NATURAL APERIENT BITTER WATERS.

BY OTTO HEHNER.

SOME time ago the attention of the medical profession was drawn to the important subject of accuracy in dispensing of medicines, by the publication of a joint report by Dr. Edward Seaton and myself. That report having been productive of some good, I venture now to refer to an allied subject, in the hope that a remedy may be found for an evil which concerns medical men and the public alike.

For a number of years past the sale of natural aperient magnesian waters has been considerably increasing, and there is now a large variety of such waters at the disposal of the practitioner. These waters are generally sold in bottles, upon the labels of which, in most cases, analytical figures are printed, which allege to represent the composition of the contents, and are doubtless intended as a guide in fixing the dose of the water to be used. There are also, generally, directions on the bottles to the effect that a wineglassful is the average dose.

It should be generally known that the waters in question, being obtained in the majority of cases from very shallow wells, are liable to very wide fluctuations in composition and consequently in therapeutical activity, and that it is impossible to represent, once for all, the composition of the waters by a single analysis. True mineral waters, coming from great depths, may and do remain unchanged in composition for a long number of years, but magnesian bitter waters, as at present collected, fluctuate in strength almost from day to day; stronger waters collect at the bottom of the wells than in the upper strata, and it is possible, therefore, to obtain at will strongly or relatively slightly saline solutions from the same well.

The following analyses, obtained from samples which I have lately purchased in the London market, represent six different waters, all coming from the Ofen district in Hungary, and frequently taken to be equivalent of each other.

10,000 parts contained:—

	A	B	C	D	E	F	G
Sulphuric acid..	187.56	197.08	232.20	242.34	247.48	279.37	310.60
Chlorine ..	13.80	15.95	8.87	10.60	10.30	13.85	14.00
Carbonic acid ..	2.29	2.51	3.87	4.36	3.08	5.81	5.06
Magnesia ..	54.00	53.19	56.85	71.95	65.66	97.24	101.60
Lime ..	6.52	6.12	6.36	6.42	6.24	7.22	7.27
Soda ..	67.75	79.36	91.74	87.88	96.40	91.05	92.17
Specific gravity..	1031.1	1032.7	1037.0	1039.5	1039.7	1048.7	1049.6

Samples D and G represent the same brand of water at different times.

To render these analyses more readily comparable with each other, I will assume that the whole of the magnesia and soda is present in the form of sulphates, which may the more readily be done as the proportions of carbonate of magnesia and chloride of sodium are small, and but little different in the seven samples :—

Magnesium sulphate	..162·00	159·57	170·55	215·85	196·98	291·72	304·80
Sodium sulphate	..155·16	181·76	210·11	201·27	220·79	208·53	211·09
	<u>317·16</u>	<u>341·33</u>	<u>380·66</u>	<u>417·12</u>	<u>417·77</u>	<u>500·25</u>	<u>515·89</u>

Taking the proportion of magnesium sulphate as the standard of strength, it is seen that of sample B 1·91 parts are necessary to produce the same effect as one part of sample G.

As the laxative powers of magnesium sulphate and sodium sulphate are nearly equal, we may more fairly compare the totals of the two salts as the measure of the activity of the waters. In that case, 1·63 parts of sample A are equal in effect to one part of G.

The readiest measure of the strength is the specific gravity. According to this A stands to G as 1 to 1·59, the quantities to be taken being of course inversely proportional.

It appears to me that the medical profession should be distinctly aware of the wide differences in the composition of these waters, and should either insist upon some measure of uniformity, which by care in bottling the waters could easily be obtained, or upon an exact statement of strength upon each bottle, be it by analytical figures, or by specific gravity only.

Imagine a patient who has been accustomed to a particular dose of, say, water A, taking an equal dose of sample G. The purgative action would be increased by almost two-thirds. Even if serious consequences might not be the result, the uncertainty of the remedy is apparent.

There could not be any practical difficulty whatever to obtain uniformity in composition, by excluding from the wells all surface water, or such coming from strata poor in saline ingredients. Even then fluctuations, but within narrower limits, would occur. An exact statement of the specific gravity of the contents of each bottle should therefore be made, so that any medical man would be in a position exactly to determine the necessary dose.* The analyses at present given upon the labels are of no value whatever for this purpose, as they do not represent the composition of the contents, but of samples specially selected to show high saline proportions, and often made many years ago.

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* The figures of the specific gravity above 1,000 very nearly representing the sum of the magnesium and sodium sulphates per 1,000 parts of the water. Thus in sample A a specific gravity of 1031·1 corresponds to 31·7 parts of the sulphates per 1,000 of the water.