content of the serum. When the patient's own cells were used, however, the result was very different. In only 19 cases were the indices between 0·8 and 1·2; 25 were below 0·8 and none was above 1·2. Still more marked was the relation of the index found when the patient's cells were used to that found when my cells were used, for the index was lower with the patient's own cells in 38 cases and higher in only four, while in two the index was the same with both the patient's cells and my cells.

My thanks are due to Dr. C. Slater for the use of his laboratory and to Dr. A. F. Stabb for giving me access to his patients. The following list gives the period of labour at which the blood was taken and the two indices:—

Case.	Number of hours or days in labour when the blood was taken.	Hours after delivery when the blood was taken.	Index with patient's cells.	Index with control cells.
1	4 hours.	—	0·73	1·0
2	5 ,,	—	0·63	1·0
3	Short cervix.	—	0·93	0·86
4	,, ,,	—	1·0	1·16
5	,, ,,	—	0·8	1·0
6	—	1	0·8	0·8
7	21 hours.	—	0·9	1·1
8	9 ,,	—	0·6	0·9
9	7 ,,	—	0·83	1·27
10	15 ,,	—	1·15	0·71
11	—	6	0·77	1·04
12	3 days.	—	0·75	1·17
13	12 hours.	—	0·74	1·11
14	14 ,,	—	0·6	1·0
15	3 ,,	—	0·65	1·2
16	6 ,,	—	0·7	1·2
17	12 ,,	—	0·51	0·62
18	12 ,,	—	0·83	0·83
19	18 ,,	—	0·6	1·01
20	30 ,,	—	0·73	1·06
21	8 ,,	—	0·76	1·06
22	7 ,,	—	0·72	0·92
23	12 ,,	—	0·64	1·29
24	12 ,,	—	0·9	1·2
25	8 ,,	—	0·7	0·91
26	12 ,,	—	0·7	0·92
27	10 ,,	—	0·66	1·0
28	24 ,,	—	1·0	1·06
29	—	12	0·8	0·9
30	48 hours.	—	1·0	1·2
31	36 ,,	—	0·44	0·98
32	24 ,,	—	0·5	1·1
33	—	1½	1·0	1·3
34	8 hours.	—	1·16	1·18
35	—	7½	0·9	1·13
36	—	½	0·6	1·06
37	—	—	0·61	1·0
38	—	8	0·81	0·75
39	14 hours.	—	0·65	0·75
40	30 ,,	—	0·52	1·2
41	—	5	0·64	1·0
42	—	2	0·91	1·0
43	—	2	0·87	1·05
44	—	3	1·14	1·04

New Cavendish-street, W.

SANITARY INSPECTORS' EXAMINATION BOARD.—An examination for certificates of qualification for the appointment of sanitary inspector or inspector of nuisances under Section 108 (2) (*d*) of the Public Health (London) Act, 1891, will be held in London on Tuesday, May 5th next, and the four following days. An examination will also be held in Birmingham in June next if sufficient candidates notify their intention of presenting themselves before May 18th. Particulars of the above examinations will be forwarded on application to the honorary secretary, the Sanitary Inspectors' Examination Board, 1, Adelaide-buildings, London Bridge, London, E.C.

"CURES" FOR ASTHMA: FATAL CASE FROM AN OVERDOSE OF OIL OF SAGE.

BY HENRY T. M. WHITLING, M.B., B.S. DURH., M.R.C.S. ENG.

ON Feb. 7th last my partner, Dr. G. D. Laing, was called at 9.30 A.M. to a woman, aged 44 years, and on his arrival found her collapsed with cardiac failure and dyspnœa, after having taken about two teaspoonfuls of oil of sage. He injected strychnine hypodermically and she rallied and appeared better before he left. Later, at 11.30, I was called to her urgently since she was much worse, and we proceeded to her house together. On my arrival I found her undressed and lying on a bed, with a deeply cyanotic face, "air-hunger," and with epileptiform convulsions. The extremities were cold, the hands being peculiarly leaden-coloured; the heart was most irregular and too erratic to be counted but very quick. Though apparently dying, as I learnt that she had not vomited, I passed down the tube of a stomach pump and extracted about one and a half pints of fluid, smelling most powerfully of the characteristic odour of sage. Then I washed out the stomach with hot water until it returned perfectly clear, and pumped 8 ounces of hot milk, white of egg, and half an ounce of brandy into the stomach. The patient was wrapped in hot blankets and given plenty of air, while my partner again injected strychnine. She, however, died in convulsions about 2 P.M. I was shown a 4 ounce bottle of oil of sage from which 2 drachms had been taken.

A necropsy, limited to the trunk, was performed by myself and Dr. Laing on Feb. 11th, and we found the heart to be normal, the muscle well developed, and no valvular disease or degeneration. The lungs were emphysematous; no tubercle was present. There was some engorgement at the bases; no bronchitis was present. The stomach was dilated; only some of the milk which had been injected was left. There was no strong smell of oil. Patchy ecchymosis was present along the greater curvature towards the pylorus; there were no ulceration, perforation, &c. In the intestines there was patchy ecchymosis of a similar character extending along the mucous membrane for from 2 to 3 feet only, and there was a strong smell of sage. The liver was normal; no signs of alcoholism were present. The kidneys were normal. The uterus was normal; the woman was not pregnant.

This woman was a sufferer from chronic asthma and had been recommended by a friend to take one drop of oil of sage, gradually increased to five drops, in two teaspoonfuls of brandy every morning for 14 days. By some blunder two teaspoonfuls of oil of sage were considered by the victim to be the dose, and the first dose taken ended fatally as above. The peculiarity of the case is that so far as my personal efforts have been able I can find no other fatal case of poisoning by oil of sage in England, though a considerable number of records have been searched. Moreover, it is extremely difficult to procure, one very large and eminent firm of chemists in the Midlands never having stocked or sold it. Sage "tea" (decoction) is generally used in the country for "fevers," "chest" complaints, and for uterine derangements. As regards the latter, it is credited with an action of an abortive, so we had to be certain that this woman was not pregnant, as in large doses of these oils there may be, and often is, an ulterior motive beyond a cure for chest troubles. In this case there was no pregnancy, nor did she or her husband ever suspect it.

The composition of oil of sage has kindly been supplied to me by Messrs. Burroughs and Wellcome, to whom I am also greatly indebted for looking up notes on its therapeutical action. I quote the following account of its pharmacology from the nineteenth edition of the "United States Dispensatory."

SALVIA (SAGE).

Both these and the flowering summits have a strong fragrant odour, and a warm, bitterish aromatic, somewhat astringent taste. They abound in a volatile oil, which may be obtained separate by distillation with water. Muir (J. Chem. S., 37, p. 678) found it to contain a terpene boiling at 150° C. (312·8° F.), another boiling at 171° C. (339 8° F.) thujone, $C_{10}H_{16}O$, a liquid boiling at from 197° to 203° C., and ordinary camphor, $C_{10}H_{16}O$. In the fresh oil the first terpene predominates. On standing, the amount of thujone increases, and then the camphor. The oil from the English leaves contains only a sesquiterpene $C_{15}H_{24}$, of the boiling point 260° C. (500° F.). Wallach (Ann. Ch. Ph., 1889) states that the first portions contain pinene and cineol but the greater portion consists of thujone, $C_{10}H_{16}O$ (formerly called salviol). Ferrous sulphate strikes a black colour with infusion of sage.

Uses.—Sage unites slightly tonic, astringent, and aromatic properties. By the ancients it was highly esteemed; it is at present little used, except as a condiment, but has been given in dyspepsia, also for colliquative sweats. The dose of the powdered leaves is from 20 to 60 grains (1·3 to 3·9 gm.). Dose of the infusion (1 oz. in 1 pint of boiling water), 2 fluid ounces (60 cc.). According to Cadeac and Meunier (Lyons Med., May, 1891) the volatile oil of sage is a violent epileptiform convulsant, resembling in its action the oil of absinthe, but less powerful.

Dose.—From 20 to 60 grains (1·3 to 3·9 gm.).

The features of poisoning in this case are apparently characteristic of all essential oils. There appears strong inhibition of the pneumogastric nerve, resulting in a weak, feeble, and irregular heart beat and dyspnœa, these oils acting through the medulla. Epileptiform convulsions also arise and in this case became stronger before death. (Oil of eucalyptus likewise causes them.) The cyanosis was remarkable, however, and was most noticeable in the hands. Of all organs the *lungs* smelt most powerfully of sage. There was only that amount of ecchymosis in the stomach and intestine which would be expected from any irritant, as a volatile oil would be in such a dose; there was no erosion or perforation. In the *Lyons Médical* for May, 1891 (U.S. Dispensatory), M. Cadeac and M. Meunier report that five centigrammes of *essence* of sage injected intravenously into a dog produced epileptiform convulsions, and that 70 centigrammes (about 10½ grains) injected into a dog weighing 21 kilogrammes caused death after 35 epileptiform fits. The ordinary essence contains a proportion of 1 of oil in 4 of spirit (1 in 5), so that if 70 centigrammes of *essence* caused death in a dog of 21 kilogrammes (46 pounds) it would only be receiving intravenously a dose of about two minims. The woman weighed about 9½ stones (133 pounds), so that injected intravenously we might expect a dose of six minims to be fatal. In this case about 120 minims were taken and proved fatal, which, allowing for the difference between intravenously and per os, is a dose probably considerably over the amount necessary to cause death. From 30 to 40 drops by the mouth would generally cause severe symptoms, if not death, judging by the above experiment.

The oil which was the cause of this woman's death had in the first instance been imported from Austria. This is worthy of the remark that the English salvia officinalis only contains a sesquiterpene $C_{15}H_{24}$, whilst foreign salvia contains two terpenes, thujone $C_{10}H_{16}O$, and camphor $C_{10}H_{16}O$. The oil was analysed by two independent analysts (Messrs. Harvey and Wilkin and Mr. J. R. Richardson, Leicester) and was found normal. The specific gravity was 0·9229. Optical rotation + 13·6° in 100 millimetres. Two volumes of 80 per cent. alcohol, soluble.

It is a sad example as to how the public lose their lives in endeavouring to "cure" themselves by using "old women's" remedies and "quack" medicines instead of attempting to obtain relief through the proper and more scientific channels. This genuinely comes under the first head, the deceased having obtained her muddled-up "prescription" through a neighbouring old woman.

Husbands Bosworth, Rugby.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF INJURY TO THE BLADDER DURING AN OPERATION ON A STRANGULATED FEMORAL HERNIA.

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ASSISTANT SURGEON TO THE ROYAL FREE AND ITALIAN HOSPITALS; SURGICAL TUTOR AT KING'S COLLEGE HOSPITAL, LONDON.

A WOMAN, 33 years of age, was admitted to the Royal Free Hospital on Oct. 1st, 1904. For six years she had suffered from a femoral hernia for which a truss had been worn. During the last two years the hernia had been irreducible but had given rise to no other symptoms, and she had continued the use of the truss. On Sept. 26th she went for a long walk. On the next day vomiting began, accompanied by intense abdominal pain. The hernia increased in size and these symptoms persisted till she was admitted. For some years she had occasional frequency of micturition. She had been married three years and had two children. The hernia was larger during each pregnancy, and after the birth of the first child she had prolapsus uteri. On examination a strangulated left femoral hernia was found. The swelling measured 2½ or 3 inches in diameter; the skin over it was somewhat reddened. The abdomen was a little distended and peristalsis of the intestine was visible.

Operation was at once undertaken. In opening the sac, which was very thin, the intestine was incised. The wound was sewn up at once by a double row of continuous sutures. The stricture having been divided the intestine was replaced in the abdominal cavity. Whilst the sac was being dissected from its surroundings a cavity, lined by mucous membrane, was opened on the inner side of the sac. No urine escaped, but on passing a catheter per urethram it was quite evident that the bladder had been cut into. A little careful dissection made it possible to free the prolapsed portion of the bladder from the outer surface of the sac as high as its neck, which was then transfixed and closed in the usual manner. The aperture in the bladder was closed by a double row of sutures, care being taken that the inner row did not penetrate the surface of the mucous membrane and that the cut edges of the latter were brought into apposition. The prolapsed portion of the bladder was then replaced in the abdominal cavity and the hernial ring partially closed, a small drainage-tube being passed through it into the sub-peritoneal tissue. The external wound was sutured except where the tube came through.

The abdominal pain and vomiting ceased at once and the bowels were opened on the fourth day. For the first two or three days the urine contained some blood; at the end of a week the urine was normal. Slight suppuration occurred in the wound, but there was no rise in temperature and the highest pulse-rate recorded was 100; generally the pulse was 84 per minute. There was no escape of urine through the drainage-tube. The patient left the hospital on Oct. 22nd quite well except for a small sinus, from which a stitch was subsequently extracted. The wound then healed soundly.

There was nothing to suggest that the bladder was prolapsed through the crural canal and was adherent to the outer surface of the sac till it was opened. No unusual amount of thickening was detected and the wall of the prolapsed portion was not abnormally thick. A large portion of the bladder was prolapsed, because the cavity opened was very large and the catheter passed straight into it. The history of the prolapsus uteri is interesting, but whilst the patient was in the hospital and when seen afterwards there did not appear to be any such descent of the uterus. It is interesting also to note that the hernia became larger during each pregnancy and had been irreducible for two years. Possibly the pregnancies caused the bladder to prolapse through the crural ring and the irreducibility was due to the bladder coming down outside the sac. There was no suggestion that the size of the swelling varied according to the amount of urine in the bladder, and, as already stated, no urinary symptoms except occasional frequency of micturition were present.

Harley-street, W.

NOTE ON A CASE OF TETANUS SUCCESSFULLY TREATED WITH ANTITOXIN.

BY J. BASIL COOK, M.D., CH.B. VICT., D.P.H. CANTAB., M.R.C.S. ENG., L.R.C.P. LOND.,
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THE patient in this case was a man, 64 years of age, who was admitted into Kensington Infirmary on August 5th, 1907, suffering from tetanus. The history was to the effect that he had to leave his work on July 31st owing to severe pain in the jaw and inability to open his mouth. On admission he presented an absolutely typical risus sardonicus. His teeth were tightly clenched and there were twitchings of the facial muscles. There was marked opisthotonos, the muscular rigidity being so great that by lifting the feet the whole of the body, with the exception of the head, could be raised from the bed. The arms were unaffected. Fluids only could be swallowed. There was a small abrasion on the left foot. The patient was quite conscious, he was perspiring freely, and his temperature was 98° F. He was given 15 grains of chloral hydrate and 15 grains of potassium bromide every four hours. On August 6th antitetanic serum obtained from the Pasteur