Clinical Notes and Cases.

Three Cases of Nasal Sinus Disease. By KATHLEEN A. H. SYKES, M.D., B.S., D.P.M.Lond., and WILLIAM HENRY SHILVOCK, B.Sc., M.B., Ch.B.Birm., Rubery Hill Mental Hospital.

DETAILS of three cases met with in a mental hospital are given.

They appear widely dissimilar in age of onset, lesions found and clinical course—whereas the account of two cases includes the *post-mortem* findings, the third has been discharged and is doing well; but widely different as they appear, they have one factor in common—a chronic infection of the accessory nasal sinuses.

In one case death was sudden, and the long-standing sinus infection was demonstrated at *post-mortem* examination. The lesions responsible for death had developed in the absence of the usually accepted ætiological factors.

In the second case an empyema of the antrum of Highmore acted as a reservoir for bacilli which later invaded the intestines and caused a fatal enteritis, the same organisms being demonstrated in the antrum and intestines during life and at *post-mortem*.

The third case is interesting from many standpoints, and is given to illustrate the improvement obtained after draining an infected sinus, in spite of persisting infection in the tonsils and of damaged kidneys.

It would appear that not only can a long-standing focus of infection, represented in these three cases by diseased nasal sinuses, act as a reservoir of organisms, but that the toxins these produce are capable of influencing adversely the tissues throughout the body.

CASE I.

A CASE OF ORO-NASO-PHARYNGEAL SEPSIS AND ATHEROMA CAUSING SUDDEN DEATH BY OCCLUSION OF THE LEFT CORONARY ARTERY.—By WILLIAM HENRY SHILVOCK.

Male, married, cabinet maker, æt. 58 on admission on August 10, 1929. First certification.

***History.*—No psychotic heredity. Standard VI on leaving school. Always a steady worker. Indulgence in alcohol and tobacco limited. Had "colds in the head" each winter.**

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The onset of recognized mental symptoms was gradual until a week before admission, when definite insomnia developed. His manner became "strange"; he was afraid of being left alone; he stated he thought someone was following him, and he refused to go to bed. There was loss of weight and appetite. He was later found by the police wandering near a police station. He said he had been "frightened out of the house by gas bombs."

On admission.—He stated that his thoughts were read by means of a periscope and dictaphone, and that he heard "people" shouting names after him, such as "Consumptive throat" and "Cancer." His conduct indicated the presence of fear, being restless, suspicious and resistive to examination and nursing attention. Physically he was fairly well developed and moderately nourished. Height, 5 ft. 9 in.; weight 10 st. 4 lb. Temperature, 98·2°; pulse, 80; respirations, 18.

Circulation: Apex-beat in sixth intercostal space, ½ in. outside left nipple line. Sounds clear and accentuated; rhythm regular. Pulse full; arteries thickened; blood-pressure, 168/112 mm. Hg. Peripheral circulation, pale face, hands and feet cyanotic. No œdema.

Lungs, *nil* abnormal.

Mouth: Gross pyorrhœa. Many carious teeth and roots, especially in left maxilla and right mandible.

Ears normal.

Nose: Anterior rhinoscopy: crusting of anterior nasal space; posterior nasal space not seen; septum deflected to right.

Nasal sinuses: On transillumination, antra dim, frontals fair.

Tonsils: Fibrotic, adherent, septic.

Nervous system: Pupils equal in size, reacting equally and briskly to light and accommodation. Bilateral ptosis. Bilateral flexor plantar response. Deep reflexes present and equal. No clonus, no anæsthesia. Articulation, gait, equilibrium normal. No tremor.

Abdomen: Superficial veins enlarged over epigastrium. Viscera appeared normal.

Urine: Sp. gr. 1018, acid; albumen, heavy cloud; uratic deposit. No blood, sugar or pus.

Blood: Wassermann test negative; Widal test negative to all groups.

Course.—Restlessness and resistiveness, especially marked at night, continued for four days. He then became more composed and more co-operative in nursing. He continued, however, to utter delusions and fear was still manifested by his suspicious manner. He refused to be shaved.

On September 6 he suddenly collapsed at 7.15 a.m., showing extreme pallor, with feeble and thin pulse, and died a few minutes later.

At autopsy.—There were no external signs of injury. Skin and face very pale. Ribs intact. Lungs free, light, voluminous, no congestion or consolidation.

Heart: Pericardium normal; myocardium fairly firm. Both sides of the heart dilated, especially left, and contained blood-clot.

Well-marked atheroma in the aorta, on the semilunar cusps and extending down on to the mitral valve and around the coronary arteries. A patch of atheroma was situated within and completely occluded the left coronary artery for ½ in. The right coronary artery was fairly patent. The pulmonary artery and valves were normal.

Larynx, trachea and œsophagus clear.

Nasal sinuses: The frontal and sphenoidal sinuses were clear, but the left antrum contained much greenish-yellow pus and in the right antrum there was pus on the medial wall.

The tonsils contained pus.

The naso-pharyngeal mucosa was œdematous and the surface muco-purulent.

Skull was intact. Some adhesions of pia-arachnoid to dura over the vertex. Pia-arachnoid milky over vertex and veins very congested.

No hæmorrhage either within or without the brain substance.

Peritoneum normal. Retroperitoneal glands enlarged. There was subacute inflammation of the atrophic gastric mucosa. Suprarenals soft and friable.

Spleen very soft and friable.

Liver was fatty and enlarged. No gall-stones.

Kidneys: Venous congestion, greasy on section; distinction between cortex and medulla almost obliterated. Capsules adherent.

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Comment.

The causes of sudden death are not very numerous. In this case the absence of the commonly accepted ætiological factors of atheroma obscured the reason for the sudden collapse; although there was kidney disease of some years' standing the blood-pressure was not unduly raised. There was no family history of sudden death, no strenuous occupation or history of over-eating and no reason to suspect chronic lead poisoning or gout. This case has affinities to the reported experiments in which atheroma has been produced by the injection of bacterial toxins. The foci of infection here were in the nasal accessory sinuses and mouth, both apparently of long standing, and it seems reasonable to assume that this chronic infection was directly connected with the atheromatous condition of the heart responsible for the patient's death.

Case 2.

A Fatal Case of *B. Pyocyaneus* Infection, Illustrating the Relation between Infection of the Nasal Sinuses and Alimentary Tract.—By Kathleen A. H. Sykes.

F. C—, a single woman, was, when æt. 24, in a mental hospital for three months. One sister was in a mental hospital; their father was a heavy drinker.

After her discharge she remained well for three years, and during this period she married.

She was again admitted to a mental hospital on September 3, 1907, when she was confused, restless, noisy and destructive, and continued so during the three years that elapsed before her transfer to another hospital. Her physical condition was poor. She was thin, and there was some suspicion of tubercle of the right lung. Her urine was normal, and there is no record of any abdominal disturbances.

She continued unchanged mentally and physically, and was eventually transferred to this hospital in 1920. She was considered to be a case of dementia præcox.

A simple, childish woman, at times quiet, asocial and apathetic, on other occasions restless, noisy, impulsive, destructive and faulty in habits.

Examination of the blood was negative to syphilis and typhoid. Examination of the fæces was negative, except that on two occasions *B. Friedländer* was found. Her physical and mental condition improved slightly, and at her best she would do some ward work, but was still subject to periods of confusion with excitement. At an ear, nose and throat examination at the end of 1926 it was noted that the tonsils were reddened and pus could be expressed from both; the tympanic membranes were retracted; on transillumination the nasal sinuses lit up fairly and equally well. She did not complain of headache. Early in 1927 she was given an intensive course of non-specific protein therapy, consisting of T.A.B. vaccine intravenously, beginning with 250 millions and increasing to 125,000 millions. To these injections she gave medium temperature responses, between 100·8° and 102·8° F., with some facial herpes. Otherwise there was nothing abnormal in her reaction to T.A.B. There was no change in her condition for some time, but about a year after the vaccine course she began to improve. She became much less confused, was quietly behaved and worked well in the ward and it was possible for her to have parole, and on one occasion week-end leave in the care of her mother. This improvement was maintained for a year, but during 1929 she relapsed into her former confused, noisy state. Early in February, 1930, she became

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acutely ill and on examination appeared to have abdominal pain. Temperature rose to 99° and 100° F. at night, with a pulse of 112 and respiration-rate of 24. She was incontinent, but did not pass more than three motions during the twenty-four hours; the stools were offensive and fluid, but contained no mucus or blood. *B. Friedländer* was found in these stools. There was loss of movement and a sensation of fullness in the lower part of the abdomen, but no tenderness, resistance or mass. Nothing abnormal was found on rectal examination.

She died on the seventh day of the illness without any other signs or symptoms having appeared.

Autopsy.—The principal points noted were old adhesions between the right temporal lobe of the brain and the adjacent dura.

The nasal sinuses showed slight thickening of the sphenoidal mucosa and definite disease in both antra. The right antral mucosa was much thickened and the cavity contained pus; the mucosa of the left was thickened and the exudate catarrhal. Ears were normal.

There were some old adhesions at the bases of both lungs, but no tuberculous deposit was found. The stomach showed submucosal hæmorrhages, especially marked along the greater curvature; the mucosa of the small intestine was slightly inflamed. The large intestine was dilated and inflamed; this inflammation was extreme in the transverse colon, where there were extensive hæmorrhagic sloughing areas.

Bacteriological examination showed the presence of *B. pyocyaneus* in both antra, liver and spleen, and *B. Friedländer* in both antra and intestines. *B. para-Grünthal* was also found in the pus from the right antrum and in the intestines.

Comment.

The points of interest which this case presents are the recovery of the same organisms from the nasal sinuses, liver, spleen and intestines.

B. Friedländer had been found five years previously in the fæces, in the absence of any evidence of enteritis. It reappears in association with an acute fatal illness which gave few of the clinical signs of bowel infection, although at *post-mortem* an acute inflammation of the whole alimentary tract was found.

In the chronically diseased antra this organism was also found. It is concluded that the alimentary inflammation resulted from a mass infection originating in the antra.

Another inhabitant of the antra, *B. pyocyaneus*, obtained access to the blood-stream and was recovered from spleen and liver. This infection was probably the actual cause of death.

Case 3.

A Case of Polycystic Disease of the Kidneys, Pyonephrolithiasis and Nasal Sinusitis with Mental Disorder. —By Kathleen A. H. Sykes.

Mrs. D. G—, married, housewife, æt. 30 on admission on November 19, 1926. First certification.

History.—Family: No history of insanity. Patient is the eldest of a family of six. The other five, and her father, are healthy. Her mother, at 40, had one kidney removed for "sepsis," and six years later died from hæmorrhage from the

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remaining kidney. Three maternal aunts and her maternal grandfather also died from "kidney trouble."

Personal: Had three attacks of measles during school age. Left school when æt. 13, in Standard VII. She worked as a machinist for six years and then married. There have been no conceptions. She states that from childhood she has had pain in the lumbar region. Shortly after marriage she had an attack of frequency of micturition and scalding, since when the pain has been more severe and the urine has at times contained blood and pus. For this she attended the General Hospital, where, on January 24, 1924, the blood-urea was found to be 81 mgrm. per 100 c.c.

She was admitted and cystoscoped on February 11. The report was as follows:

The right ureter is raised. Left ureter is not so high as right. Blood-stained fluid coming from right ureter. Enlarged vein seen running across base. Phosphate deposits on bladder floor.

On February 15, 1924, the right kidney was exposed and found to be cystic, and on exploration of the left kidney this was also found to be cystic and a little larger than normal. The condition appeared to be that of congenital bilateral cystic disease of the kidneys. The wounds were closed. She was discharged to home care.

She continued to pass blood and pus at intervals, and although able to do light work she was regarded as a semi-invalid.

State prior to admission to mental hospital.—In August, 1926, she lost weight and became very depressed. At the beginning of the following October the lumbar pain and urinary disturbance grew worse and she became still more miserable. She was continually threatening to make away with herself, and on one occasion left home and walked into a pool of water.

On examination it was found that she was greatly depressed and agitated. She stated that she was afraid to go out alone, and if she did she would not come back. She said she had nothing to live for and would like to die.

On admission to mental hospital on November 19, 1926.—She was extremely depressed and agitated. She lay in bed with her face covered and cried. Little could be elicited from her beyond incoherencies to the effect that she was "not worthy." She said she wanted to but could never die. She was afraid of the dark, and of being left alone. She imagined that the other patients and nurses were constantly talking unkindly about her. Her nails were bitten close, and she was continually biting them. The right pupil was slightly irregular and excentric to the nasal side; both pupils reacted to light and accommodation. The left field of vision was normal, but on the right side there was diminution of visual acuity with a contraction of the temporal half of the field. The retinæ appeared œdematous. Blood-pressure was 143/96 mm. Hg. A few septic papules were present on the skin. Face was sallow. Temperature was 99° F., pulse 88. Although seriously ill physically, description of her feelings and depressed ideas was far easier to obtain than any statement concerning her sensations, aches and pains.

It was elicited, however, that she had headache, and on examination she admitted pain in the right lumbar region, where a boggy, indefinite, tender mass could be palpated. The lower pole of the left kidney could be felt on inspiration. On the night of the 20th, temperature rose to 102° F., and during the next twenty-four hours she passed 36 oz. of acid urine, red with blood and containing a heavy deposit of pus. During the next day temperature fell to 97·8° F. and thereafter rose to 100° F., then fell and rose again to 99·4° F. and 99° F. until the 28th, when it fell to 97° F. and remained about 98° F. The urine now contained less blood and pus, the pain and tenderness were not so marked and the mass in the right lumbar region was no longer palpable.

It was elicited that the constant depression had periods of exacerbation, which appeared to precede the passage of urine containing more pus and blood than usual. This appeared to be the case on this occasion, and the acute mental symptoms were evidently coincident with an exacerbation in a pyonephrosis, and were relieved by its partial natural drainage.

Examination of the nose showed pus in both sides of the naso-pharynx; tonsils were septic. The nasal sinuses on transillumination lit up well.

A blood-culture was sterile. Wassermann and Widal tests in the blood were negative. An aching carious molar was removed. Her temperature remained normal, and her urine contained pus but no blood.

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At this stage she was able to be up and walk about the ward. She was quietly behaved, but obviously very depressed and still retained the idea that she was "unworthy." Depression varied and was worse on dull days.

She had constant lumbar pain, but still complained very little about it—she had had it so long that she had come to accept it as part of herself.

The diagnosis of the renal condition was considered to lie between a pyonephrolithiasis and tuberculosis, in either case superimposed on congenital cystic kidneys.

A catheter specimen of urine was found to contain a very large amount of pus-cells and free bacteria.

Stained preparations showed the presence of numerous large cocci, but there was no evidence of tubercle bacilli. On culture only *B. acidi lactici* were obtained; there was no coccal growth.

No evidence of tuberculosis was found on animal inoculation. On December 11 she was sufficiently well to permit of a radiographic examination.

The report was as follows:—Renal: Large irregular calculus on right side. Kidney outlines appear ill-defined, but right appears atrophied and left very considerably enlarged. Pulmonary: All functions good. Considerable coarse peribronchial thickenings in both basal zones. Otherwise normal.

Urea concentration tests were now carried out. The results were as follows:

8.20 a.m.: Blood (fasting), 16·1 mgrm. urea per 100 c.c.
Urine, 0·97% urea.

8.30 a.m.: Fifteen grammes of urea in half a pint of water given on an empty stomach.

9.30 a.m.: Urine, 0·98% urea.

10.30 a.m.: Blood, 75 mgrm. urea per 100 c.c.
Urine, 1·55% urea.
Cerebro-spinal fluid, 31·6 mgrm. urea per 100 c.c.

No alteration of symptoms followed this procedure.

On January 15 she consented to be examined by Mr. H. H. Sampson, F.R.C.S., who considered that the stone in the right kidney should be removed and that she was an operable risk for nephrolithotomy, but not for nephrectomy., At first the patient dreaded the idea of operation. She said she would die in any case, and that she preferred to do so without the operation.

Finally she consented, and on February 17 she was admitted to the General Hospital under the care of Mr. Sampson. Here the clinical and pathological findings were confirmed, and she was pyelographed.

On March 7 the right kidney was exposed. It was found to be very friable, and densely bound down with adhesions. It was enlarged and cystic, and a hydronephrosis had to be incised before the large stone could be palpated and removed. A quantity of "shale" was also scooped out.

The main body of the calculus was found to be an irregular oxalate stone weighing approximately 3 drm.

The convalescence was somewhat stormy. On the third night the temperature reached 100° F., and she became excited, noisy and delirious.

The temperature continued to fluctuate between 100° F. and 103° F., and the delirium recured each evening, until a subdiaphragmatic abscess was opened and drained on April 10. Within two days of this procedure it was noted that "the temperature was falling and the mental state clearing up." Later it was noted, "Temperature dropped; mentally normal." She was discharged from the General Hospital on May 21, 1927, to her home, where she remained in apparently good physical and mental health. The fears which formerly obsessed her had gone, and she was able to take up her normal life again.

During a seaside holiday in the summer of 1927 she indulged in sea-bathing. A "chill" followed and again she became depressed. The depression during the following month increased, and she showed irritability and restlessness. She ran away from home several times and wandered aimlessly in the neighbourhood. For two days she refused food and when questioned did not answer. She was re-admitted to the mental hospital on August 30, 1927. She was depressed and agitated. Wringing her hands and pulling at her hair, she said, "Everything is wrong and all is dark," and constantly repeated, "I want to die."

Her physical state was, however, better than on the previous admission. Heart and lungs were healthy. Constipation was extreme. There was some tenderness in the left kidney region. Urine contained albumen and pus. Examination of

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the nose showed a streak of pus coming from the right middle meatus. The right antrum was on transillumination dimmer than the left. When questioned she admitted the presence of headache.

Under local anæsthesia using the Watson-Williams technique the ethmoids and antra were investigated. A bilateral ethmoid infection was found and *Bacillus alkaligenes fæcalis* was cultured from all four cavities. She continued mildly depressed.

In November she volunteered that a right-sided headache which she "had always had" had vanished after the sinus irrigation, and had only returned on the first day of her menstrual period.

The physical state had improved, and it was decided to drain the infected sinuses and if possible remove the chronically diseased tonsils. This was done on November 10. The sphenoids were clear of exudate, there was thick pus in both ethmoids and muco-pus in both antra. The ethmoids and antra were drained intranasally.

Anæsthesia was not well tolerated, and the removal of the septic tonsils was not proceeded with.

Although the sphenoids had been found to be devoid of macroscopic exudate, culture of their washings showed the presence of *Staphylococcus aureus*, *B. alkaligenes fæcalis*, *B. proteus* and *Streptococcus equinus* as against a sterile control.

Ethmoids and antra gave *Staphylococcus aureus* only, the controls also being sterile.

Following this operation it was noticed that although the returns of the antral irrigations were very soiled, there was definitely less pus in the urine.

She was given a small dose of T.A.B. vaccine intramuscularly. She continued cheerful and was regarded as convalescent. During the cold weather of January, 1928, she became more depressed, her manner was furtive and she was found to be hiding pieces of glass in her clothes. The depressed state continued during the whole of that year and was not noticeably improved during the warmer weather, although there was a slow physical improvement, including a gain of over a stone on her admission weight.

In October she was given a 200-million T.A.B. vaccine intravenously.

During the following winter there was no marked change in her mental state. In March, 1929, she developed a carbuncle on the back of her neck, which did not heal until well into April.

A slow steady improvement was noted in her mental state from this time and by June she was definitely convalescent. This continued, and in August she was transferred to a non-observation ward.

At a review in October, 1929, she was quite composed, neither depressed nor exalted, had insight into her illness. She stated that prior to May, 1929, the menstrual periods had always been very irregular, but since then had been quite regular. She showed with pride her finger-nails, now grown so long as to require cutting for the first time in her life of thirty-three years; previously she had always bitten them until they bled. Facial colour, mobility and tone much improved. Teeth and gums quite healthy. Urine: No pus or albumen.

She was discharged in October, 1929, and subsequent reports were satisfactory.

On March 21, 1930, she visited the hospital. She appeared cheerful and interested. She stated she had had no attacks of depression, no lumbar pain, even during or following domestic work, and no headache. She had experienced some irritability at the first day of menstruation (which was still regular, 5/28), but was not depressed. She had gained weight. Skin was clear; nails still unbitten. The right pupil was slightly larger than the left, and did not react so briskly to light. Both fields of vision were normal. There was still some blurring at the nasal side of the right disc. Blood-pressure 192/114 mm. Hg.

Comment.

This case is interesting from both the physical and the mental standpoint.

A woman with a well-marked family history of kidney affections

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is found to be suffering from bilateral polycystic disease of the kidneys, a renal calculus and pyonephrosis. Symptoms referable to these complaints date back to childhood, and progress with exacerbations, each exacerbation being accompanied by an attack of depression. The suicidal attempt which necessitated her first certification was coincident with a state of acute toxæmia. When the pyonephrosis drained, her mental state improved and further improvement followed the removal of the stone, so that she was discharged from hospital care for three months. On her return nasal sinusitis was treated and this was followed by an immediate improvement in the condition of her kidneys—as shown by a lessened amount of pus in the urine. This suggests that the already damaged kidneys were labouring to excrete organisms which were being absorbed into the blood-stream from the affected sinuses. Her general physical condition was stimulated by the dose of typhoid vaccine. The improvement became marked about April, 1929, and thereafter continued steadily, so that on discharge in October she was in a better physical condition than she remembered herself to have ever been in her life. The regularity of her menstrual periods, as contrasted with the previous irregularity, is most interesting, indicating an improvement in the functioning of the whole ductless gland system.

She has now been discharged for fifteen months, and her improvement has not only been maintained but has continued. At the same time the ultimate prognosis is not good. It is impossible to deal adequately with her diseased kidneys, and the steady rise in blood-pressure is significant.

All that can be said is that a definite remission in her physical and mental symptoms has been obtained as a result of treatment.

May, 1930: She reports in a letter that she is back at work and is keeping well.

January 1931: She continues well.

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