

carcinoma. But this circumstance cannot to any great extent detract from the significance of the results. These three experiments were meant to be merely of a preliminary nature. It was my intention to make other observations with similar material incubated for various periods. But until quite recently I have been unable to obtain any further supply of carcinomatous fluid. Many more experiments of a similar kind are needed, and it is largely with the purpose of commending such work to others who have the necessary time and facilities, which I have not, that these initial observations are now recorded. There is probably for the production of tumours an optimum period of incubation of the carcinomatous fluid, and this will, I think, be found to be shorter than the time in my experiments.

On the ground of the experimental results that I have recorded it could, I think with good reason, be contended that the pathogenic agent transferred from the human subject to the mouse was not merely a chemical substance but must have been a living virus. This contention has, however, a still stronger support. It is borne out by abundant evidence of a direct character. From one of the mammary tumours occurring in these mice I made several cultures upon non-nutrient agar-gelatin, similar to those described some years ago in a paper by Dr. Henry Wade and myself.⁴ These cultures have been studied in section by means of the ammonio-silver process by Dr. M. C. W. Young, who has been able to demonstrate in them certain morphologically characteristic forms identical with those already observed by us in malignant tumours from the human subject and more recently in one of the original Jensen mouse tumours. Some of these forms have also been demonstrated in these experimental tumours, as well as in a mammary tumour produced in a previously healthy mouse by inoculation of one of these growths. Our more recent observations, some of the results of which were demonstrated on Feb. 26th at a meeting of the Edinburgh branch of the British Medical Association, lead to the conclusion that a group of protozoan organisms, to be classed among the mycetozoa and including very numerous pathogenic species, is associated with tumour growth, just as very numerous pathogenic species of schizomycetes are associated with inflammation. The main phases in a complicated life cycle have now been demonstrated in sections of tumours, in sections of agar cultures from tumours, and in films of the centrifuge deposit from fluid from cases of malignant pleurisy secondary to carcinoma of the breast. The phases recognised include forms with flagella, sporoblasts and their residua, nucleated forms, some of which have been observed in mitosis, and certain other remarkable bodies of characteristic appearance which almost certainly represent gametes.

Edinburgh.

A NOTE ON

THE RECURRENCE OF VESICAL CALCULI AFTER REMOVAL IN A SERIES OF 160 OPERATIONS.

By F. A. SOUTHAM, M.B. OXON., F.R.C.S. ENG.,

SURGEON TO THE MANCHESTER ROYAL INFIRMARY; PROFESSOR OF CLINICAL SURGERY, UNIVERSITY OF MANCHESTER.

HAVING recently performed lithotritry (or litholapaxy, as the operation is now termed) for the sixth time within a period of 16 years upon the same patient, a male, now aged 76 years, the frequent recurrence of the calculi in the bladder naturally suggests the question whether their presence there has been due to the descent of more calculi from the kidney or to small fragments left in the bladder after operation, either of which may form the nuclei of fresh vesical calculi.

In this case the patient had undergone the operation of perineal (lateral) lithotomy for the removal of a stone 15 years before he came under my care for the first crushing operation, and during this interval he had remained free from any symptoms. The six crushing operations which I performed upon him were separated by successive intervals of one year, ten years, two years, three years, and one year, the calculi consisting of uric acid, and in each instance being considerably under an inch in diameter. As the first crushing operation occurred 15 years after a calculus had been

removed by lithotomy, there must on the first recurrence have certainly been a descent of a fresh calculus from the kidney; and, as an interval of ten years elapsed between the second and third crushings, it is not probable that a fragment left after the second crushing operation formed the nucleus of the stone removed so many years subsequently. It would appear, therefore, that provided the bladder is thoroughly cleared of the fragments, as is now possible owing to the improvements during recent years in the technique of the crushing operation, a recurrence after lithotritry is generally due to the descent of a fresh calculus from the kidney.

The tendency to a recurring formation of calculi in the kidney was well illustrated in the case of a patient, aged 20 years, upon whom I performed lithotritry some years ago, for he brought with him a collection of 41 uric acid calculi, some measuring a quarter of an inch in diameter, which he had from time to time previously passed per urethram. In six patients I have twice performed lithotomy, and in one of these the calculus again recurred, necessitating a further operation. In two other patients, after removing calculi from the bladder I subsequently performed nephro-lithotomy, on each occasion removing a calculus from the kidney.

Having up to the present time operated on 160 occasions for the removal of vesical calculi, the following analysis of the cases shows that recurrence is as common in male patients after a cutting as after a crushing operation; in fact, in my experience it has been practically the same—viz., 7 per cent.

Summary of 160 Operations for Calculus Vesicæ.

	Nature of operation.	No. of operations.	No. of patients.	No. of patients in whom calculi recurred.	Percentage of recurrences.
Males {	Lithotritry	61	56	4	7.1
	Lithotomy	89	83	6	7.2
Females {	Vaginal lithotomy ...	1	1	0	—
	Dilatation of urethra	9	9	0	—

In ten male patients the calculi recurred after operation—viz., in four after lithotritry and in six after lithotomy (17 lateral and 72 suprapubic operations). One patient (already mentioned) was operated upon six times, another patient four times, and the remaining patients each twice. The longest interval between any two successive operations was 19 years, this period intervening between the operations of lateral and suprapubic lithotomy performed upon a patient aged 53 years at the first operation, and 72 years at the second. Of the patients in whom a recurrence took place, one was in his fiftieth year and the others were all over 56 years of age when the first operation was performed; four patients were aged respectively 72, 72, 76, and 79 years.

No instance of recurrence was met with in younger subjects, of whom 27 were under ten years of age, and of these 14 were treated by lithotritry.

From a consideration of the results in my series of cases, it would therefore appear that a recurrence of calculi after operation is relatively not more common after lithotritry than after lithotomy, and when it does take place it is in both instances probably due to the descent of a fresh calculus from the kidney and its retention in the bladder. The percentage of recurrences after lithotritry given in the above summary—viz., 7.1 per cent.—is somewhat less than that of other surgeons. Sir H. Thompson¹ met with a recurrence in 75 patients out of a total of 600 cases = 12.5 per cent.; Cadge² in 18 patients out of a total of 133 cases = 13.6 per cent.; and R. Harrison³ in 23 patients out of a total of 101 cases = 22.7 per cent. It is interesting to note that Freyer⁴ in his Indian experience of lithotritry met with a recurrence in ten patients only in a series of 610 operations, which gives a much lower percentage of recurrences—viz., 1.6 per cent.

¹ Brit. Med. Jour., July 3rd, 1886.

² Ibid.

³ THE LANCET, Nov. 12th, 1898, p. 1250.

⁴ The Modern Treatment of Stone in the Bladder by Litholapaxy second edition, p. 56.

⁴ THE LANCET, Jan. 28th, 1905, p. 215.

The more satisfactory results of lithotripsy at the present day, as compared with those in the early years of the operation, are no doubt mainly owing to the fact that we now employ larger evacuating catheters, which enable us to remove the broken-up fragments from the bladder much more thoroughly than was formerly the custom.

Manchester.

PUSTULE SIMULATING ANTHRAX DUE TO ORGANISMS OF THE PROTEUS GROUP.

By THOMAS ORR, M.D., B.Sc. (PUB. HEALTH) GLASG.,
BACTERIOLOGIST AND ASSISTANT COUNTY MEDICAL OFFICER,
WEST RIDING OF YORKSHIRE.

So much doubt exists as to the possibility of organisms of the proteus group, in the absence of other organisms, causing pathogenic lesions in man that the following case is worth recording. The case is interesting not only on account of its rarity but also because the lesion presented characteristics indistinguishable from malignant pustule, for which it was mistaken and as such treated.

A butcher, 45 years of age, first noticed a small pimple on the back of his left thumb about the middle of the metacarpal bone. This slowly increased in size but showed no signs of suppurating. There was little or no pain felt and he did not complain of feverishness or of being ill. As little discomfort was experienced, he did not seek medical advice until about a fortnight after its first appearance and until it had much increased in size. When examined by Dr. William Craik, Thurnscoe, there was found a hard raised swelling of about the size of a shilling over the area mentioned. The top of the swelling was depressed or crateriform and was dark and necrotic in appearance. At the margin of the necrotic area was distinct vesiculation and the skin around for about a quarter of an inch was dusky red with a bluish tinge. There was no evidence of pus formation. The appearances were uncommon and at once suggested malignant pustule. On the day when seen the sore was treated by injecting a solution of carbolic acid into the centre and periphery. On the next day the necrotic part had extended and the skin was inflamed to a greater extent. A crucial incision was therefore made and salicylic acid was dusted into the wound. On the following day it was thought advisable to excise the pustule on the assumption that it was due to the anthrax bacillus. Before excision a little of the serum exuding from the previous day's incision was collected in a glass tube for bacteriological examination. Within ten days after excision a small secondary papule developed at the margin of the wound. This was incised and dusted with salicylic acid. In a few days the inflammation began to subside and the wound slowly healed.

Bacteriological Examination.

1. *Serum from incised wound.*—Films made from the serum and stained failed to show any organisms. A loopful spread on an agar plate gave a few white colonies which were found to be of *Staphylococcus albus*. The presence of these organisms was probably due to contamination from the skin owing to want of aseptic precautions in collection.

2. *Excised pustule.*—The pustule on excision was put into sterile distilled water and next day examined. Films made from the fluid exuding from the freshly cut surface of the tissue and stained showed the presence of small bacilli with rounded ends. These were found both singly and in small groups and retained the stain by Gram's method. The surface of the tissue was seared with a hot iron and incised with a sterile knife. The fluid exuding from the cut surface was spread on nutrient agar plates. After 24 hours' incubation at 37° C. there were found numerous small colonies of two different types. Both types of colonies occurred in about equal numbers and were found to be composed of Gram-staining bacilli to be described later. Sections of the tumour examined microscopically showed areas of necrosis surrounded by areas of leucocyte infiltration, the leucocytes being large mononuclears. In the zone between these areas of necrosis and infiltration were found many Gram-staining organisms. These were bacillary in form, irregular in size and in shape, many swollen at the ends or in the middle, and some large and spherical.

3 and 4. *Specimens from the secondary papule.*—Two sterile cotton-wool swabs were rubbed in the centre of the secondary papule and submitted for bacteriological examination. These two specimens were taken on different days. Agar plates were smeared with the swabs, and after 24 hours' incubation they showed two kinds of colonies (A and B) similar to those isolated from specimen 2. These also were found to be composed of small Gram-staining bacilli.

Thus, from specimens 2, 3, and 4 two kinds of organisms were isolated. In their morphological and biological characters they belong to the proteus group. Both organisms were very motile and non-sporing, and retained the stain by Gram's method. Both occurred as small slender rods with rounded ends, sometimes in chains. B was often arranged end to end in pairs and was slightly thicker than A. In old cultures both showed a variety of shapes; some of the bacilli presented irregular forms with swollen ends. On agar slopes the growths of both organisms were somewhat similar, being greyish-white and glistening or slimy, but A slightly more opaque than B. On agar plates A occurred as small greyish-white opaque glistening colonies with a regular margin; B showed colonies each of which had an opaque greyish-white centre and a thin transparent margin, the transparent margin being much broader than the opaque centre. A liquefied rapidly, a deep saucer-shaped hollow of liquefaction being found in the gelatine stab in 72 hours, while B liquefied much more slowly, in seven days a shallow cup of liquefaction being formed. Both produced acid and gas in glucose and saccharose but not in lactose broth. A corresponds in microscopical and cultural characters with *Proteus vulgaris* (Hauser), while B presents characteristics similar to *Proteus mirabilis* (Hauser) as described by Lehmann and Neumann. It would thus appear that the sore was caused by these two organisms belonging to the proteus group, *Proteus vulgaris* (Hauser) and *Proteus mirabilis* (Hauser).

Although such infection by these organisms is unusual, it should not be unexpected when the man's version of the origin of the sore is considered. He stated that he had got in his thumb some poisonous material from bags sent out by hide and refuse dealers. These, he says, are sometimes very dirty and bad-smelling. They are used again and again without cleaning, passing from one butcher to another. In these foul-smelling bags, used for collecting fat and bones often in a putrefying condition, large numbers of organisms belonging to the proteus group are certain to be present.

Wakefield.

SUDDEN FAILURE OF RESPIRATION RESTORED BY ARTIFICIAL MEANS,

OCCURRING DURING THE COURSE OF AN ACUTE PNEUMONIA COMPLICATED BY COMA OF URÆMIC ORIGIN.

By ROBERT KNOX, M.D. EDIN., M.R.C.S. ENG.,
L.R.C.P. LOND.,

MEDICAL OFFICER IN CHARGE OF ELECTRICAL DEPARTMENT, GREAT
NORTHERN CENTRAL HOSPITAL, HOLLOWAY-ROAD, LONDON, N.,

AND

JOHN MORISON, M.B., C.M. EDIN.

THE chief points of interest in the following case are (1) the sudden failure of respiration, restored by artificial respiratory movements; and (2) the rapid progress of the fatal symptoms.

The patient was a married man aged 40 years. He gave a previous history of some bone trouble in early life which affected his left hip and knee joints and one or two ribs on the left side; probably necrosis of bone with separation and protrusion of fragments. For three days before the onset of his fatal illness he complained of headache. On the fourth day (Feb. 10th, 1909) he was seen by Dr. Morison, when he still complained of headache and sleeplessness. The temperature was 102° F., the pulse was 100 and of moderate tension, and the tongue was furred, moist, and glutinous. There was slight cough, and the respirations were increased in frequency. Examination of the chest revealed a small area of dulness at the left base, and on auscultation there were prolonged expiration and moist crepitations over the area of