that he knew of no case where a fit characterized by upward or downward movement of the eyes was associated with disease of the cerebral hemispheres. There appears to be an innate co-ordinated upward movement of the eyes associated with the emotions, and related to a centre at a lower level. The eyes roll upward in sleep, and I have noted how in infancy, at an age when the vegetative centres are apt to take control, the eyes roll up in convulsions caused by gastro-intestinal irritation.

Other Ocular Symptoms

Other ocular symptoms noted among my patients are excessive blinking, fluttering of the eyelids, and difficulty in moving the eyes in a vertical direction when told to do so. I do not consider these typical of chronic encephalitis, but rather characteristic of the over-emotional state of the patients who show them. We have all observed them in emotional or nervous subjects—the act of blinking being closely related to the mental tension of the subject at the time.¹² Bradykinesia of Parkinsonism is often seen in slow carrying out of the normal voluntary movements of the eyes, and sometimes adds to the difficulties of reading.

Effects of Hyoscine and Stramonium

I now come to the last part of my subject—namely, the visual disabilities caused by hyoscine or stramonium in the treatment of Parkinsonism. Often ten times the pharmacopoeial dose of stramonium is given, resulting in very marked improvement in the Parkinsonian rigidity.¹³ Many of the patients, however, complain greatly of their inability to read, and of being worried by bright light, due to paresis of accommodation and dilatation of the pupils. Roughly speaking, the stramonium effect as regards accommodation for reading distance is counteracted by a + 1.50 to 1.75 lens, and eserine and pilocarpine applied to the conjunctival sac seems to counteract the effect to the extent of 1½ dioptries. Thus children and young adults with normal refraction, who do not want to read much, can have their visual disabilities removed by myotics. Presbyopes and hypermetropes need glasses, the latter for constant wear. In the case of children, or of adolescents who are myopes or whose mentality is such that they do not wish to read, or who have disorders of behaviour in which the use of glasses is inadvisable, the use of myotics to prevent dazzle is found the best procedure. I have had a group of twenty patients of all these varieties under various myotics; three have wished to continue with the use of pilocarpine drops rather than have glasses. The problem is a definite one, as it would appear that these Parkinsonian patients have to continue with stramonium for the rest of their lives.

These are but a few of the interesting points which have appealed to me as an ophthalmologist in dealing with these patients.

I should like to thank Dr. Borthwick, the medical superintendent of the Northern Hospital, and Dr. T. R. Hill, for facilities to examine these patients.

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VESICAL SCHISTOSOMIASIS COMPLICATED BY CARCINOMA

BY

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Vesical schistosomiasis is a disease with an unenviable history, for parasitic schistosomes may survive for long periods in the portal system, depositing ova from time to time in the pelvic viscera with cumulative effects. Accurate information on the longevity of the worms is limited, but Christopherson¹ (1924) recorded some important cases where viable ova were passed eighteen to twenty-eight years after patients had contracted their malady. The case recorded below is of special interest, as the duration of the disease was approximately thirty years, during the last twenty-nine of which the patient resided permanently in England.

A man, aged 50, first came to the out-patient department of the Hospital for Tropical Diseases, London, in October, 1930, complaining of intermittent haematuria of approximately thirty years' duration, which had developed during the South African war. Bilharzial infestation had been suspected.

The patient, who went to the South African war in 1900, was invalided to England in 1902 on account of debility and haematuria, which continued for about two years. Since that time the appearance of blood in the urine and vesical discomfort had been essentially intermittent; he only remembered three severe attacks of haematuria throughout the period, and he was often without symptoms for years. Two months before admission a severe relapse occurred, and since then the haematuria has been persistent, blood clots as large as his thumb being passed in the urine. Originally the haematuria was terminal in onset, but latterly the bleeding continued throughout micturition. The urine, on the first examination, contained albumin and many red blood corpuscles, but no ova. The bilharzial skin test, however, was strongly positive, a wheal of 2.5 cm. diameter developing in a few minutes, with the characteristic pseudopodial-like outrunners and surrounding erythema. The complement-fixation test was also strongly positive (+++), quantitative titrations showing a fixation of 12 minimal haemolytic doses of complement. Subsequent urinary examination revealed a few dead terminal-spined ova of *Schistosoma haematobium*. The serological diagnosis of vesical schistosomiasis was thus confirmed.

At this time the patient was not prepared to come into hospital, though the possibilities of superadded renal disease and vesical carcinoma were pointed out. On November 6th, 1930, he returned for admission, complaining of fever, persistent haematuria with the passage of blood clots, strangury, penile irritation, aching pains across the hypogastrium and in the right groin. Loss of weight had recently been noted, and during the previous fortnight he had suffered from profuse sweats. On admission the temperature was 100° F., the pulse 110, and the respirations 22 per minute. Asthma was also present; it originated during the South African war, and had since been an annual occurrence.

On examination the patient was found to have distressed breathing and an asthmatic facies. Multiple telangiectasias covered the cheeks. Ten round or oval-shaped nodules, varying in size from 0.5 to 1.5 cm. in diameter, hard in consistency and somewhat bluish in colour, were noted in the subcutaneous tissues over the abdomen and chest. Under local anaesthesia one was removed for microscopical examination.

The tongue was furred, the teeth were carious, and pyorrhoea was marked. The chest moved equally on the two sides, but the air entry was poor. A pleuritic rub was heard over the lower part of the right side of the chest anteriorly, and to a lesser degree behind. The heart showed no abnormality, but the peripheral blood vessels were tortuous and thickened.

The blood pressure was 140/84. The liver was somewhat tender, and palpable one fingerbreadth below the costal margin. Tenderness was present in both iliac fossae, as well as in the loins.

The patient was too ill for cystoscopy, but a diagnosis of vesical carcinoma, with generalized carcinomatosis secondary to vesical schistosomiasis, was made. The following notes epitomize the progress of the case.

November 9th, 1930.—The patient was very ill, with a greyish-coloured facies and rapid pulse. Sibilant rhonchi were heard all over the lungs, and at the right base there was impaired resonance, with moist sounds behind and coarse friction sounds in front. The sputum was rusty, and contained pus and epithelial cells; examinations failed to reveal schistosome ova. The Wassermann reaction was negative, and the stools showed no ova or protozoa. The blood urea figure was 40 mg. per 100 c.cm.

November 14th.—Dyspnoea and cyanosis were present. There was a marked tricuspid systolic bruit associated with epigastric pulsation; tubular breathing, increased vocal resonance, and crepitations were noted at the right base.

November 15th.—Haematological investigations showed: erythrocytes, 4,700,000 per c.mm.; leucocytes, 13,000 per c.mm.; and haemoglobin, 80 per cent. The differential count was: neutrophils, 75 per cent.; lymphocytes, 14 per cent.; mononuclears, 5 per cent.; and eosinophils, 6 per cent.

November 16th.—There was progressive increase in the dyspnoea and cyanosis, and at times the former was paroxysmal. The right side of the heart was obviously engorged, and venesection was performed with temporary benefit. Oxygen, digitaline, and pituitrin were also administered. The blood pressure was 102/62, and the blood urea figure 64 mg. per 100 c.cm. The patient was semi-comatose and still cyanosed. The urine contained much albumin, with many erythrocytes, and fatty and hyaline casts; sugar and ketone bodies were absent. Glucose was given intravenously, and sodium bicarbonate and glucose by the rectum.

November 17th.—The patient appeared more comfortable. Moist rales were present over the right base, and tenderness was marked in both loins. The optic disks were normal. The blood urea was now 92 mg. per 100 c.cm., and the plasma CO₂ figure was 78.5 volumes per 100 c.cm. Lumbar puncture released clear cerebro-spinal fluid under increased pressure—250 mm. water pressure.

November 18th.—The patient was semi-comatose and cyanosed, with a dry mouth and rambling speech. Normal quantities of blood-stained urine were passed. At 1.30 a.m. the pulse rapidly weakened, and he died. The terminal picture rather resembled uraemia, but the urinary findings and blood chemistry did not support this diagnosis, and at the necropsy abundant functioning renal tissue was found.

MORBID ANATOMY

The necropsy was performed nine hours after death. The patient was emaciated, and showed multiple subcutaneous carcinomatous nodules, while post-mortem staining was marked in the tissues of the back and buttocks.

Thorax.—The subpleural tissues were studded with carcinomatous nodules, some of which were umbilicated. The right lung showed extensive adhesions anteriorly and laterally; via these, direct cancerous infiltration of the intercostal muscles and of a pectoral lymph gland had occurred. The lower portion of the right lung was extensively consolidated. The heart presented little abnormality; no secondaries were found.

Abdomen.—The liver was slightly enlarged, and showed some increase of fibrous tissue around the periportal zones, as well as scanty carcinomatous nodules, ranging in size from 0.3 to 1.8 cm. in diameter. The gall-bladder was distended with bile, and there were carcinomatous glands in the portal fissure. The tail of the pancreas also contained carcinomatous deposits. A few squat circular nodules of secondary carcinoma were noted in the submucosa in the cardiac end of the stomach, as well as in the first part of the duodenum. No deposits were seen in the enterocolon, but carcinomatous involvement of some of the mesenteric and colonic lymph glands had occurred. The appendix was abnormally large, and a number of small subperitoneal nodules, the size of a pin's head, were present. The kidneys presented little evidence of fibrosis; the pelves were not

dilated, and the ureters in their abdominal course showed no abnormality. Small white carcinomatous nodules were seen under the capsule. The cortex was narrow, but the capsule was smooth, and stripped readily. The suprarenals were enlarged and very hard, and showed extensive carcinomatous involvement.

The bladder was hard, contracted, and of small size. It was removed by an *en bloc* dissection, with the prostate, seminal vesicles, and terminal portion of the pelvic colon and rectum. On opening the bladder, carcinomatous ulcers, with extensive infiltration of the base and neck of the bladder, were demonstrated. The ulcers, on section, cut in a gritty fashion, suggesting that they originated in the sandy patches so characteristic of chronic vesical schistosomiasis. The mucous membrane also presented some squat papillomatous outgrowths, carcinomatous in nature. The seminal vesicles were thickened and hard, as were also the bases of the ureters where they passed through the vesical wall; this thickening extended for at least one inch of the extra-vesical portion of their course. The prostate was also involved, but the urethra was not obstructed.

Brain.—No haemorrhages or carcinomatous deposits were noted in the brain, but there was a marked excess of cerebro-spinal fluid in the pia-arachnoid space, and some degree of cerebral oedema.

OVA AND WORMS

Unfortunately the examination of the pelvic venous plexuses for schistosomes was postponed until after the pelvic viscera had been removed, and it was then found impossible to make satisfactory observations. Examination of the mesenteric veins, however, revealed a living male schistosome; other worms would undoubtedly have been demonstrated had the examination been made at the beginning instead of at the end of the necropsy.

Tissues from different organs were digested in 4 per cent. caustic soda solution for 20 hours at 55° C. Large quantities of ova were demonstrated in the sediment of the digest from the bladder and seminal vesicles; they were also found in smaller numbers in the large intestine, liver, and lung, but not in the pancreas and small intestine.

MICROSCOPICAL PATHOLOGY

Microscopical sections showed epithelioma of the bladder, and a heavy deposit of schistosome ova confined to the mucosal and submucosal layers; the carcinomatous infiltration extended beyond these zones, deeply invading the muscular layers of the bladder. Some of the schistosome eggs contained normal miracidia, while others were dead and calcified. Ova were also noted in the muscular coats of the ureters, and there were heavy deposits in the seminal vesicles, where they were surrounded by whorls of fibrous tissue. Sections of the liver contained scanty ova, but there was a consistent increase in the fibrous tissue of Glisson's capsules, which sometimes showed small-celled infiltration. Considerable hepatic congestion was present, and nodules of secondary carcinoma were encountered. Secondary carcinomatous deposits were also studded in sections of the pancreas, suprarenals, and lungs.

COMMENTARY

Vesical epithelioma is the common cancer of Egypt, and Ferguson² (1911) first recognized its essential relationship to deposits of bilharzial eggs in the bladder wall. It is generally regarded as supervening only in chronic cases which have been repeatedly exposed to infection over long periods of time, but the present case shows that continuous re-infection is unnecessary for its development. The experimental findings in *Rhesus* monkeys also support this view, for Fairley³ (1920) described extensive bilharzial papillomatosis of the bladder some three months after heavy cercarial infection; even at this early date in certain of the sections the transition to malignancy was debatable.

Though cases of *S. haematobium* may undergo spontaneous cure with the passage of time, others in which the haematuria is mild or completely absent for years may develop vesical carcinoma and renal complications, owing to the steady deposit of ova in the bladder and

lower third of the ureters respectively. Further, secondary bacterial infection may complicate the picture at any time. For these reasons it cannot be too strongly emphasized that, in Europeans at least, bilharzial infestation should be diagnosed as early as possible and thoroughly treated. It is equally important to remember that cystoscopy, the complement-fixation test, and the intradermal skin test for schistosomiasis, may reveal infestation at a time when ova are not demonstrable in the urine or faeces.

Since 1900 this patient had passed through the hands of a number of practitioners; it is particularly unfortunate that his condition remained undiagnosed until carcinoma had supervened, for at an earlier date the intravenous administration of tartar emetic would have been curative.

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SOME FACTORS IN THE REDUCTION OF ABSENTEEISM DUE TO CATARRHAL CONDITIONS

BY

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The impairment of efficiency and earning capacity of the worker which is caused by mild ailments, especially catarrhal illnesses, is of such magnitude that no apology is needed for this brief report on some measures that have resulted in approximately a 50 per cent. reduction of absenteeism in the head offices of a large industrial undertaking.

In estimating the significance of the accompanying comparative table it should be remembered that the figures relating to the approved society do not include any absences from work of less than three days, while those relating to the industrial undertaking include absences of one day only.

There are several factors which contribute to the striking differences—for example, the healthy position of the building and its design, a system by which a good mid-day meal is available for the employees at a reasonable cost, and the encouragement of exercise by the provision of a well-equipped gymnasium and facilities for outdoor games. Also of great importance is the medical supervision of every member of the staff. The essence of this supervision is that every employee has easy access to the resident medical officer at certain hours of the day. Appointments are fixed beforehand by the matron, so that time spent in the doctor's waiting room is reduced to a minimum. All new employees are medically examined before they are engaged; so, too, are all employees who have been away from work on account of ill-health. Thus many minor defects are discovered, and advice given for their remedy before they have assumed such proportions as will lead to illness and its consequent wastefulness both to the patient and to the employer. Other important factors in the reduction of sickness have been: (1) ultra-violet ray medication; (2) remedial exercises prescribed by the medical officer, and taught by the gymnasium instructor after office hours; and (3) inoculation, both prophylactic and curative.

The high figure in Column B is accounted for by the fact that any employee reporting sick, with a slight rise of temperature, increased pulse rate, or other early symptoms of illness, is immediately sent home to bed and told to call in a private practitioner. A day or two in bed is more economical than the lengthy absence which may result from neglecting illness in its initial stages.

It is disturbing to note the very high absenteeism due to catarrhal conditions. The total percentage of employees

Sick Absence in the Offices of an Industrial Undertaking for the Year ended December 31st, 1930, compared with Figures supplied by a Similar Undertaking, and by an Approved Society consisting largely of Office Workers.

	Average Number Employed A	Percentage of Sick Absentees B	Average Amount of Sick Absence in Days per Person Employed C
Head office staff of the industrial undertaking	1,444	75.2	4.70
Staff of a similar large London office	2,256	68.5	9.15
Members of an approved society	2,404	No figure available	9.16

absent some time during the year suffering from all forms of sickness was 75.2, while the corresponding figure from catarrhal conditions was 51.625. Attempts to control the absenteeism due to this cause have met with some degree of success.

PROPHYLACTIC INOCULATION

This was offered to every member of the staff, and was an experiment in mass autogenous vaccine. During the preceding winter, cultures were taken from the throats and noses of a large number of workers suffering from sore throats and coryza. This was done under the supervision of Dr. M. R. Brady, and cultures were made in his laboratories. The cultures were taken on to warmed fresh blood agar slopes, and the tubes were carefully kept warm until they were actually placed in the incubator. By this method a greater variety of organisms was found in the cultures than in controls which were allowed to cool, or which were taken on other culture media.

In the manufacture of the mass autogenous vaccine, scrupulous attention was paid to the smallest bacteriological details and technique. If a luxuriant growth of the micro-organisms was not obtained on a twelve-hour culture, fresh cultures were taken so as to avoid repeated subculturing, which would have tended to attenuate the organisms, and therefore to lessen the potency of the vaccine. In sterilizing the vaccine the minimum amount of heat was used, all suspensions being killed in thirty minutes at 60° C. The total amount of antiseptic in the vaccine was 0.5 per cent. phenol in 0.9 per cent. sodium chloride: thus the possibility of extensively damaging the structure of the micro-organisms was reduced to a minimum. It was essential to give accurate doses in so potent a vaccine, so the strength of every micro-organism contained in the vaccine was estimated by counting on a Thoma-Zeiss haemocytometer.

It is interesting to note that the influenza bacillus was found in a large number of cases where these precautions were observed, but was not found in cultures taken from the same patients in tubes which had been allowed to cool between the taking of the culture and the placing of the tube in the incubator. The organisms found were:

Staphylococcus (mixed), *Streptococcus haemolyticus*, streptococcus, *Micrococcus flavus*, pneumococcus, *Micrococcus tetragenus*, Friedländer's bacillus, *Bacillus influenzae*.

and from these the vaccine was made up. The first dose consisted of 50 millions of the mixed staphylococcus and 5 millions of each of the other organisms in 1 c.cm. The second dose was four times the first, and the third dose was ten times the first. It has to be admitted that the increase in dosage was somewhat steep, but this was