characteristics the Klebs-Loeffler bacillus. In seventeen the organism was described as the "long" and in three as the "short" variety of the diphtheria bacillus. The only other organisms frequently present were *B. termo*, various micrococci, and the *B. mucosus*, the last being noted in sixteen cases (69.5 per cent.).

Two questions naturally arise in connexion with this organism: (I) Is it present in the normal nose or in diseased conditions of the nasal mucous membrane other than atrophic rhinitis? (II) Is it a true diphtheria bacillus?

I.

In order to determine the first point a series of examinations of healthy noses of children and adults was made at the Bristol General Hospital. In no instance was a bacillus detected in any way conforming to the type of the long diphtheria-like bacillus found in cases of atrophic rhinitis. In 58 per cent. of young children and adults a short diphtheria-like or pseudo-diphtheritic type of bacillus was present in the nose. In this connexion I should like to emphasize the fact that so common is this type of organism in the healthy nose that a report of its presence should never lead to a diagnosis of diphtheria unless well-marked clinical symptoms are also present.

A series of cultures was also taken from the noses of persons suffering from ozaena secondary to congenital or acquired syphilis, rhinitis sicca, and lesions other than atrophic rhinitis. In none of these were diphtheria-like bacilli present, but the *B. mucosus* was found in more than half the number. From these observations we may conclude that the type of "diphtheria-like" bacillus to be described is peculiar to the condition—atrophic rhinitis.

II.

The second question is not so easily answered. There are a large number of bacteria closely resembling the diphtheria bacillus, and at least twenty different types of the true Klebs-Loeffler bacillus, so that the possibility of error is very great.

In morphological and cultural characteristics the bacillus of atrophic rhinitis closely resembles the Klebs-Loeffler bacillus, and they cannot be differentiated by mere microscopical examination. In this statement I am supported by several competent authorities, to whom I have submitted specimens.

There are certain distinctive features, however, in the organism as seen in stained films taken directly from the exudate. The bacillus is more curved, thinner, and more highly metachromatic than the Klebs-Loeffler organism, in size, shape, and beading, closely resembling the tubercle bacillus. There is sometimes difficulty in obtaining a growth on agar or Kanthack's medium, as the colonies are inhibited or obscured by the abundant spreading growth of *B. mucosus*. For the same reason the process of isolation is tedious and difficult.

On Kanthack's medium short-sheathed varieties are common, and in broth and old agar cultures involution forms arise. The metachromatism is well brought out by Neisser's stain, and the bacilli are stained by Gram's method.

The most satisfactory test as to whether a given organism is the diphtheria bacillus or not is undoubtedly the inoculation test. Our University College is not licensed for this purpose, and there is consequently some difficulty in getting the work done. Cultures from two of the cases have, however, been submitted for examination, the one to a private laboratory and the other to the Jenner Institute of Preventive Medicine. In both instances the report has stated that the morphological and cultural characteristics are those of the diphtheria bacillus, and that the organisms were pathogenic to guinea-pigs, producing the same lesions as the Klebs-Loeffler bacillus. As a control, a culture taken from a case of tobacco-worker's rhinitis was submitted to the Jenner Institute, but neither by microscopical examination nor by inoculation could the diphtheria bacillus be found.

The constant occurrence of the diphtheria-like bacillus in cases of atrophic rhinitis is by no means conclusive evidence that it plays any part in directly exciting the disease. Possibly this might be demonstrated by means of special local inoculation experiments upon animals. The point I wish to emphasize is that this type of bacillus is found in atrophic rhinitis only, and in this respect it is unlike the *B. mucosus* which we have demonstrated in cases of rhinitis sicca and syphilitic disease.

CONCLUSIONS.

If the foregoing facts can be substantiated, and the identity of this bacillus with the Klebs-Loeffler bacillus can be esta-

blished, then we may regard atrophic rhinitis as a chronic form of nasal diphtheria.

In addition to the bacteriological evidence the following points may be considered in support of this theory:

1. In diphtheria the accessory sinuses of the nose are constantly infected. Bacilli may remain in the sinuses for prolonged periods, exciting a purulent, sero-purulent, or serous discharge.⁴

2. Chronic suppuration in the accessory sinuses is, in the opinion of many eminent rhinologists, the direct exciting cause of the conditions of ozaena and atrophic rhinitis.

3. Multiple cases of atrophic rhinitis in the same household occur from time to time, as one would expect if the process were a true infection. Thus Terez⁵ records twelve instances in which there were two or more sufferers in the same family. This is a point I have not inquired into amongst my own series of cases.

4. An attack of diphtheria may be the starting point of atrophic rhinitis. Only two patients in the present series dated the onset of symptoms from an attack of diphtheria, but the history of all was not inquired into.

5. Atrophic rhinitis, like diphtheria, attacks females more than males; it is a disease of early life, and induces a pronounced anaemia and leucocytosis.

6. Atrophic rhinitis has been successfully treated by diphtheria antitoxin. With regard to this point my experience has been so limited that I do not feel justified in saying more than that if repeated moderate doses of antitoxin are administered regularly, amounting in all to 20,000 units, marked relief of symptoms results.

7. In atrophic rhinitis the type of diphtheria bacillus does not alter during the progress of the case, a fact which Woodhead⁶ has recently found to hold true in acute faucial or nasal diphtheria.

Apart altogether from the theory that atrophic rhinitis is a chronic form of nasal diphtheria, there is a point arising out of this investigation which is of great practical importance, namely, in cultures taken from the nose, throat, or ears of persons suffering from atrophic rhinitis there may be found bacilli which on microscopical examination may be pronounced to be diphtheria bacilli, and this may lead rightly or wrongly to the patient's notification and detention. This is well illustrated by the following case:

D. R., aged 10, a schoolgirl, came under my care early in 1901, suffering from atrophic rhinitis of seven months' duration. Cultures from the nose showed the long diphtheroid bacillus I have described as present in such cases. At about the same time an outbreak of diphtheria occurred in the school which she was attending, and the health authorities took cultures from the nose and throats of all suspected children. Finding what they considered to be typical long varieties of diphtheria bacilli in the nose of the child, D. R., they excluded her from school on the grounds that she was suffering from diphtheria. In addition, I may remark they had the culture tested by Dr. Klein, who pronounced the organism to be a virulent diphtheria bacillus. As the organisms persisted in the nose the child was excluded from school for nine weeks, when I believe on my representations she was allowed a return. I have had subsequently the opportunity of making frequent bacteriological examinations from the nose of this case, and when last seen, sixteen months after first coming under observation, the long diphtheria-like bacillus was still present.

I mention this case simply as an example of what may and does happen. Further investigation is required in order to show whether the organism described is the true Klebs-Loeffler bacillus or a bacillus closely resembling this, and having pathogenic properties when injected into certain animals.

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THE BILBERRY.

By SIR JAMES SAWYER, M.D.LOND., F.R.C.P., F.S.A.,
Senior Consulting Physician to the Queen's Hospital; and ex-Professor of
Medicine in the Queen's College, Birmingham.

WELL may we pause over the bibliography of the bilberry in view of the interesting communication of Dr. Bernstein, published in the *BRITISH MEDICAL JOURNAL* for February 7th, 1903. His paper is attractive of interest and excitant of thought. Long have some of us dwelt with affection, and with hope of finding modern uses for some old drugs which were being lost to sight and to memory in the limbus of the past, and perhaps not without some practical success, upon

the archaeology of our medicinal "simples," upon the histories and lore, upon the forms, virtues, and renown of many old-time medicinal plants, upon plants called simples because each of them has been held to enshrine its particular curative virtue, and so to furnish a simple remedy for some symptom of disease, or for some individual morbid manifestation. Perhaps we have loved to walk, as Evelyn did, "into a large garden, esteemed for its furniture one of the fairest, especially for simples"; or perhaps we have followed our own Garth, "when simpling on the flowery hills he strayed."

Dr. Bernstein has adduced a body of valuable evidence, at once striking and suggestive, upon the remedial uses of various preparations of the bilberry shrub, in the alleviation and cure of several morbid intestinal conditions, which conditions include some of the pathological manifestations of enteric fever, of dysentery, and of some other maladies in which the intestines are affected either primarily or incidentally. It will surely become us to investigate his conclusions in our practices. It seems likely we may find in the therapeutic uses of the bilberry perhaps even a simple remedy of almost specific efficacy, or, at the least, a useful succedaneum to more established remedies in the treatment of many conditions of disorder or disease affecting the intestinal membranes, coats, contents, or functions.

Meanwhile, until our experience shall ripen upon the subject, I venture to draw the attention of my brethren to some references to the virtues of the bilberry, which are close to my hand in the books I know by my own reading. Nicholas Culpeper, writing in 1653, recommends blue bilberries to stay "vomiting and loathings," and he says they "do somewhat bind the belly." Anne Pratt quotes an old herbalist who praised bilberries as a remedy for many maladies, and wrote: "It is a pity they are not more generally used."² The *Rural Cyclopaedia* points out that the leaves of the myrtle bilberry contain a considerable quantity of tannin, and have been used as an astringent medicine in the same way as those of *uva ursi*.³ The *Medical Lexicon* of the New Sydenham Society gives the *vaccinium myrtillus* as antiscorbutic and astringent. Another old herbal refers to an ancient use of bilberry juice as an astringent and antipyretic, recording that "a syrup made out of the juice of bilberries, when not over-ripe, is cooling and binding; it is a pleasant and gentle medicine where an astringent is required."⁴ Dr. Fernie has recently reported that this myrtle bilberry has some remedial use in the treatment of chronic diarrhoea, and even in the cure of severe dysentery. He writes: "The bilberry (*vaccinium myrtillus*) is an admirable astringent..... If some good brandy be poured over two handfuls of the fruit in a bottle, this will make an extract which continually improves by being kept. Obstinate diarrhoea may be cured by giving doses of a tablespoonful of this extract taken with a wineglassful of warm water, and repeated at intervals of two hours whilst needed, even for the more severe cases of dysenteric diarrhoea. The berries contain chemically much tannin."⁵

True is it to-day as when Sir Thomas Watson so declared a third of a century ago that "the greatest gap in the science of medicine is to be found in its final and supreme stage—the stage of therapeutics."⁶ Therapeutics advances by our increasing knowledge of the nature of morbid processes and of the physiological effects of remedies, and also by studying again many a good old drug by the light of later scientific methods, and also by judicious selection from the traditions of popular medicine. Such selection gave us digitalis.

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CASE OF RUPTURED URINARY BLADDER : OPERATION AND RECOVERY.

By HUGH LAWRIE, M.B., C.M.,
Ramsbottom, Lancashire.

The following case is of interest and some rarity :

History.—B. C., aged 29, a cotton factory operative, and unmarried, came under my care on March 30th, 1902, suffering from what appeared to be rupture of the urinary bladder. She had been out late on the previous night with some friends, and to reach her home had to proceed along a narrow, badly-lighted road for about half a mile alone. About halfway in this walk she was attacked by two men and knocked down. Her cries for help speedily brought several persons to the rescue, who found her in a dishevelled condition and covered with mud, supporting herself against the wall on one side of the road. She was alone, and two of these persons

assisted her to walk home. She complained of pain in the lower part of the abdomen; and did not get any sleep that night. Sitting in a chair was the most comfortable position, any attempt to lie down being accompanied by increase of pain.

State on Examination.—When I was called to see her I found her sitting up in a chair. She complained of pain in the abdomen and inability to micturate. She had not passed water since the assault, although she wanted to do badly before it. There was a bruise on the left side of the face, the skin over it being rubbed off by some rough surface, probably the ground. She refused to be examined further, declaring that she had not been outraged—which was quite true—and I left her, contenting myself with advising sitz baths to promote urination. Later in the day I drew off from the bladder with a gum elastic catheter 8 oz. of bloodstained urine. There were no marks whatever of external violence on her body except the mark on the face and a very small bruise on the left knee. In the evening I passed the catheter again, and withdrew about 2 oz. or 3 oz. of urine. This urine was clear, but under the microscope it was seen to contain red blood corpuscles. Her temperature and pulse were normal. Percussion over the abdomen showed an ill-defined area of relative dullness immediately above the pubes. Palpation was painful.

Progress.—On the morning of March 31st her condition was about the same. I had to attend the police-court on this day, and did not see her again until the evening, when the pulse had risen to 100. On April 1st her temperature had slightly risen and the pulse was 120.

First Operation.—She was conveyed to the Aitken Memorial and Jubilee Cottage Hospital, Ramsbottom, and at 4 p.m. (on April 1st), after her depositions had been taken before a magistrate, I made an incision in the middle line above the pubes about 3 in. in length. The deeper tissues of the abdominal wall were infiltrated with urine, and when the transversalis fascia was reached it was seen to be dark-grey in colour. This was easily torn, and then there welled out of the wound two to three pints, roughly speaking, of dark-coloured fluid smelling of urine. With the left index finger I explored the wound and found behind the pubes on the right anterior surface of the bladder a hole which would admit three fingers. This rent was extraperitoneal, and no further injury to the bladder could be detected. Considerable separation of the transversalis fascia from the outer peritoneal layer had taken place as a result of the escape of urine from the bladder, between these membranes extending on either side almost as far as the superior anterior spines of the ilia and upwards towards the umbilicus. The whole region was irrigated with gallons of warm boric acid lotion, and it was agreed by all present that to further prolong anaesthesia would be decidedly dangerous. The pulse before the operation was 150, and it was now almost imperceptible, so drainage tubes were hurriedly inserted, one passing from the abdominal wound right through the bladder and out at the meatus. Two deep stitches were inserted in the upper part of the abdominal wound and iodoform gauze was packed into the lower part over which were placed thick pads of cotton wool. A woollen body bandage with elastic fastenings secured the lot. She was given hypodermically $\frac{1}{2}$ gr. of morphine sulphate and $\frac{1}{16}$ gr. of strychnine nitrate and put to bed with hot bottles placed round her in convenient positions. At 10 p.m. she was sleeping quietly; temperature 100°, pulse 140.

After-progress.—April 2nd. She had a fairly good night's sleep, temperature 100°, pulse 144. Wound irrigated with boric lotion. At 4 p.m. the bowels moved naturally. During the first week, despite the frequent irrigations (three times a day) with boric lotion and mercury perchloride solution in 5,000, the wound became very septic, and large sloughs of transversalis fascia, dark in colour and very fetid, came away with considerable quantities of pus. A counter-opening was made near the left superior anterior spine of the ilium, and drainage through this opening was promoted through a drainage tube by tilting the patient towards that side. About the end of the second week the condition of things was much improved, healthy granulations were appearing in all directions, so it was decided to suture the bladder.

Second Operation.—On the afternoon of April 16th she was anaesthetised with chloroform, the condition being continued with ether, and I made a transverse incision on the right side, beginning in the abdominal wound an inch above the pubes, and carrying it outwards to Poupart's ligament through the right rectus and abdominal muscles. This enabled us to pull a triangular flap downwards, and thus expose the rupture in the bladder. It was found to be larger than at first anticipated, extending from the middle line close to the peritoneal reflexion downwards, and slightly to the right behind the pubic bones for a distance of about 2 in. Five strong silk sutures were inserted in the more accessible region, including muscular and submucous coats only. Traction was exerted upon these, and with the greatest difficulty two more were inserted at the lower part of the rent, taking in as much of the bladder wall as possible, without respect to the different layers. Considerable haemorrhage took place with the insertion of these last two stitches, on account of the needle having to pass through a plexus of veins near the neck of the bladder. The stitches were tied in the usual fashion from the middle towards either end, and then 4 oz. of boric lotion were introduced into the bladder without any leakage taking place. The abdominal wound was packed loosely with iodoform gauze, and a few stitches were inserted to hold the edges of the wound apposed to one another, but these were removed in a few days as they were useless. A large rubber catheter was fixed in the bladder by strapping it to the thigh. Two hours were occupied in this operation, and the patient was very collapsed when she was put to bed. Pulse 144, small, and thin. Hot-water bottles were placed all round her, and she was given $\frac{1}{16}$ gr. strychnine nitrate, hypodermically. During the night following she vomited slightly several times.

Further Progress.—April 17th, 9.30 a.m. About half a pint of urine had