THE TOLERATION OF ARSENIC.

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IN connection with the epidemic of arsenical poisoning at present so widespread, a few statistics as to the tolerance of arsenious salts administered through a long period in regular doses may be of value. To Dr. Stopford Taylor, Honorary Attending Physician to the Liverpool Skin Hospital, I owe the suggestion to compile these statistics, and I am deeply indebted to him for permission to make use of the records of patients attending the outdoor department of that institution.

Table of Statistics.

No.	Number in Hospital Register.	Sex.	Age.	Duration of Administration.		Amount of Donovan's Solution taken per Diem.	Equivalent in Grains of As ₂ S ₃ per Diem.	Symptoms of Intolerance.
				Months.	Minims.			
1	9	M.	37	5	45	0.409	(a)	
2	12	F.	32	6	30	0.272	o	
3	24	F.	—	4	30	0.272	o	
4	70	F.	21	3	15	0.136	o	
5	75	M.	42	11	45	0.409	(b)	
6	115	M.	52	12	15	0.136	o	
7	187	F.	34	1	45	0.409	o	
8	245	F.	55	11	15	0.136	o	
9	256	M.	50	5	30	0.272	o	
10	262	F.	33	4	45	0.409	o	
11	265	F.	44	10	45	0.409	(c)	
12	295	M.	26	6½	45	0.409	o	
13	419	M.	40	5	45	0.409	o	
14	514	F.	46	10	30	0.272	o	
15	562	F.	24	6	30	0.272	o	
16	600	M.	56	8	30	0.272	o	
17	660	F.	50	1	15	0.136	o	
18	693	M.	21	8	30	0.272	o	
19	757	F.	52	7	15	0.136	o	
20	770	F.	32	7	15	0.136	o	
21	775	F.	33	7	30	0.272	o	
22	789	F.	54	8	30	0.272	o	
23	846	F.	—	8	30	0.272	o	
24	858	M.	28	3	30	0.272	o	
25	862	M.	40	7	45	0.409	(d)	
26	881	M.	19	6	15	0.136	o	
27	1,380	F.	4	3	9	0.081	o	
28	1,369	M.	37	3	30	0.272	o	
29	1,394	F.	22	3	15	0.136	o	
30	1,398	F.	54	1	15	0.136	o	
31	1,399	M.	36	1	30	0.272	o	
32	1,443	M.	15	1	15	0.136	o	
33	1,444	M.	11	3	15	0.136	o	
34	1,448	M.	34	3	15	0.136	o	
35	1,504	M.	32	1	30	0.272	o	
36	1,506	M.	41	1	30	0.272	o	
37	1,487	F.	23	3	30	0.272	o	
38	1,496	F.	22	1	30	0.272	o	
39	1,477	M.	30	3	15	0.136	o	
40	1,451	F.	10	2	15	0.136	o	
41	1,552	F.	7	1	9	0.081	o	
42	932	F.	16	5	15	0.136	o	
43	992	F.	31	6	30	0.272	o	
44	1,047	F.	17	4	15	0.136	o	
45	1,098	F.	11	3	15	0.136	o	
46	1,108	F.	13	6	22½	0.204	o	
47	1,113	M.	49	3	30	0.272	o	
48	1,137	M.	21	4	30	0.272	o	

NOTES.

(a) Donovan's solution stopped because eyes suffused and patient sick after food.

(b) Patient was a sailor, and therefore attendance was irregular.

(c) After three months' administration of Donovan's solution it was stopped for 8 weeks, not, however, because of any toxic symptoms. It was again renewed and continued till now.

(d) Pigmentation of arms and legs.

o signifies that no symptoms of intolerance were observed.

A considerable proportion of the patients attending the hospital clinics suffer from skin diseases, for which the administration of arsenic is indicated; and the preparation which Dr. Taylor usually employs is the double iodide of arsenic and mercury, better known as Donovan's solution. So well is arsenic in this form tolerated by the patients, that toxic symptoms are of extreme rarity. As the figures show,

some patients have taken daily for months 45 minims of Donovan's solution (corresponding to 0.409 gr. of arsenious iodide) without any untoward symptom appearing. Facts of this kind give one reasonable ground for wondering if the infinitesimally small amount of arsenic found in impure beer can justly be held responsible for all the cases of peripheral neuritis at present laid to its charge; but I shall postpone discussion of the matter until I have quoted the statistics. The cases are drawn at random from the large external clientèle of the hospital.

The table of statistics shows what large amounts of arsenious iodide patients can tolerate. Some of the cases were taking into their systems for long periods nearly half a grain of the salt per diem without any results but beneficial ones. To consume as much arsenic as these patients did, the drinker of arsenical beer would have to swallow an ocean of the beverage, for, so far as I am aware, the greatest amount of the poison found in any sample did not exceed 0.28 per gallon.¹

It is a matter of common knowledge that arsenic and its salts exhibited for a time in small doses establish a tolerance, and the arsenic eaters of the Austrian Tyrol are the classical proofs of the fact. How is it, then, that the small quantities of the poison found in beer have not produced a like effect? Is it because the alcoholic medium, in which the arsenic is, intensifies its action? It might do this in several ways. First, there might be a chemical action between the menstruum and the salt, increasing the toxicity of the latter. Or it may be that there is a combined toxic effect, for both alcohol and arsenic can produce peripheral neuritis. Or possibly the alcohol interferes with the proper elimination of the drug by producing degenerative changes in various organs. This last hypothesis would explain why Donovan's solution is so well borne; for since it is a double iodide, and a potent alternative, its elimination must be greatly facilitated.

A consideration of the statistics forces one to the conclusion that an undue importance has been attached to the arsenic in the beer. Only those cases should be ascribed to arsenic in which there is a well-marked clinical picture of arsenical toxæmia, or in which arsenic has been found in the excretions, or *post mortem* in the organs of the body.

Dr. Taylor informs me that of the 2,000 patients who have passed through his hands at the hospital during the last fourteen months, only one could fairly be said to suffer from arsenic poisoning. The statement is of interest, for as many of the symptoms of chronic arsenical poisoning appear on the skin,² it is likely that if the epidemic were as widespread as the alarmists would have us believe, the dermatologists would have seen more of its effects.

REFERENCES.

¹ BRITISH MEDICAL JOURNAL, December 1st, 1900, p. 1538. ² *Ibid.*, December 8th, p. 1630.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

HERPES FOLLOWING THE ILIO-HYPOGASTRIC AND ILIO-INGUINAL NERVES.

ON April 2nd I saw Mrs. A., aged 50 years, a small and very anæmic woman. She complained of great weakness and of "pain in the left side." There was a well-marked vesicular rash, mapping out the course of the ilio-hypogastric and ilio-inguinal nerves. The rash began behind in a group of vesicles lying just to the left of the vertebral spines at the level of the first lumbar. After the first couple of groups posteriorly the vesicles were arranged in two rows, the upper representing the course of the ilio-hypogastric nerve and the lower that of the ilio-inguinal. These sloped obliquely downwards until they reached the crest of the ilium, about its middle point. Here were several isolated vesicles descending over the gluteal region, and mapping out the course of the iliac branch of the ilio-hypogastric nerve, while the two rows still continued their course round the body, a little above the iliac crest. The upper row terminated about an inch above the pubes, and several single vesicles crossed the middle line, re-