desquamating were more frequently followed by "return cases." My records in Birmingham covered some 4810 cases during the two-and-a-half years 1894-96. 8.0 per cent.² of these were noted as showing some trace of desquamation (principally late desquamation on the feet) at the time that they were discharged. But of the cases which carried out

against the supposition that desquamation is infectious, as follows: 1. The absence of evidence supporting it. It is difficult to believe but that if the old supposition were correct, strong evidence of it would ere this have been forthcoming, as is now the case with discharges from the nose and ears. 2. The fact that infectivity begins prior to the

A TABLE GIVING PARTICULARS OF FIVE "RETURN CASES" ARISING OUT OF 190 PATIENTS DISCHARGED AFTER AN AVERAGE ISOLATION OF 39.1 DAYS.

No.	Infecting case.			Return case.		
	Sex and age of patient.	Duration of infecting case and dates of onset and discharge.	Condition of infecting case at time of discharge* and subsequent health.	Sex and age of patient.	Date of onset of return case.	Interval between discharge of infecting case and onset of return case.
1	Male, aged four years.	41 days—August 25th to Oct. 5th.	"Looks unhealthy." After return home suffered from constant nasal discharge.	Male, aged eight years.	Oct. 15th.	10 days.
2	Male, aged four years.	42 days—August 28th to Oct. 9th.	Crack behind ear not healed.	Female, aged two and a half years.	" 16th.	7 "
3	Male, aged four years.	47 days—Sept. 14th to Oct. 31st.	"Nose better, but not quite right." Still desquamating on feet."	Male, aged three years.	Nov. 5th.	5 "
4	Male, aged 11 months.	26 days—Oct. 23th to Nov. 23rd.	"Nose looks suspicious; little discharge."	Male, aged seven years.	Nov. 27th.	4 "
5	Male, aged 16 years.	39 days—Oct. 26th to Dec. 4th.	"Sore nose." Sore at home after return for more than a fortnight.	Female, aged nine years.	Dec. 17th.	13 "

* As recorded on the bed chart at the time that the patient was "passed."
 Note.—The subjects of the infecting cases in Nos. 1, 3, and 4, had suffered from rhinitis whilst in hospital.

infection (by giving rise to "return cases") only 6.5 per cent. had been noted as showing traces of desquamation.

In Leicester during the three months Sept. 14th to Dec. 14th, 1901, I tried the experiment of reducing the minimum stay in hospital to four weeks. The average stay in hospital, including time ill at home, during these three months has been 39.1 days, or counting only time in hospital, 35.3 days (excluding³ cases which were sent home on account of erroneous diagnosis). In order to obtain this result it was necessary in many cases to "pass" patients prior to completion of all desquamation. The total number of cases sent out was 190 and the number of "return cases" was five. The particulars of these "return cases" are given in the accompanying table.

In only one case was there any desquamation present in the "original" or "infecting" case: this was on the feet, and it was also noted that the patient was suffering from a sore nose, which latter fact alone is, in my experience, amply sufficient to account for the "return case."

An attempt to send patients out of hospital at the end of a month is not, in the present state of public opinion, free from difficulties. There is always, of course, the possibility that "return cases" may occur with patients sent out desquamating, just as there is with patients sent out suffering—let us say—from corns or decayed teeth; and should this happen censure is likely to follow. A medical man is called in and if he finds the least trace of peeling he frequently expresses the opinion that the patient was sent out from hospital too soon.

There is one other point which I must mention. As things are at present the public will readily believe that a patient is still infectious and will continue to take precautions as to isolation, &c., so long as desquamation continues. Shake their faith in this and patients might be running about the streets at the end of 10 days or a fortnight. I fully realise the force of this. What medical officer of health, indeed, has not found it convenient to avail himself of this firmly-established belief? As students of science, however, we ought not to allow such an opportunist consideration as this to obstruct our search after truth. Moreover, our methods and measures for controlling the spread of scarlet fever (based largely upon theories) have not been such a conspicuous success in the past that we need apprehend any very serious consequences from a little modification of them in the future.

In conclusion I may briefly sum up the principal arguments

² This percentage was estimated from the records of only 2500 of the cases discharged but the same system of discharging was followed throughout.

³ There were no deaths to exclude.

onset of desquamation and frequently continues long after desquamation has ceased. 3. The fact that scarlet fever wards, although abounding in desquamating epithelium, are not a danger to neighbouring houses. 4. The fact that the proportion of "return cases" does not appear to be increased amongst patients sent out from hospital still desquamating. On the other hand, the principal argument in favour of the view that desquamation is infectious is the fact that patients still desquamating, but otherwise apparently free from infection, have frequently been known to convey the disease to others. The whole force of this argument disappears, however, when we consider that patients apparently quite free from infection and in whom desquamation has entirely ceased have also been known to convey the disease; moreover, patients still desquamating have frequently mixed freely with others without untoward result.

Leicester.

THE TOPICAL APPLICATION OF MUCIN IN CERTAIN AFFECTIONS OF THE NOSE, THROAT, AND EAR.

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IN communications to THE LANCET of Sept. 8th, 1900, p. 730, and Oct. 12th, 1901, p. 972, and in papers read before the British Medical Association at the last two annual meetings, I described the beneficial action of mucin when administered in cases of painful digestion, gastritis, and gastric ulcer; and I gave the history of patients from my own practice and that of others who had proved its effectiveness in the alleviation of such painful gastric conditions. In these papers I also pointed out what I think had not hitherto been observed—viz., that almost invariably these stomachic symptoms were accompanied by a more or less pale and secretionless or dry condition of the nasopharyngeal mucous membrane; and I showed the advantages of applying mucin to the nose and throat as a part of the treatment of these gastric affections. It was also shown that the deficient mucous secretive action of these surfaces was often a persistent and long-standing antecedent of the gastric irritation and an active factor in its causation. Anatomical and physiological facts were cited to prove that normally much mucus is meant to be carried onwards to the stomach to act as a protective against attrition by lumpy food and irritation by the acid gastric juice.

The *bête noire* of nose, throat, and ear practice is the difficulty of successfully accomplishing amelioration of aridity of the mucous linings of these organs and the fact is that to such aridity all the other intractable, disagreeable, and distressful symptoms are due—namely, incrustation, fœtor, ulceration, hæmorrhage, and pain. The lessened mucous flow by causing desiccation causes also the loss of the essential and special nasal functions of smell and the filtration and warming of the inspired air. I claim for mucin that it does more than anything that has yet been tried to relieve the discomfort in mild cases and to mitigate the distress and suffering in the more severe. It is a natural remedy which restores the moisture and maintains it in virtue simply of its hygroscopic properties. I have had ample opportunities of testing the efficacy of mucin in the very extensive and mixed out-patient department of the Central Nose, Throat, and Ear Hospital.

As usual when the pathology of disease is obscure there have been much speculation and many theories put forward to explain the causation of atrophic and dry rhinitis and pharyngitis, and the treatment is, consequently, very unsatisfactory. I will not attempt to solve the pathological problem as to how the dryness and atrophy in these conditions are to be accounted for but will briefly indicate how mucin acts in remedying them. Two researches that I had carried out by Dr. G. L. Eastes of the Laboratory of Clinical Pathology, Queen Anne-street, W., the first two years ago and the second last year, throw much light on how mucin acts. In the first research it was conclusively shown that mucin has a retarding influence on bacterial growth, that sterilised solutions containing mucin remained sterile for a long time on exposure to the air, and that bacteria ceased to grow in culture media when mixed with mucin. This is a very interesting and important fact, as it indicates that nature has in the secretion poured out on mucous membranes provided a ready means for the suppression and retardation of growth of bacteria. In the *British Medical Journal* of March 8th last in the pathological column of recent literature (see Epitome) there is an account (quoted from the *Lyon Médical*) of a research by Professor Fernand Arloing in which this work is repeated in an investigation of the action of "mucidine"—a solution of the mucus of red snails—upon the bacillus of Löffler. From this he concludes that mucidine possesses a bactericidal action and that it retards the growth of other bacteria. The second research proved that mucin is hygroscopic in its action, being about one-fourth as absorbent for water as glycerine is, and that in this way it will act as a moistening agent—gently, slowly, and with lasting effect. According to this investigation 100 parts of mucin absorbed 3·8 parts of water in four hours, while 100 parts of glycerine absorbed 16·3 parts of water in the same time.

When applied locally to the interior of the nose and pharynx mucin has a soothing and emollient action; it moistens the surface and softens incrustations, readily facilitates their removal and prevents their re-formation; it thus also obviates fœtor, which is one of the best points in its favour as a local remedy. Mucin also restores the nasal function of smell by its hygroscopic effect and the filtration and warming functions are also resumed, because in a dry condition the mucous membrane is functionless. Messrs. Burroughs, Wellcome, and Co. have prepared for me a soloid composed of five grains of mucin, five grains of sodium bicarbonate, and one grain of menthol. This is prepared for use by dissolving it in one ounce of sterilised warm water, or, more thoroughly to get more of the mucin into solution I am in the habit of dissolving the soloid in equal parts of sterilised warm water and sterilised warm lime water. This solution may be used to spray, to douche, or to syringe the nose and throat twice daily. The spray should be a coarse one, as otherwise it is liable to get clogged with particles of undissolved mucin. A very good plan to obviate this is to spray warm water at least once a day through the instrument and thus wash it out. If much incrustation has to be got rid of it is well to rub it off with cotton-wool saturated in the warm mucin solution on a mounted prop. In severe and very old-standing cases of atrophic trouble I supplement the local treatment by giving the patient tabloid mucin co. containing five grains each of mucin and sodium bicarbonate internally before and after meals and thus relieve the concomitant gastric irritation and constipation.

I have had very good results in the treatment of dry conditions of the larynx and in cases where there have been incrustations on the laryngeal lining from the use of a spray of warm soloid mucin solution, the discomfort and hoarseness

very soon being much relieved. I have at present 10 cases of dry catarrh of the middle-ear with narrowing of the Eustachian tubes and varying degrees of tinnitus and deafness under treatment. I am injecting twice a week a few drops of a solution of the soloid mucin co. of the same strength—1 in 1 ounce of sterilised warm water—into the Eustachian tubes. While the constant and terrible tinnitus of some of these patients has certainly been much relieved—and in some instances this has existed for years and proved quite unamenable to every form and variety of remedy—and the hearing has also improved, I can speak only tentatively of my results as I have not had the cases regarding which I write long enough under observation. The results, however, are distinctly encouraging, especially as the narrowing of the Eustachian tubes has become less evident. Where patients are very sensitive to the solution of the soloid of the usual strength (1 in 1 ounce) I either dilute the solution more or substitute for the soloid the tabloid for internal use. This has no menthol in its composition but I prefer the soloid, as the menthol serves to stimulate the remaining unatrophied mucous glands to secrete.

The substance most generally used at present for intra-Eustachian injection and as a nasal spray in these affections is a liquid oily paraffin with menthol in the proportion of two and a half grains to the fluid ounce. I object entirely to liquid grease in any shape or form for softening and moistening purposes. It is certainly absolutely useless as a moistening agent; indeed, such preparations act inimically, because they clog and paint over the still remaining and half-atrophied mucous glands. Such oily substances should never be thought of for the purposes of relieving a similarly dry condition of the oral cavity and yet they are commonly persisted with in the treatment of nose and throat and ear cases. What is required is a warm alkaline watery solution of mucin as a substitute for the deficient natural secretion and this is just what the solution of the soloid mucin co. supplies. The more potent penetrating effect of the watery solution is proved by the fact that menthol when used to the amount of only one grain to the ounce of the mucin solution is, by some patients, felt to be quite pungent enough in its stimulating action, as compared with the solution of menthol in liquid oily paraffin, in which it can be borne even to five times the strength.

I have found that even long-standing cases of atrophic nasal and pharyngeal trouble do very well, and that the crusts soon cease to accumulate, after regular douching twice daily with solution of soloid mucin co., and that no other irrigations are ordinarily necessary; but there are certainly instances when pus is present in the discharge in which it is advantageous to use just before the mucin douche a lotion of sodium sulphate or a combination of sodium sulphate and bicarbonate for cleansing purposes. I have patients who, after years of suffering from typical atrophic rhinitis with all its horrors of fœtor and discomfort have, after continuous and persistent application of the mucin irrigation, now been able to dispense with treatment to a greater extent than two or three times weekly.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF GANGRENE OF BOTH NIPPLES OCCURRING IN THE PUERPERIUM.

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GANGRENE of both nipples occurring in the puerperium is an extremely rare accident. So far as I am aware there is no recorded case at all similar to the one which I am about to describe and I therefore think that it should be published. For permission to report the case I am indebted to Dr. W. S. A. Griffith.

The patient, a single primigravida, aged 23 years, was delivered at Queen Charlotte's Lying-in Hospital on June 3rd.