

urethra by the endoscope immediately after micturition and injection almost always shows that there is still a thick coagulated discharge adherent to the walls, indicating the mechanical difficulty an injection would have had in acting directly on the mucous membrane. 3. The exact extent of the inflammation can be seen, and the remedy applied to its extreme posterior boundary. 4. The remedy is applied to the urethral walls when they are distended and stretched by the endoscopic tube, so that all furrows are obliterated. 5. Stronger applications can be used with safety because the remedy is no longer applied blindly or by unskilled hands, and I have no hesitation in saying that the use of the endoscope allows play for a good deal of delicacy in touch. 6. There is no fear of the application carrying the infected material to the distal part of the urethra, and thus giving rise to complications.

BACTERIOLOGICAL NOTE.

Previous to the employment of the treatment described above trials were made of the value of some antiseptic injections. These were not found, however, very satisfactory, whether regarded from the clinical or bacteriological point of view. Of those injections usually employed, a large number, such as the salts of zinc and lead, boracic acid, sodium salicylate (5 to 20 per cent.), and carbolic acid (1 per cent.), have practically no bactericidal action. Corrosive sublimate in solution of 1 in 20,000 and 1 in 10,000 was shown by Friedheim in the Breslau clinic to be actively antiseptic, but decidedly irritating; the latter strength, indeed, produced intense inflammatory symptoms. Our own experience, while confirming to a certain extent these observations, leads us to attribute both less antiseptic power and less irritating action to the perchloride. The solutions employed were much stronger than the above—viz., one grain to six ounces (about 1 in 2600), two grains to six ounces (about 1 in 1300), and three grains to six ounces (1 in 860). No toxic or inflammatory complications occurred.

For microscopical examination the urethral secretion was collected as pure as possible, spread on a cover glass, fixed, stained with Löffler's methylene blue, and examined with a high power ($\frac{1}{2}$ oil immersion). The examinations were continued for a long time, usually at intervals of from three to six days. With the 1 in 2600 injection the patients experienced a little pain with the first injections, but this soon passed off, and the scalding on micturition was greatly diminished. There was no rapid change in the character of the secretion, which gradually decreased as the case progressed. Microscopically, the discharge became slowly less purulent, and at an early stage the proportion of young epithelial cells to pus cells increased. The gonococci steadily diminished in number and became less typically distributed, but after the lapse of so long a period as thirty-eight days could still be demonstrated. The cases lasted on an average from six to eight weeks, but many patients had still a slight gleet when they ceased to attend the hospital.

With the 1 in 1300 injection better results were obtained. This injection gave rise to no more pain than the weaker solution, and had a more decided effect on the micro-organisms. In several cases the cocci had disappeared in from fourteen to twenty-one days. The changes in the microscopic appearance of the secretion were similar to those following the 1 in 2600 injection, but took place more rapidly. The average duration of the cases was forty days, but during the last ten or fifteen days the discharge was hardly perceptible. The 1 in 860 solution proved too irritating, and did not show any superior bactericidal action over the 1 in 1300 injection. Thinking that some of the lack of success with these injections was due to the formation of a coating of coagulated albuminous material which protected the micro-organisms from the action of the antiseptic, a 1 in 1000 solution of iodide of mercury and sodium was employed. This, however, caused very considerable pain, did not diminish the scalding, and did not appear to be of such value, either clinically or microscopically, as to warrant a persistence in its use. Silver nitrate in solution of from 1 in 4000 to 1 in 2000 was the injection selected as most efficient by Friedheim, and was said to rapidly diminish the number of micro-organisms, and by its astringent action to aid the cure. Such solutions have been long in use at the Lock Hospital, but have for some time been given up as being clinically a failure. The difficulty of destroying the micro-organisms associated with gonorrhoea has long been recognised. This difficulty is not due to the resistance of the gonococcus; it is indeed

easily attacked by destructive agents, but apparently is due to the impossibility of reaching it by means of injections. It is well known that though the gonococcus acts at first quite superficially, yet it rapidly passes into the deep layers of the mucous membrane and into the sub-mucous tissue, where it is shielded from the action of antiseptics and covered by a dense layer of purulent discharge. It became obvious from the attempts recorded above, as well as from frequent examinations of the urethra after injections, that to be effective the medicament must be applied in some way which would permit of the perfect cleansing of the urethra from discharge, and render it certain that the solution reached the inflamed mucous membrane. The method devised by Mr. Cotes realises these conditions. The question of the specificity of the gonococcus does not affect the *rationale* of the treatment, since, whatever opinion is held on this point, there is no doubt that Neisser's micro-organism is present in and associated with the purulent urethritis of gonorrhoea.

The effect of the new treatment on the character of the discharge is at once very marked. Examined microscopically, the discharge during the first twenty-four hours after treatment is often chiefly purulent, but in many cases even in so short a time as this there is considerable alteration in the relative number of the pus and epithelial cells. These latter increase rapidly, so that in forty-eight hours a specimen of the discharge has the appearance met with during the third or fourth week in cases by injection. Indeed, in some cases treated early, the discharge at the end of two days consists almost entirely of epithelial cells of various types with a small admixture of pus cells. There is, in addition, a certain amount of exudation, so that the cells are found entangled in a fibrinous material. The effect on the cocci is very marked also. They are very considerably diminished in number in twenty-four hours, and when met with are often free in the exudation or attached to the epithelial cells, while scanty in their usual situation in the interior of the pus cells. This diminution of the cocci goes on rapidly, and their absence from the pus cells and their presence free or in epithelial cells become more marked. In some cases no gonococci can be found forty-eight hours after treatment, and in nearly all cases they are absent after seven days. It is obvious that the local application of silver nitrate solution has a very powerful effect in causing the elimination of the micro-organisms, and that, whether regarded clinically or microscopically, this treatment is most efficient.

ON A CASE OF HEREDITARY SUPPRESSION OF FINGERS, AND THE RELATION OF THIS KIND OF DEFECT TO CROOKED LITTLE FINGER, WITH REMARKS ON THE DISAPPEARING LITTLE TOE.

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In the Guy's Hospital Reports for 1880-81 I described a remarkable family, in which there existed an apparently irrepressible tendency to the production of supernumerary digits—a proclivity so strongly marked that out of a total of eighty descendants traced from a particular individual no less than twenty-four, or 30 per cent., presented supernumerary fingers or toes, and this without any reinforcement by the intermarriage of relatives. In that short paper I incidentally mentioned two other deformities which had attracted my attention by their tendency to hereditary transmission; one of these was harelip and cleft palate, the other the simple and very common defect of a crooked little finger. In the particular family referred to a new defect had made its appearance in one individual in the shape of cleft palate and harelip combined, which, in tracing the family history, I found had been foreshadowed by a harelip which occurred in a great-uncle. With my mind bent on the observation of minor defects which might foreshadow graver evils for future generations, I began tracing back from the greater pronounced deformities to discover anything of a milder nature in the parents or ancestors which might indicate that a particular deformity would be likely

to appear, and I discovered, in reference to cleft palate, that the congenital absence of a lateral incisor tooth of the upper jaw in a parent might foreshadow the greater deformity in the offspring. Three observations bearing on this were recorded in the Clinical Society's Transactions for 1888. Now the other minor defect to which I alluded in the paper of 1880—viz., a crooked little finger—has never forced its importance upon my mind until within the last few months. I said in the paper referred to that I had frequently traced this defect through three generations. It is exceedingly common, this congenitally bent little finger, and therefore is probably in the main merely a general expression of the tendency to suppression of the digit which is so little used, and which is constantly cramped by a large proportion of the population for many hours during the day in the occupation of writing.

That this is the probable explanation of the origin of the defect is borne out by the fact that the little finger when presenting this congenital bend is frequently also abnormally short. Further, the defect of the little finger may not be a mere flexion, but be accompanied by a lateral displacement of the terminal phalanx; or this slight lateral displacement may exist alone, or be associated with a shortened finger. If, as I suggest, the commonly found crooked little finger is but an expression of hereditary neglect brought about by little use and cramped position, it will bear an interesting relation to the fast disappearing little toe. This latter useless little appendage, which is almost as much out of date as the pineal gland, has got before the anatomy books in its downward descent under generations of boot pressure. It has long since lost one of its extensor tendons; so that, if perchance a second one be now found, it is recorded by enthusiastic young anatomists as an abnormality. The flexor tendons are, however, still described as two in number; but so common is the suppression of one of these that a perfect and complete development of two flexors is, I am inclined to believe, falling into that interesting heap of cast-off anatomy amongst which anatomists dig up the homologues of their abnormalities. I am interested to see that Professor Macalister, in his work, states that the second and third phalanges of the little toe are, after a certain period of life, commonly found ankylosed, which is a further proof of the downward descent of this appendage. The future of the human foot would appear to be a gradual suppression from without inwards of the toes, and a further strengthening of the great toe line on the inner side. That this is all that is required is abundantly proved by observing the thousands who, even at the present time, use only the great toe as a means of progression. I was much interested some few years ago by observing the foot of one of the finest athletes of the day. He was an All-England three-quarter at football, a champion short- or mid-distance runner, and the finest football kick of his day; yet he wore a boot so narrow that only the great toe could approach near to the end of it. All this brilliant performance was done by the great toe alone, and he showed on the running path and in the football field that swiftness, agility, and strength were, so far as the foot is concerned, centred in the line of the great toe. The enormous and increasing power of the great toe tendons is further illustrated by the feats of the ballet dancer, and a *première danseuse* would without doubt be soon hissed off the stage if she were seen to balance herself on any part of the foot other than the great toe. There are still some anatomists I believe who affect to be enamoured of the beauties of the savage foot, but its picturesqueness never appealed to my imagination. It is a long-toed, long-heeled, low-arched splay foot, useful no doubt to prevent the limb it supports from sinking too deeply into the native sands, or to aid the hands in upward-tree progression, but as distinct from the civilised foot as the huge hoof of the Shire horse is from that of the thoroughbred. At present the great-toe line of support is apt to rebel against the undue strain put upon it, and gout and osteo-arthritis attack the most used joint of this series at a time antecedent to their appearance in other joints; hence, just as Her Majesty is said to be the most overworked woman in the realm to which hereditary responsibility has fitted her, so the metatarsal phalangeal joint of the great toe, from its responsibility, must be regarded as a queenly joint at present not quite equal to the strain required of it—at least when such strain is associated with a queenly table. So, too, the beautiful longitudinal arch on the inner side of the foot, in weakly, fast-growing lads, and especially when the age of

puberty bears a relation to immoral practices, yields under the superimposed burden, and there is a reversion to a lower type and a less elastic tread. But a more general reversion to a lower human type is brought about by syphilis and rickets, which may thus be regarded as debasing diseases, for either of these in hereditary transmission is apt to lead to stunted growth, an ill-shapen head and a flattened nasal bridge, conditions and appearances which are usually regarded as peculiar to a lower type of humanity. But I am straying somewhat from the disappearing little toe and its possible cousinship to the crooked little finger. All the arguments I could adduce in favour of the view that the future of the human foot was a further development of the inner side and a suppression from without inwards of the toes, I put forward in an introductory lecture to my course of Anatomy delivered in 1888; and the idea stimulated the poetic genius of one of our students, who threw the fancy into a rhyme so clever that it may be worth while to reproduce it from the *Guy's Hospital Gazette* of Oct. 13th, 1888:—

"DIGITI MINIMI DECESSUS.

"*Man is losing his little toe. . . and can do without it.*"—
Mr. Clement Lucas, in his opening lecture.

"If thou must go, thou feeble, foolish digit,
Fain would I speed thy slow degenerate way!
I daily feel a disagreeable fidget
Whenever I've occasion to display
Thy doubtful outline, and thy form chaotic
(Born of a taste in boots, perhaps erotic).
Thou art a shock to my aesthetic sense,
And offerest no kind of recompense
In way of use; of every function shorn,
Except to act as basis for a corn.
When thou art gone I'll still maintain my grace,
Still walk erect wherever I may be;
Still I'll belong to the athletic race,
Waltz with the fair, and kick mine enemy!
So *pace* Schopenhauers, and *pace* Mallocks
When I've acquired a hypertrophied hallux,
To monodactyle type thus simplified,
Life shall be simpler too, and so—beatified.
When future science forgets thee in thy prime,
Methinks a great mind from a northern clime
May then discuss thy remnants, and declare
He finds a true prophetic organ there!

F. G. H."

To return to the crooked little finger. I was examining Mr. H. E. G.—for insurance on Nov. 14th, 1891, when I noticed as he presented his hand that the little finger was crooked and short. I asked if there were not others of his family with the same defect, and he replied that his fourth child, a son, had precisely similar little fingers. I pressed him further for his family history as to any similar defects, and after some hesitation on his part I procured the following account. His father and mother he believed to have been perfect, and he knew nothing of their ancestors. His father married twice, and his two half brothers had on each hand the second finger shorter than the third; or, as he put it, the second and third fingers had changed places. Mr. G.'s eldest daughter and second child was born with no fingers on the right hand and a small thumb. One half brother only is married, and he has one child unmarked. I have already alluded to Mr. G.—'s fourth child having his father's peculiar little fingers. One of his father's brothers married his mother's sister, and they had five children, one of whom, a daughter, is married and has an only daughter with a thumb absent on the right hand. Another of his paternal uncles is married, and has a family. His eldest daughter, first cousin to Mr. G.—, is married and has three children, of whom the eldest, a boy, has no fingers on the left hand. In this family there is shown to be a peculiar tendency to a shortening or disappearance by suppression in development of particular digits, and it is the first instance I have come across which would seem to indicate that shortened crooked little fingers may lie in close proximity to the more serious deformity of further suppression of other digits. It was the observation of the peculiar little finger that led me to obtain the extraordinary history just detailed. It is now well established that a tendency to the production of supernumerary digits is strongly hereditary, but there is less accumulated evidence as to a like hereditary proclivity in the case of suppression of the fingers or toes. It would seem that nature, having arrived at a tendency to suppression in a particular individual—of which the earliest indication may be a shortened or bent finger,—in some of his descendants may sweep away wholesale the fingers of a hand. There is an obvious reason why there should be less opportunity of

establishing heredity in cases of suppression than in superabundance, because in the former the loss is apparent, and is classed by the general public as a deformity to be avoided; whereas supernumerary digits are usually removed by surgeons during infancy, and thus the tendency is concealed.

I am well aware that there is a wide gap of evidence between the suggested origin of the crooked little finger and the establishment of a hereditary tendency to suppression of digits, and it is possible they depend upon two processes so distinct as scarcely to be related. Such suppression as occurs from disuse through generations upon generations, or through ages upon ages, and which I maintain can be shown to be taking place in the case of the little toe, is so gradual and so general that any idea of deformity is completely enshrouded by time. It is only when we observe an abrupt suppression in development that we regard the result in the light of deformity. When such tendency exists, no doubt in-breeding would increase and perpetuate the defect; and it is not improbable that in families where several well-marked instances occur there may have been an accidental union in the parents of two individuals, each with a slight deviation from normal in the direction of the result produced. Hence the importance of observing minor defects which, increasing by generation, may be pregnant with graver deformities in the unborn future.

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THE CONTINUOUS ADMINISTRATION OF OXYGEN IN A SEVERE CASE OF BRONCHO-PNEU- MONIA FOLLOWING INFLUENZA; RECOVERY.

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AND

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THE patient, a lady aged fifty-seven, was attacked with influenza about the middle of January of the present year, from which she was recovering, when, on Feb. 1st, a relapse set in, accompanied by the development of lung symptoms, which gradually increased in severity. On the morning of Feb. 5th her condition was as follows:—Slightly cyanosed. Temperature 101.4°; pulse 108; respiration 30. Urine free from albumen. She was troubled with a most persistent dry cough, unattended with expectoration, which had been kept in check by the inhalation of the chloroform mixture described in THE LANCET of Jan. 30th. Over the lower half of the lungs, both anterior and posterior aspects, abundant sharp large and small crepitations could be heard. In addition, near the inferior angle of the scapulæ on either side the breathing was bronchial in character, especially so on the right. At 9 P.M. the same day the temperature was 100°; pulse 96; respiration 38. The following morning the patient was decidedly more cyanosed, the respiration had increased to 40 per minute, and her pulse was weaker. On Sunday, Feb. 7th, her condition remained stationary. In the region of the inferior angle of the right scapula the breathing had now become tubular in character and the percussion note dull. A patch of dulness with bronchial breathing was detected over the base of the left lung. On this day we agreed to try the effect of oxygen, and gave it for short periods, with the result of slightly diminishing the cyanosis and improving the pulse. On Feb. 8th (the following morning) the patient was decidedly worse. Her respiration had increased to 50 per minute; pulse 120; cyanosis much more marked. She was lying in a drowsy, semi-conscious condition, unable to sleep on account of the dyspnoea. She had voided very little urine in the past twenty-four hours, which contained a heavy cloud of albumen. We now decided to push the oxygen and to administer citrate of caffeine hypodermically. A good stream of oxygen was turned on, the mouth piece being held well over the mouth. At the end of twenty minutes the respiration had fallen from 50 to 40, the pulse from 120 to 106, and it had improved in character; the lips had assumed a ruddy in place of a purple tint, and the patient was dozing calmly. The stream of oxygen was now diminished and the nurse instructed to keep a small quantity playing

over her mouth during the day. At our evening visit we found that she had rested more calmly throughout the day, and that the cough had apparently been much benefited by the oxygen. Her general condition, however, gave us much anxiety, as the rapid improvement of the morning had not been maintained, and it was clear that the mischief in the lung had in no way abated. The nurse was instructed to continue the oxygen throughout the night. On our arrival on the morning of Feb. 7th we found the patient in a critical condition. She was quite unconscious of her surroundings, and could with difficulty be aroused; the cyanosis had much increased; pulse 120; respiration 42. On inquiry, we found that our oxygen cylinder had become exhausted at 3 A.M., and that the patient had been without any for six hours. Two hours and a half later we were enabled to borrow a cylinder in the town, and at once recommenced the administration. She was next seen in the afternoon at 3 P.M., when a distinct improvement was noticed. At our evening visit at 9 P.M. the improvement all round was most marked. The temperature had fallen from 102° to 99°; the pulse from 120 to 104; the respiration from 45 to 38. From this point up to the present time the improvement has been continuous and uninterrupted. The administration of oxygen was kept up throughout Tuesday night (Feb. 9th) and Wednesday, after which it was given for short periods, the intervals between the administrations being gradually lengthened as the lungs cleared, so that for the past few days no oxygen has been required. For some days past the patient's temperature has been normal; pulse about 80; respiration 27. The lung symptoms all point to a gradual clearing up of the mischief.

Remarks.—We would point out that up to the time we agreed to administer the oxygen continuously the patient's condition had steadily grown worse, and that she was then in a very critical condition. The continuous administration was immediately followed by unmistakable improvement, as shown by the marked fall in the rate of respiration and pulse and improvement in colour. The oxygen also enabled her to get more sleep and rest than had been the case for some days. Further than this, it had a marked influence on the very troublesome and intractable cough—so much so that after we had given up the continuous administration the nurses were so certain of the relief likely to follow oxygen inhalation that they gave her a small quantity from time to time to check it. The rapid return of all the bad symptoms on the Tuesday morning, when the patient had been without oxygen for six hours, and the equally marked improvement within a few hours of its readministration, appeared to us a crucial test. The conclusion we formed was that for oxygen to be of value in these cases it should be administered more or less continuously. The oxygen cylinders were supplied daily by Brin.

Oxford.

A CASE OF SCIRRHUS OF THE BRAIN SECONDARY TO THAT OF THE BREAST.

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THE following case occurred while I was resident medical officer at the National Hospital for the Paralysed and Epileptic, and has been recalled by the similar case published by Mr. Beadles in THE LANCET of Oct. 3rd, 1891. For permission to publish the notes I am indebted to Dr. Charlton Bastian, under whose care the patient was.

Charlotte M—, aged sixty-eight, was admitted to the Hospital for the Paralysed and Epileptic, Queen-square, London, under the care of Dr. Bastian, on March 1st, 1887, complaining of fits and left-sided paralysis. In November, 1886, the patient had had her left breast removed in St. George's Hospital, and I am indebted to Mr. Bull, at that time surgical registrar, for his courtesy in supplying notes of the case. From these it appears that a large scirrhus growth, extending from the outer margin of the breast into the axilla, was removed, together with the breast, which contained a very small hard growth, by Mr. Dent on Nov. 18th. The axillary tumour could not be entirely removed at the time of operation, and it was thought that recurrence had taken place before the patient left St. George's Hospital for a convalescent