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CLINICAL LECTURE

ON THE

LOCHIAL DISCHARGE,

DELIVERED AT THE GLASGOW MATERNITY
HOSPITAL.

BY

HUGH MILLER M.D.,

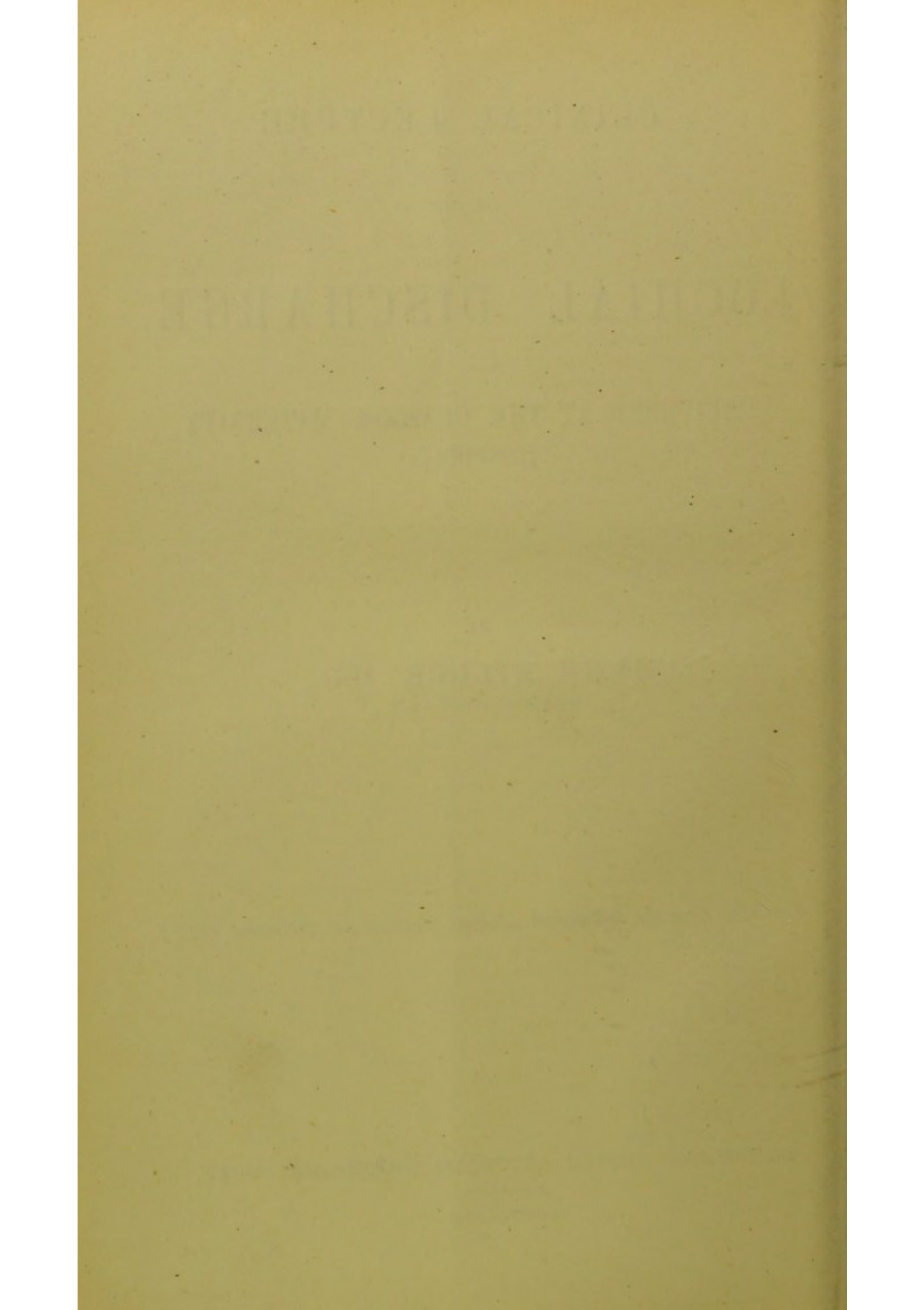
PHYSICIAN-ACCOCHEUR.

(Reprinted from the Edinburgh Medical Journal for November 1878.)

EDINBURGH: OLIVER AND BOYD, TWEEDDALE COURT.

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CLINICAL LECTURE ON THE LOCHIAL DISCHARGE.¹

GENTLEMEN,—The term lochial discharge is applied to the matter which escapes from the vulva after delivery. This discharge is derived chiefly from the uterus and vagina, and it flows out from the time the afterbirth is expelled until the puerperal convalescence is completed. It receives other names, being known as “the cleansings,” and the “after cleansings;” and the woman herself, in speaking about it, usually calls it simply her “discharge.”

With the termination of the labour the work of the womb may be said to be completed. The function for which the uterus existed was really terminated by the expulsion of the foetus. The nest in which the embryo began its existence weighed about two ounces. During gestation this organ gradually increased in size, until at full term it weighed from twenty-four to thirty ounces. Its internal surface, which at conception measured about six square inches, increased with pregnancy, until at full time it extended to about 350 square inches. This great increase in size and capacity was due to a process almost peculiar to the womb—a process by which a rapid increase of the muscular fibre took place; and this was brought about by the enlargement of the individual cells, and also by the formation of new ones. During this period the mucous membrane increases in vascularity, grows in thickness, and out of this thickened membrane the decidua is formed. Thus the small, dense, lowly-organized uterus in process of time matures, and forms a large, vascular, powerful muscle, having, it is said by Dr Matthews Duncan, a propelling power of 50 lbs., or if you take the calculations of the Reverend Dr Haughton of Dublin, a force of 54 lbs. The onset of labour, calling into active action this muscular power, and aided by the other adjuncts, provides the means by which the organ discharges its contents. With the emptying of the nest and the giving of independent life to the offspring the excessive vitality of the uterus ceases, and immediately afterwards it becomes broken up and is removed. This is accomplished by the used-up muscular

¹ I am indebted to Mr John L. Spiers, Medical Student, for his kindness in supplying me with his shorthand report of my lecture.

fibre breaking up under a degeneration, which is called fatty; after which change it is absorbed into the circulation, and as molecular fat it wanders about in the blood. The ultimate destination of this used-up tissue has afforded further proof to me that no unnecessary waste takes place in the human economy. Were we to examine the milk of a woman about to give suck for the first time, if she were healthy, we should find present about 42 per cent. of colostrum, and only 24 per cent. of fat; but when the secretion is fully established, say only two days afterwards, the colostrum is reduced in quantity to 20 per cent., and the proportion of fat present has increased to 31 per cent., showing that when once the constituents of the milk begin to be affected by its active secretion, the changes proceed rapidly. This colostrum is supposed to be the epithelium cells of the mammary ducts undergoing degeneration. It disappears when the breast is actively secreting, and the large quantity of fat, which is found in the milk by the sixth day, taking the place of the colostrum, I believe to be derived, to some extent, from the disintegrating uterus. I have watched this matter since I directed the attention of the profession to it in 1870, and have found many additional proofs in corroboration of this theory. A frequent one, which you will observe, is that of women who cannot nurse their children from their own breasts during the usual period without stimulants, supplying the infant perfectly well up to the fifth or sixth week, or until involution of the womb is completed, but not after that. The normal quantity of fat in a healthy woman's milk is about 17 per cent. This standard is reached about the 36th day; the proportion in excess of this, which existed during the previous six weeks, I am supposing to be derived chiefly from the old uterus. Thus the old nest passes away, and, in the midst of its decaying fibres, the elements of a new womb are deposited, which gradually assumes a form identical with the old non-pregnant one, and when completely reconstructed will remain so until another impregnation takes place, when the same physiological series will be repeated. During this post-parturient period, the internal surface of the uterus exhibits certain features deserving of your notice. The extent of the cavity will be in proportion to the remaining vital activity of the uterus. The firmer the walls contract, the less internal surface will there be. Sometimes you will find the womb firmly drawn together, at other times you will have it partially elastic, and you will meet with cases where, in defiance of all your exertions, the uterus will remain soft and flabby. Immediately after parturition the internal surface feels softer than usual, and is covered with a greenish red fluid. The place which was occupied by the placenta is softer and more pulpy than the rest. In this placental surface several small openings are usually observed. Within the cavity you might find small clots of blood, and little pieces of placenta and decidua. Around the os uteri there is often an orange colour

observed, and the os may have a ragged appearance. When the internal surface of the womb is examined under water, and the loose fluid contents removed, its appearance is described as not unlike the raw surface of a stump, and in our obstetric text-books you will frequently find it compared to one. The discharge from the uterine surface serves a double purpose. It provides a drain whereby the material no longer required by the organ is discharged, and it is a means by which the opposite walls are prevented from adhering—a condition which might arise during the granulating process necessary to complete the epithelial layer already partly formed.

The normal duration of the lochial discharge is not constant. It may flow for only a few days, or it may continue for weeks, and yet be perfectly natural. Its early cessation is not of itself an evidence of disease; but, when associated with other symptoms, this condition furnishes important indications for treatment. The discharge is usually prolonged when ulceration at the cervix takes place, or when a similar condition exists either in the cavity of the womb or in the vagina. It has been prolonged by the patient getting up too soon—by the patient not suckling her child, and in some of these cases it has been even prolonged until the usual monthly discharge occurred. Its duration has been lessened where the foetus was still-born, and had been dead for some days before delivery. This probably was owing to the internal surface of the womb having time for certain changes to be completed towards the reconstructing of its surface, and to the diminished arterial excitement in the organ. The flow is frequently diminished and irregular, sometimes even suppressed, when the mammary glands begin to secrete the milk. Constipation affects the discharge, so also will the mental state influence it. Certain inflammatory diseases also control the quantity discharged. Even with healthy patients, it is very difficult to fix on a given quantity as the standard estimate of the normal flow. The Germans have estimated that within the first eight days 1·485 kilog. pass out. The quantity usually exceeds this when the woman does not suckle her child; I suppose because, in this way, nature provides an equivalent. More oozes out from the internal surface of the uterus owing to none of the uterine debris passing out by its proper channel, hence the milk really finds an exit by the lochia. Where the patient has had many after-pains she will as a rule have less discharge.

For some time observations have been made upon the lochia by myself, materially aided by some of the house-surgeons of this Hospital, with a view to determine more clearly the nature of the discharge, and its significance as a factor in diseased conditions occurring after childbirth. Let me read to you the following cases from the Journal, as examples of the variation which the lochial discharge undergoes in different conditions of childbirth:—

Reported by Mr Kirkwood, House-Surgeon.

I.—Mary M'D., aged 24 years, second confinement, single, last date of menstruation uncertain. Duration of labour—first stage, four hours; second stage, half an hour; third, two minutes. The foetal heart was not heard, although the uterine souffle was quite distinctly recognised. Before the membranes ruptured it was known that either a knee or elbow would present. Upon rupturing the membranes a knee came down, and without much aid delivery was effected. The foetus was putrid, and part of the skin peeled off. Her progress was uninterrupted. She made a good recovery, and the daily observations on the lochia gave, on the

1st Day.—When examined by the microscope, very few epithelial cells or decidual debris. The discharge was almost wholly composed of red blood corpuscles. A few white corpuscles were seen, but their quantity was so few compared with the red that the colour of the discharge still remained a bright red. The discharge had no tendency to coagulate. In consistence it was more watery than normal blood.

2d Day.—Squamous epithelial cells are observed, and are numerous. From their size and shape they appear to be derived from the vagina. The white corpuscles are increased, forming about one-third of the discharge. The colour is modified. It has become pale red. Shreds of decidua were noticed in the discharge.

3d Day.—The flow has increased in quantity. The white corpuscles were in excess of the red ones. The colour is a dirty white. The other constituents of the discharge noticed were epithelial cells and shreds of decidua.

4th Day.—The red corpuscles were very few. The white ones were abundant and had a granular appearance. Epithelial cells abundant; also some shreds of decidua.

5th Day.—Patient allowed to-day to sit up two hours; discharge more abundant. The red corpuscles are more numerous than the white ones. Colour of discharge ruddy.

6th Day.—Patient has sat up the greater part of to-day. The discharge is still abundant, and appears more sanious; the increase consists chiefly of red corpuscles.

7th Day.—Patient up during whole day. Discharge not so abundant. The red corpuscles have almost disappeared, and the flow now appears to consist of serum, white corpuscles, and decidua.

On *8th day* she left the Hospital feeling quite recovered.

II.—Mrs B. C., aged 20 years, married, was delivered of a female child on 25th August 1877. Second confinement. Duration of labour—first stage, five hours; second stage, half an hour; third stage, five minutes. With reference to the lochia, on examination

within a few hours of childbirth, we found the solid part of the discharge to be composed almost exclusively of red corpuscles.

2d Day.—The discharge appears to be made up of white corpuscles, epithelial scales, and red corpuscles.

3d Day.—The red corpuscles have almost disappeared. The discharge now consists of white corpuscles, decidual shreds, and vaginal epithelium.

4th Day.—No red corpuscles observed. The discharge has diminished in quantity.

5th Day.—Patient up for a few hours. The discharge has much increased, and the red colour has returned to it. No clots observed to the eye, but under the microscope these were observed ranging from $\frac{1}{32}$ th to $\frac{1}{16}$ th of an inch. They are of a brilliant red colour, and stand out from the rest of the discharge.

6th Day.—No clots. A few red corpuscles still present. Discharge much less in quantity.

7th Day.—Red corpuscles wholly disappeared. The discharge has a greenish white colour, and it continued so until the 10th day, when the patient was dismissed.

I shall only trouble you with a few details of another case:—

M. H. W., aged 22 years, single, primipara. Duration of labour—first stage, forty-six hours; second stage, one hour; third stage, five minutes. Although tedious, the labour was natural and the perineum was not torn. Patient had arranged not to nurse her child. The lochia was normal until the evening of the 2d day, when it increased in quantity.

3d Day.—Pain complained of in the region of the uterus, which was relieved upon the application of turpentine stupes, and the discharge returned in greater quantity. The mammary secretion being abundant, a liniment of belladonna and camphor was applied.

4th to 9th Day.—The discharge is scanty and consists of red corpuscles, numerous granular cells and epithelial cells, with shreds of decidual debris. On the *5th day* bacteria were observed in the discharge, and the smell was stronger, so that we had to repeat the injection of permanganate of potass at shorter intervals. On the *9th day* she complained of pain in the outer aspect of left leg; but there was no œdema or swelling detected until next day, when a circumscribed swelling was observed, and which ultimately formed into an abscess. On the *11th day*, at the request of her relatives, she was removed home. (The house-surgeon was unable to make stated observations on this case, owing to the frequent application of the injections.)

These examples are extracted from the Clinical Journal of last August. I might easily multiply them, but I think we will be better employed in following the usual method of examining this

discharge, and for that purpose we will study the constituents of the lochia as they may be observed during the three usual varieties of colour the lochia passes through before it quite dries up.

FIRST PERIOD.—DISCHARGE ALMOST PURE BLOOD.

This discharge is dark red in appearance. It is derived chiefly from the placental surface, and the quantity is regulated by the completeness of the uterine contraction. The flow is more subject to modifications shortly after childbirth than afterwards. It may remain fluid, or may coagulate and pass out as clots. It may be retained within the uterus for a longer or shorter time, or may discharge when formed. Any of these conditions may exist, and are likely to arise during the time, say, from the first hour after the expulsion of the after-birth, up till about the third or fourth day. Judging from the average of the cases which we have examined, the first alteration begins about twelve hours after the placenta is delivered, when the white corpuscles are found beginning to increase in number; these rapidly increase, accompanied with a serous fluid of alkaline reaction. By the microscope we observed during this period the discharge to contain blood corpuscles, flat epithelium, mucous corpuscles, granular masses, and occasionally also fragments of the decidua and placenta. The flow varied in quantity; as a rule, the slower the uterus contracted, the more fluid passed out. It was modified by the placenta being adherent or diseased, by lacerations, and by the quantity of the normal menstrual flow. We found the discharge less when a flooding had occurred.

SECOND PERIOD.—DISCHARGE OF SEROUS BLOOD.

This non-coagulable flow sets in about the third or fourth day, and continues until about the end of the seventh day. It is characterized by the abundance of the epithelial scales, mucous corpuscles, and a reddish slime. By the microscope you would observe pus which now appears and gradually increases in quantity. You would also notice fewer blood corpuscles, the rest of the discharge consisting chiefly of granular cells and fat globules. During this period the flow is thicker from the presence of molecular granules, it gradually becomes whiter—"milky"—and its quantity daily diminishes.

THIRD PERIOD.—DISCHARGE OF YELLOWISH-WHITE LIQUID.

This is usually a thick, oily-looking discharge, varying somewhat in colour, and having a neutral reaction, which, towards the end of the eighth day, becomes faintly acid. The quantity varies. It is more abundant when the patient does not suckle her child. In normal cases it lessens from day to day. That you may form some estimate of the decrease, I may mention that a patient usually requires about a dozen napkins daily to receive her

discharge for the first day or two after childbirth; now, one or two daily may suffice. The discharge, as revealed by the microscope, is found to consist of pus, few epithelial cells, numerous spindle-shaped tailed corpuscles of young connective tissue, and fat globules and granules. During our inquiry we discovered no material but what had already been observed by Wertheimer and others.

From the observations of others, and from our own investigations, some inferences may be adduced, such as, that, while the blood passing out in the lochia is irregular in quantity, it usually diminishes from childbirth onwards. In all the patients under our observation who made a normal recovery we found this to be the case. The red corpuscles diminished or increased without affecting the patient or the character of her recovery. The white blood corpuscles increased in quantity until the third day, when the maximum number seemed to be attained. The flat epithelium only increased in acute disease. The ciliated epithelium were found both in healthy and diseased lochia. They have also been found in the discharge of non-pregnant women, and so may be considered as not a constant constituent peculiar to the discharge. Neither do they seem to affect the health of the patient, or to be an exciting cause of disease. The other important ingredients of the lochia were the granules and the bacteria, and, as the latter appear to have an important relation to diseased conditions originating during the post-parturient state, we will consider these bacteria more fully.

A woman, in childbed, recovering from a natural labour, has been compared to a wounded person, and the microscopic examination of the discharge teaches us that the uterus then corresponds, in some respects at least, to an ordinary wound. When sores become unhealthy, the putridity is supposed to be due to the presence of the bacterium in the discharge. These same bacteria have been found in the lochia during certain febrile conditions of the patient, and notably, when septicæmia was present. They appear as short, cylindrical, colourless bodies, composed of protoplasm, which we are told is nitrogenous. They are usually seen when recently removed in rapid motion, but when united in amorphous slime colonies, they may be seen in a state of rest. These belong to the vegetable kingdom, and are supposed to be the cause of putrefaction. It appears there are various kinds of lowly vegetations besides the bacterium *terre*, and not unlike it, which exist in discharges from animal tissues. It seems we have not got quite into their world. With the microscope we get the general outline, but we are unable to distinguish the particular organism which accompanies, if it does not give rise to, septicæmia, from those innocent forms which so closely resemble it. The life history of these interesting vegetations has not yet been worked out. M. Pasteur has found that bacteria may present themselves in two forms, one kind being destroyed at a

temperature of 212° , while the other kind can resist a temperature of 248° , and that some require about two hours' boiling before being effectually destroyed. It has been ascertained that bacteria will grow readier in an alkaline than in a slightly acid solution. May this be the reason for the popular belief, that from a certain day after confinement the patient is safe? At first the lochia is alkaline, then after a few days it becomes neutral, and by the eighth day it is slightly acid. I have not observed septic disease originate after the lochia became acid. Should the bacteria be simply developed in the lochia the effect may be local. When, however, a wound exists capable of absorbing, the poisonous organism will pass into the body, and produce the constitutional mischief. I have thus seen a clot within the uterus, by acting through a slight laceration at the cervix, produce febrile symptoms and lead to mammary congestions. We frequently forget that uterine irritation may be the exciting cause of the mischief to the breast, and direct our treatment solely to the local condition without benefit, then afterwards find the simple removal of the irritating intra-uterine clot has led to marked benefit, and proved the only effectual means of allaying the mammary irritation.

The *odour* of the lochia is usually very slight, but sometimes, even in health, it is so strong as to produce a curious, sickening, disagreeable smell. It is most marked in fair women. It depends also upon other causes than the mere temperament of the patient. The want of cleanliness very soon intensifies the smell, as do also coagula retained within the uterus. A prolonged labour, causing injury to maternal parts by bruising, has given rise to a foetid discharge. Cancer of the neck of the womb, when complicating the labour, gives its characteristic smell to the flow. Any lesion in uterus or vagina may prove the source of altered smell, and give varying degrees of offensiveness to the discharge. When this is not very putrid it may indicate simply a decomposition of the coagula, of part of the membranes left, or of a slight injury. When, however, the odour is decidedly foetid, and the discharge of a coffee-ground colour, you may infer that gangrenous inflammation has taken place. When the discharge is foetid, purulent, and excessive, and the temperature increased to, or above, 102° F., I have usually found these symptoms point to the existence of a uterine lesion with septic absorption. In phlebitis, on the other hand, the lochia is also very foetid, and in excess, but the discharge is almost hæmorrhagic; while in metritis, if acute, the discharge is foetid, diminished, and when not arrested, bloody and purulent. In severe cases of forceps delivery, or when a prolonged second stage had occurred, I have observed a foetid discharge afterwards setting in, which was due to injuries either of the vagina or the perineum; but this alteration rarely produced a constitutional disturbance.

Having to watch over a discharge in every respect as important to the accoucheur as the fluid formed by suppuration is to the

surgeon, it is not unnatural that we should take advantage of any improved methods of treatment, and attempt to adapt these to the management of the lochial flow. Already, from Paris and Berlin, reports have come describing methods of treatment by antiseptics, but it is too soon yet to draw a comparison from their results. Besides, I would rather have you at present consider how far the means naturally provided may be relied upon, in all ordinary cases, to give sufficient protection. With the surgeon a drainage-tube is necessary to allow of a sufficient discharge; with our patients, the cavity is so constructed as to obviate any necessity for this. The nursing of an infant, requiring the mother to move from side to side, aids the flow; and when a too rigid adherence is not demanded to the recumbent position after the first forty-eight hours, but the patient is permitted to have her food sitting up, and to perform other necessary duties in the usual manner, then she further aids the natural process of emptying the cavity of its contents. I think it a pernicious practice to keep a puerperal patient lying on her back for days. It is at the lowest part of the cavity—at the os uteri—where fissures, when made, are most likely to take on morbid action. While lying on her back the patient keeps the fluid there, and should either the diathesis be depraved, or the discharge be infective, we keep the patient in the best possible position for acquiring disease. In allowing of free movements in bed we provide very efficient prophylactic treatment, and in a normal labour you are not expected to adopt other and more stringent measures. Where, however, there has been an offensive smell from the amniotic fluid as it escaped; when a putrid foetus was given birth to; where you suspected lacerations to have taken place either in the cavity or at the perineum; where you had to do with a narrow pelvis, with the head arrested at the superior strait or at the outlet: in any cases such as these, requiring operative measures or delay in delivery, I would advise you to adopt precautions—precautions pointing to the maintenance of a healthy discharge, and towards securing antiseptic protection. I believe for all vaginal examinations, and especially in those required for ascertaining the state of the labour, and for watching its progress, that vaseline is the best agent to smear over the fingers. It is a pure emollient, with slight antiseptic properties, and it is cleaner than lard or oil. On the completion of the labour the patient should have all the discharges carefully wiped away. This should be specially attended to at the vulva, as clots are apt to form at the pubes, and their remaining there may prove mischievous. Afterwards the external parts should be cleaned several times a day, as well as after micturition. The napkins should be frequently removed; the clothing around the patient should be dry, clean, and comfortable; and all this ought to be managed without any exposure of the parts. The soiled clothes should be removed from the bed-

room as soon as they are taken from the patient. We are working with a delicate organism, and although labour be a healthy process, the very delicacy of the structure makes a trifle, when in error, produce formidable results. The remembrance of this will lead you never to consider a detail too trifling for your notice. In special cases, where I have deemed an antiseptic plan of treatment necessary, I have tried the carbolized gauze. I put two or three layers of it, extending from the navel down nearly to the knees, to act as an apron, and over it I applied the binder in the usual way; otherwise the treatment consisted in the use of the gauze instead of napkins to receive the discharge. I have discontinued this plan, because the ladies objected to the strong carbolic odour given off. I found, also, when sickness overtook mother or child the gauze was blamed for it. They also found fault with the gauze for chafing the parts; and these seeming reasonable objections, I have not persevered with its use. I have employed also Westmacott's medicated tow, but I found the same objections offered to its use. At present I am employing thymol. You may dissolve it with the aid of spirit, so as to make a solution of 1 part thymol to 500 parts water; and in this form you will employ it for sponging with. I prefer to use this preparation, made by adding three grains of thymol to an ounce of Eau de Cologne, and to simply sprinkle it over the napkins before they are used. You will observe the odour is pleasant and rather refreshing; and in the few cases in which I have employed it no objections were offered to its use. In some cases I employed the disinfectant proposed by Dr Day of Geelong. It is a mixture of turpentine, rectified benzine, and oil of citronella. You may sprinkle this liquid over the ordinary napkins in use and hang them up to dry. Afterwards, as these are soiled by the discharges, the disinfectant becomes revived, and a disagreeable odour is prevented.

Besides these means, in suspected cases I use the internal injection of various remedies. In ordinary cases, where no special indications would lead you to employ a peculiar drug, you have a choice of the permanganate of potash, a solution of carbolic acid, 1 to 40, or of a solution of thymol, 1 to 1000. In severe cases, with a putrid odour, I use a solution of the permanganate of potash, injecting it with a Higginson's syringe having a vaginal portion attached, and continue injecting it until the fluid returns unaltered in colour. In all cases where the discharge is excessive I use the tincture of arnica. It may be used in the proportion of one teaspoonful to a cupful of water, and you will find it act well as a mild astringent and disinfectant.

Whenever you discover you have to deal with a septic complication, I would advise you to employ the sulpho-carbolate of potash, giving it in the form of powders in doses from 10 to 15 grains internally, three times a day. In an epidemic of septicæmia which we had in this hospital, this treatment, aided by the in-

jections, proved beneficial. When the discharge is suspended, find out if possible the exciting cause, and remove it. The treatment to restore the flow consists of turpentine stupes applied over the lower part of the abdomen, with the addition of warm moist cloths, or of sponges pressed out of hot water, and applied to the vulva. In nearly every case I examine the supra-pubic region on the second day, and when I do not find the uterus smaller than it was at delivery, especially should tenderness be felt there without increased temperature of skin, I apply friction over the womb to reduce it, and failing in this, I order stimulating applications, such as a turpentine stupe, to be applied, and when this does not relieve the enlargement, I have derived advantage from conjoining a half-grain morphia suppository with it, night and morning. In like cases, but accompanied with a relaxed condition of the organ and an excessive discharge, \mathfrak{zj} . doses of liquid extract of ergot, repeated every three or four hours, and

R Quiniae. sulph., \mathfrak{zss} .
 Acidi hydrobromici, $\mathfrak{3vj}$.
 Aqua, ad $\mathfrak{3ij}$.
 Dose.— $\mathfrak{3i}$. in aq. ter in die.

(which enables you to give large doses of quinine without causing a headache) will generally give relief.

To multiply further the indications for treatment of disorders of the lochia would lead me to speak of the most frequent of the post-parturient diseases. These will be considered later on, and when speaking to you about them, opportunities will be afforded us for considering the local, along with the constitutional, treatment peculiar to the condition present. It only remains for me to urge you ever to bear in mind, that the treatment which is most satisfactory, and which shows our calling as obstetricians to most advantage, is that which is *preventive* rather than that which is *curative*.

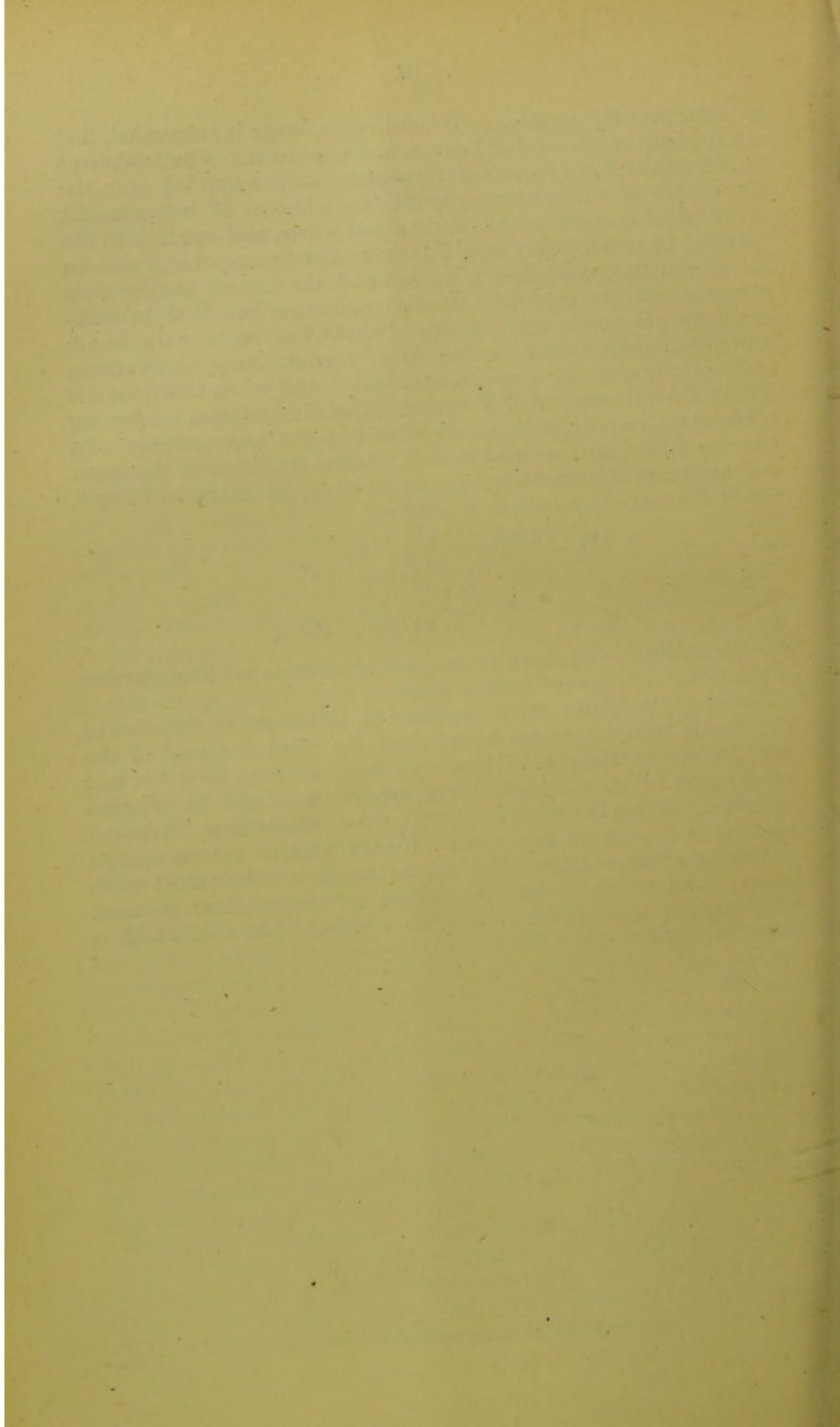




FIG. 1.

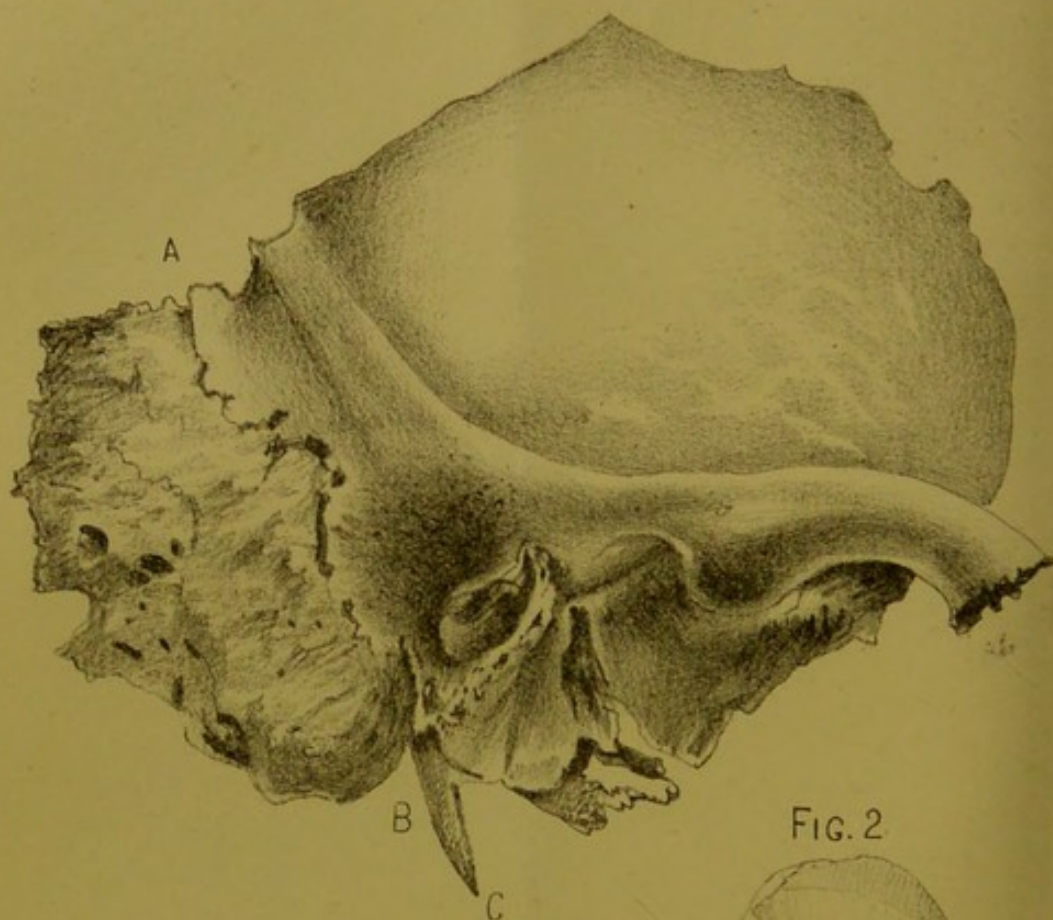


FIG. 2.

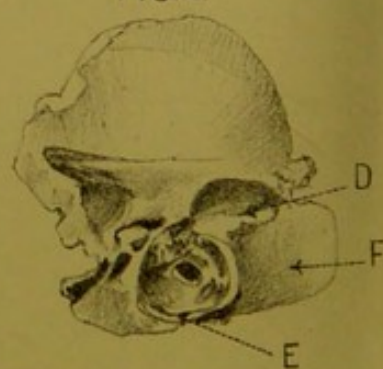
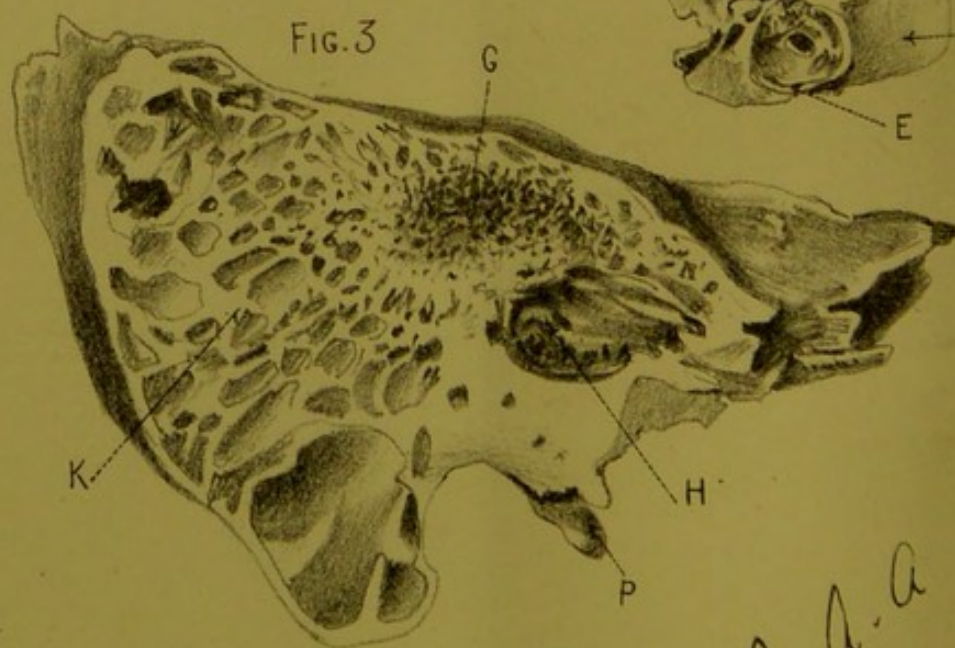


FIG. 3.



S. A. A