from 2 to 4 cm. in thickness, generally thinning gradually toward

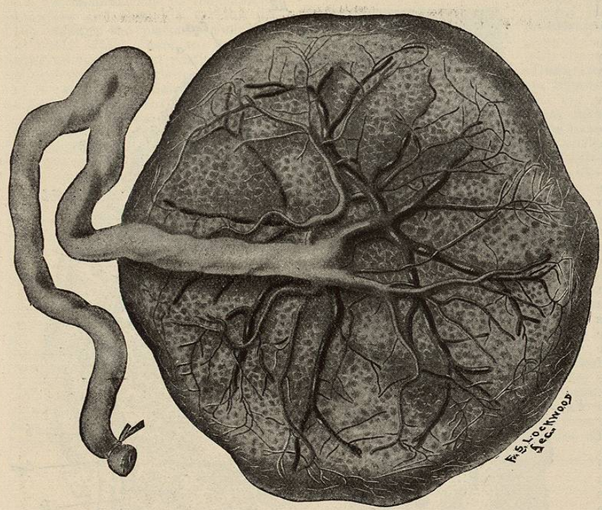

FIG. 3811.—Fœtal Surface of Mature Placenta. × 2/5. (From J. Whitridge Williams.)

the edges, which fade away into the thin fœtal membranes. Sometimes, however, the thickness is fairly uniform up to the very margin. Its weight varies from 500 to 600 gm., being usually about one-sixth of that of the child, though in syphilis, nephritis, and some other conditions it may be relatively heavier.

The placenta presents two surfaces for examination, the *maternal* and the *fœtal* (Figs. 3809 and 3811). The former varies considerably in appearance, but is usually dark red in color, varying according to the amount of blood contained in its substance and the density of its structure. It is divided into a number of irregularly shaped areas, the *cotyledons,* which are separated from one another by shallow fissures. They vary considerably in number, sometimes as many as thirty being observed, and may measure from 1 to 8 cm. in diameter. The cotyledons are not primary divisions of the placenta, but appear first at the fourth or fifth month (Minot). The outer layer of the entire maternal surface consists of a thin investment of *decidua,* which dips down to form the cotyledonary divisions, and at the edges of the placenta is continuous with the inner coating of the membranes. The decidua is transformed uterine mucosa; while the placenta is in utero, it constitutes the boundary between the chorionic villi of the placenta and the uterine muscle, and separates in the final stage of labor, so that its outer or compact portion is carried off as part of the placenta and membranes, the spongy or glandular portion remaining attached to the muscle wall (Figs. 3810 and 3816). Scattered over the maternal surface are numbers of minute yellowish-white patches of varying size. Some of these have undergone calcareous degeneration, and impart to the palpating finger a sensation as of coarse sand paper. Close inspection of this surface reveals the torn openings of many blood-vessels. Thus Klein was able to count one hundred and five of these on a single specimen, fifty-one being arteries and fifty-four veins.

As opposed to the rougher maternal surface, the fœtal side presents a smooth and glistening surface, and is of a purplish-gray color, mottled with minute yellowish patches, and marked by irregular yellowish-white areas of varying size (white infarcts) (Fig. 3811). It is covered by the thin glistening *amnion* which is loosely attached to it, but which may be separated as far as the insertion of the cord. Beneath the amnion lies the smooth *chorion,* from the lower surface of which the villi extend, giving rise to the mottled appearance of the surface.

The *umbilical cord* terminates upon the fœtal surface of the placenta, and presents a dull white translucent appearance. It varies from 1 to 2.5 cm. in diameter, and averages 55 cm. in length, the extreme variations being 0.5 and 198 cm. When unusually short it may give rise to dystocia at the time of labor. As the blood-vessels are usually longer than the cord, they grow in a spiral manner, and are frequently folded upon themselves, giving rise to projections which are termed *false knots.* On the other hand, *true knots* are sometimes noted. These may be most complicated in form, and are believed to be due to fœtal activity. Contrary to the usual statements, the cord is not enclosed in an amniotic sheath, but is covered by stratified epithelium,

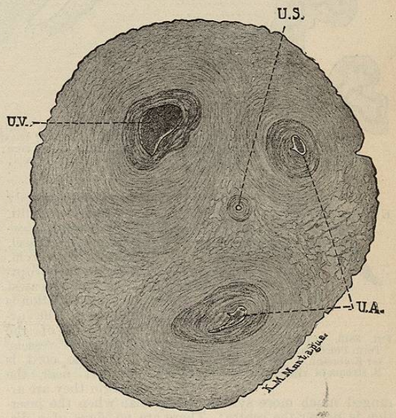


FIG. 3812.—Umbilical Cord. Fœtal End. × 5/6. *U.A.*, Umbilical artery; *U.S.*, remnant of umbilical stalk; *U.V.*, umbilical vein. (From J. Whitridge Williams.)