and though actual acute inflammation arising from the appendix alone was no doubt classed under the other name, I believe that very many of the old surgeons have seen and noted a veil-like matting of the thickened peritoneal cover to the caecum, and simply regarded it as a consequence of inflammatory action. I have seen a large number of cases in which this veil was present over the intestines, and remarked on during laparotomy, without, however, any marked evidence of consequent constriction. Delore and Alamartine subscribe to a theory of repeated and mild peritonitis, which doubtless applies in many instances, as recovery from slight peritonitis is, in my opinion, very common, the complicated protective armoury of the peritoneal sac and omentum being responsible for overcoming many attacks of infection.

Lane imagines a natural reaction in the tissues, which adapt themselves to mobile or distended intestines by developing bands or adhesions as a result of crystallization of the lines of strain. Mayo considers a dislocation of embryonic arrangements of the caecum to result in a thickened pericolic membrane, and Gray and Anderson believe it to be due to excess of physiological fusion—that is, that the caecum in descending from the region of the liver carries with it a fold of omentum, which gets stretched and thinned, losing its fat, and remaining to cover the caecum. The last two theories presume the existence of a membrane throughout life, with later development, if any, of symptoms of the nature of autointoxication or stasis.

Doubtless many extraneous membranes and adhesions are due to the result of microbic action. Lane's theory also has much in its support, and accommodation of parts to altered physiological strain is but natural and reasonable; while Gray and Anderson's theory has much to commend it from anatomical grounds. When kinking occurs, symptoms appear of a gastro-intestinal, toxæmic, or coprostatic variety. Kinking may be due to gravitational pull of a loop of bowel attached by a band, it may be due to altered intra-intestinal or intra-abdominal tension, or to shrinking of the tissue of the band.

My experience is limited to about thirty-two cases of well-marked dense veil formation seen during laparotomy for appendicitis, in which all the patients were over 40 years. In volvulus, too, it is well known that young persons are not usually attacked, and in band obstruction generally, except when due to dense gross adhesion, the patient is often in middle life. I believe this age incidence is not a casual one, and that bands existing previously and without symptoms may develop to a noxious degree, as suggested by me before under the name of "condensation obstruction."¹ Old superficial scars which have been pliable in early life become puckered and hardened as years go on, especially in women after the menopause, in whom stitch marks are commonly felt as button-like prominences; a linear scar is converted into a ridge. Tissue sclerosis is a sign of age, be it in arteries, eye, bone, muscle, brain, or other organ.

In this short communication I wish to suggest, therefore, that many acute abdominal diseases, or chronic conditions, occurring in middle life, are the effect of contraction of former resilient and pliable adhesions—a form of condensation obstruction.

REFERENCE.

¹ *Lancet*, January, 1914.

MITZMAIN (*Philippine Journal of Science*, vol. viii, Section B, No. 3, June, 1913) states that surra may be mechanically transmitted by *Tabanus striatus* (Fabricus). For his experiments he used bred flies so as to eliminate fallacies which might have resulted from natural infections. He was successful three times with direct or mechanical transmission by "interrupted" feeding when only a short interval was allowed between the bites on infected and healthy animals. In sixteen experiments the minimum number of flies with which the infection could be transmitted was two. Hereditary transmission was not observed. The maximum length of time for which *Trypanosoma evansi* could be demonstrated microscopically in the gut of this species of fly after feeding on infected blood was thirty hours. The organisms were found in the fly's dejecta two and a half hours after biting the infected animal, and suspensions of flies when injected subcutaneously were found infective for animals from a period of ten hours after the flies had fed on infected blood.

FATAL CASE OF VERONAL POISONING:

RECOVERY OF THE DRUG FROM THE TISSUES AND URINE.

BY

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THE subject of the following notes was a patient of Dr. G. H. Barker, who has kindly allowed us to publish the case. One of us (G. P.) saw the patient in consultation with Dr. Barker, and the other (E. R.) is responsible for the analysis.

A. B., 50, a restaurant manager, had suffered for some time from mental depression and insomnia, and had on the advice of a friend previously taken veronal, but was warned by Dr. Barker not to do so. He had improved in health considerably. On November 11th he went to bed about 10 p.m., but was heard snoring loudly during the night. Next morning he was found to be deeply comatose and breathing heavily. The pupils were small, but reacted to light, and later on were moderately dilated. There was no evidence of paralysis, but all the limbs were flaccid, except for some little power of resistance in the left arm. No plantar or other reflexes could be obtained. The face was of a natural colour, the skin moist, the temperature raised by about a degree, the pulse was quickened but regular, and the blood pressure was not abnormally high. There was no rigidity of the neck, and no squint. The lungs were fairly normal, but the breathing was rattling from the accumulation of mucus in the upper air passages, and whenever the head was depressed over the side of the bed this ran out in a turbid stream to the amount of an ounce or two, with great relief to the respiration. A stomach tube was introduced, several ounces of clear fluid were drawn off, and the stomach washed out with potassium permanganate. The urine had to be drawn off; it contained neither albumin nor sugar. There was no return of consciousness, and since the patient was unable to swallow he was fed during November 12th and 13th by nutrient enemata and salines, which also contained coffee and strychnine. The bowels failed to act. Very early in the morning of November 14th he became worse, and the temperature rose to the remarkable level of 107.2°. Cold packs were employed, as a bath was not at hand, and the temperature was reduced to 104.5°. The heart acted fairly well, but one lung was now full of moist râles, and after a few hours he died.

A *post-mortem* examination was made next day; rigor mortis and hypostatic congestion were well marked. The brain was normal, and contained no trace of haemorrhage or tumour. The lungs were dark, oedematous, and congested, but no pneumonic consolidation could be found. The kidneys were normal; the liver weighed 60 oz., and was slightly fatty. The heart weighed 17 oz.; there were deposits of fat on the surface, and the muscle showed some degenerative changes; the cavities were dilated, and all contained liquid blood and *post-mortem* clots. The intestines and stomach were normal, except for a little *post-mortem* congestion on the posterior wall of the latter, near the cardiac end. The stomach contained a little grumous mucus only. A culture was made from the cerebrospinal fluid, but no pathogenic organisms were obtained. There was no trace of injury or violence in any part of the body.

Portions of the brain, viscera, and of the urine drawn off before death were sent for analysis.

It is remarkable how little the decision of the Privy Council to include veronal under Schedule II of the Pharmacy Act as a poison is known to pharmacists.

THE SEARCH FOR VERONAL.

Of the urine procured from the patient 175 c.cm. were examined by Willcox's method, as follows:

Lead acetate added in excess, filtered, and excess of lead removed by H₂S; the solution remaining feebly acid to acetic acid, was concentrated at a low temperature to 60 c.cm., a little blood charcoal added and allowed to stand for a few hours, filtered, and evaporated to about 30 c.cm. in a water bath at a temperature below 60° C., extracted with two volumes of ether three times, separated, and ethereal fluid filtered into a tared flask, evaporated off either at laboratory temperature, and finally under air pump; failing to remove last traces of water by these means, evaporated in water bath below 60° C. until crystals appear.

Weight of crystals, 0.31 gram.

Recrystallized from ether, melting point 183° C.

Recrystallized from water, melting point 186° C.

Mixed with crystals of hippuric acid and succinic acid to obtain cross melting point, melting took place between 150–175° C.

Mixed with crystals of veronal, melting point 186° C., melted at 186° C.

Crystallographic appearances, both rhombic and fan-shaped, were obtained of similar character to those obtained from veronal.

Chemical reactions with Millon's reagent, a white precipitate soluble in excess.

Boiled with KOH, no reaction.

Crystals fused with KOH gave smell of ammonia, and the resulting solid had a rancid smell; the solid dissolved in water gave a slight brown colour with Nessler's reagent.

These chemical and physical reactions afforded adequate evidence that the crystals were veronal.

Portions of the brain and a mixed portion of viscera were examined by the following processes respectively: Treated with about 75 c.cm. of 90 per cent. alcohol acidified with a few drops of acetic acid, macerated and allowed to remain for twenty-four hours at 30° C.; the liquid decanted and the residue treated with feebly acid alcohol four times; the alcoholic extracts mixed, filtered, and evaporated to a syrupy consistency at about 35° C.; 200 c.cm. of absolute alcohol added and allowed to stand, filtered, and again evaporated to a syrup at 35° C.; taken up with water and turbid liquid filtered, concentrated by evaporation at 35° C. to 15 c.cm.; treated with blood charcoal and filtered; extracted with two volumes of ether four times; ether extract filtered and evaporated to dryness at low temperature. A crystalline residue showing similar physical characters to the crystals from the urine was obtained in each of these cases.

Amount of crystals from viscera, 0.0235 gram.

Amount of crystals from brain, 0.0385 gram.

On purifying these crystals a melting point of 184° C., somewhat lower than the melting point of the crystals from the urine, was obtained.

Regarding this evidence as sufficient to show the presence of veronal in the body as well as in the urine, and in view of the fact that the visceral organs were not weighed, it seemed best to construct the probable dose from the urine only. The amount of urine received was 225 c.cm.; it was taken from the bladder seventeen hours after the onset of coma; it does not, therefore, represent the total output of urine in twenty-four hours, in which time 50 per cent. of the veronal is excreted; it is not unreasonable to assume that at least twice this amount of urine was excreted, and that the deceased person took a dose between the fatal dose of 50 grains and the minimum recorded fatal dose of 15 grains.

We are indebted to Mr. F. E. Need, F.C.S., for his assistance with the analytical part of the work.

VERONAL POISONING: CASE OF RECOVERY FROM 125 GRAINS.*

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I WAS recently called between 8 and 9 one Monday morning to see a healthy young lady of 20, who had not appeared at breakfast at the usual hour, and could not be roused by those who entered her room. She had gone to bed quite as usual the night before, and about 11 a member of the household visited her in bed and kissed her "good-night." The patient remarked as her friend left the room, "I am glad you came to wish me 'good-night,'" and this was her last speech for four days.

I found her quite unconscious; shouting, shaking, slapping, and pin-pricks elicited no response whatever. The eyes were open, eyeballs fixed and staring, pupils semi-dilated, light and corneal reflexes abolished. The cheeks wore what seemed a natural flush, the breathing was perfectly quiet and natural and the pulse full and regular (72). There had been no incontinence of urine or faeces. The patient had been the subject of depression and of baseless misapprehensions regarding her health, which a doctor who had been consulted had tried without success to reason away; two days before a bottle of veronal tablets had been taken from her and had since disappeared; neither this bottle nor any other clue to the drug taken could be found on looking round the bedroom.

The patient was held up in a sitting position, a cork placed between the jaws, and a stomach tube passed without much difficulty. The stomach was nearly empty, only a little colourless fluid and mucus being withdrawn. After washing out the stomach, half a cup of black coffee was introduced; about 16 oz. of urine, of normal colour, were withdrawn by a catheter. An attempt was made to administer a soap-and-water enema, but the sphincter was not acting. After hypodermic injection of $\frac{1}{16}$ gr. of strychnine, a second attempt was made, and a good evacuation of the bowel followed, after which half a pint of normal saline was injected and retained. I thought it useless to try stimulation by the galvanic or faradic current, but as some time had now elapsed since the dose of coffee, I passed a stomach tube again and gave a second half cup. This was a

mistake, for it produced retching, and a little of the half-vomited material found its way into the glottis, threatening suffocation. Cyanosis remained after the choking fit was over, and oxygen was then administered; it was found most useful, not only at this stage, but in the recurring attacks of cyanosis which interrupted the progress of the case. From this point Dr. Walsh was good enough to watch the case with me, and to him I am also indebted for references to some of the other cases cited. We decided to adhere to the treatment already commenced—namely, periodical rectal injections of saline and withdrawals of urine by catheter, with oxygen inhalation for cyanosis, and strychnine hypodermically as the pulse weakened.

These measures were fortunately successful, but not without a period during which the patient appeared to be slipping downhill. It appears from the notes that the catheter was passed six times and 85 oz. of urine in all withdrawn; five saline injections were given, in all 3½ pints, and, in addition, three nutrient enemata, each consisting of 5 oz. milk and white of one egg. The pulse and temperature observations are summarized in the following table:

	Pulse.	Temperature.	Remarks.
Monday:			
Morning ...	72	—	
11.15 p.m. ...	114	99.8°	
Tuesday:			
5.15 a.m. ...	—	—	Cyanosis; oxygen ten minutes.
7 a.m. ...	120	102.4°	Resp. 40; strychnine $\frac{3}{16}$ gr.
10 a.m. ...	—	—	Rigor; strychnine.
1.30 p.m. ...	130	103°	Rales right and left bases.
3.30 p.m. ...	—	—	First return of corneal reflex.
6 p.m. ...	88	100.1°	Catheter specimen kept for analysis.
9.30 p.m. ...	92	100.6°	
11.30 p.m. ...	—	—	A few drops of water were swallowed automatically. Restless.
Wednesday:			
12.50 a.m. ...	—	—	Turns herself about.
2 a.m. ...	92	100°	Resp. 26.
6 a.m. ...	96	99.8°	Resp. 28.
6.45 a.m. ...	—	—	Opened her eyes.
7 a.m. ...	—	—	Wept for half an hour.
Noon ...	—	—	Few drops of water swallowed.
2 p.m. ...	84	99°	
3 p.m. ...	64 (!)	100°	Pulse feeble and intermittent; strychnine $\frac{1}{16}$ gr.
4.30 p.m. ...	—	—	Swallowed a spoonful of milk.
5.30 p.m. ...	—	—	Swallowed a spoonful of coffee and brandy.
6.30 p.m. ...	66	99°	
7 p.m. ...	—	—	Strychnine $\frac{1}{16}$ gr.; milk and brandy in spoonfuls. Bowels opened twice.
9.45 p.m. ...	—	—	Drank a glass of water.
10 p.m. ...	68	99°	
11 p.m. ...	—	—	Opened her eyes and cried a good deal.
Thursday:			
1.45 a.m. ...	68	98.8°	Resp. 26.
6 a.m. ...	82	98°	
8.30 a.m. ...	—	—	Swallowed half a cup of milky tea.
9 a.m. ...	70	98.2°	Catheter passed for last time.
11.30 a.m. ...	—	—	Has talked rationally.

She slept most of the time, with occasional restless fits, and did not talk any more until Friday morning, when she awoke full of her old misapprehensions and wept a good deal. She was now able to tell us that she had taken a whole bottleful of veronal, twenty-five tablets five at a time, before getting into bed the night before. She could not remember what she had done with the bottle, but later recalled that she had put it into her sponge bag, where we found it empty. In a day or two she was none the worse for her experience, excepting that a transient erythematous rash appeared on trunk and thighs, and she was in places bruised from attempts to rouse her.

The period of total or partial unconsciousness lasted three and a half days, although the corneal reflex returned in about forty hours. Several fits of weeping preceded her return to speaking consciousness, the mind evidently picking up the emotional attitude which preceded the

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