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NOTE ON A SALT SPRING NEAR BAWGYO,  
THIBAW STATE.

BY

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*Situation of the Salt spring.*—It is a rule that great faults are usually accompanied by springs following the line of disturbance. The great fault which begins near the Gôkteik pass and extends probably far beyond the Salween, is no exception to this rule. Its way is marked by several springs, the water of which is more or less alkaline, and the temperature of which reaches the boiling-point in some cases. It is of course only the salt springs that are of special economical value, as under skilful management they might prove an exceedingly profitable source of revenue. For the present, only one salt spring is known, from which salt is produced by the ordinary method of evaporating the brine in cauldrons. This salt spring is situated about half a mile to the west of the village of Bawgyo in the Thibaw State; its geographical position is about  $97^{\circ} 15'$  East and Long.  $22^{\circ} 35'$  North Lat. A regular well has been dug by the villagers, which is well lined with timber, and from which the brine is drawn. I have been told that there was formerly a second well, which, however, yielded so large a quantity of brine that the villagers were unable to work it, and therefore filled it up again.

2. *Analysis of the brine.*—The analysis of a sample of the brine taken by me and sent to Rangoon proved that one gallon contains 8,771 grains of solid residue, or 12.53 per cent. I do not think, however, that this represents the average percentage of solid matter contained in the brine. The villagers stated that during the rainy season one of the cauldrons produced  $2\frac{1}{2}$  viss per day. During the hot season the same quantity of water produced 4 viss of salt per day. The reason of this difference is easily intelligible. During the rainy season a considerable quantity of the rain water falls into the well, thus diluting the brine, the diluted portion of which, being of course of lower specific gravity, floats on the top and is therefore extracted. During the hot season no such dilution takes place, hence the difference in the output. I took the sample on the 8th June, that is, at a time of the year when it had already rained heavily, so that the brine was already a little diluted.

Supposing the amount of solid matter to be correct, the brine would contain 5,288 grains of sodium chloride (common salt), 3,038 grains of sodium sulphate, 87 grains of calcium sulphate, and 75 grains of magnesium sulphate, to the gallon, the rest being moisture, organic matter, &c., according to the following analysis:—

|  | Per cent.     |
|--|---------------|
| Sodium chloride . . . . .                              | 60.30         |
| Sodium sulphate . . . . .                              | 34.64         |
| Calcium sulphate . . . . .                             | 1.00          |
| Magnesium sulphate . . . . .                           | 0.86          |
| Undetermined (moisture, organic matter, &c.) . . . . . | 3.30          |
| <b>TOTAL</b> . . . . .                                 | <b>100.10</b> |

Unfortunately I have only the analysis of the brine of Sadwingyi for making a comparison. Mr. Blanford states that this salt spring is one of the most productive known in Pegu. It contained 4,704 grains of salt to the gallon. Mr. Blanford does not say whether under the word "salt" he understands the total of solid

matter, *i.e.* sodium chloride, sodium sulphate, &c., or whether he means only the amount of sodium chloride. Supposing the word "salt" means the amount of sodium chloride, the Bawgyo brine would contain a considerably larger quantity of salt than the richest brine known up to the present time in Burma. If, however, the amount represents the total of solid matter, the Bawgyo brine contains nearly double the quantity. At any rate we may consider the Bawgyo brine to be the richest now known in Burma.

3. *Analysis of salt as produced by the natives from the brine and sold in the bazaar.*—The first matter of importance which the natives everywhere told me about the Bawgyo salt was, that it could not be used for food, as it had a peculiar bitter taste; consequently, it could hardly be sold in the bazaar, and 20 viss only fetched 4 annas, while the price of best imported salt was 6 annas per viss. When tasting the salt I did not notice the bitter taste particularly, but from the mode of manufacturing the salt, by evaporating the brine till nothing but the solid matter was left, it was perfectly clear that all salts, which were contained in the brine and which have a particularly unpalatable taste, such as sodium sulphate, were contained in the "salt," and hence its peculiar bitter taste. The analysis of a sample of salt confirmed my idea. The salt as sold in the bazaar had the following composition:—

|  | Per cent. |
|--|-----------|
| Sodium chloride . . . . .              | 50.14     |
| Sodium sulphate . . . . .              | 42.33     |
| Calcium sulphate . . . . .             | 0.63      |
| Magnesium sulphate, a trace . . . . .  | ...       |
| Undetermined (moisture, &c.) . . . . . | 6.90      |
|  | <hr/>     |
| TOTAL . . . . .                        | 100.00    |
|  | <hr/>     |

4. *Manufacture of the salt.*—The manufacture of salt is simple enough. Every fifth day the brine is drawn from the well and filled into large wooden troughs coarsely cut out from a log; from there the brine is filled into flat cauldrons and boiled down till all the water is evaporated. The salt is then taken out, and is ready for sale. Under an ordinary bamboo shed there are about 14 wooden troughs to take up the brine and salt, arranged in a square, the centre of which is occupied by three furnaces, each containing two cauldrons. The furnace is not constructed in any particular way; its length is about 6 feet, its height about 1 foot 6 inches, and it is of oblong shape. The front opening at one of the small sides serves for the supply of firewood, while the back opening on the opposite side serves as an outlet for the smoke. At the top of the furnace are two flat cauldrons, each of about  $2\frac{1}{2}$  to 3 feet in diameter; on one side of each cauldron there are two low baskets to receive the salt which is skimmed from the surface of the brine. The natives state that such a furnace does not last longer than two months; at the end of that period it is broken up, and the clay pounded and mixed with brine to extract the salt which collected in it during the boiling process. The total number of cauldrons is said to be 30.

5. *Production and working expenses.*—It was extremely difficult to get any reliable information about the production, as either the natives really did not know the exact amount produced every month, or, what seems to me more likely, did not

want to give me exact information for fear of being taxed. It was stated that the daily production is about five cauldrons, each yielding  $2\frac{1}{2}$  viss of salt during the rainy season and 4 viss during the dry season. The daily production would thus range from  $12\frac{1}{2}$  to 20 viss. Supposing that during six months the brine yields the large and during six months the smaller quantity, the present total annual production would amount to 5,850 viss. Of this quantity half goes to the Sawbwa as royalty and half to the villagers as reward for their labour. The salt being sold at R2-8 per 100 viss, the total gross value amounts to R146-8. As the villagers, however stated that the working expenses, particularly for firewood, amounted to R2 per 100 viss, the actual surplus would amount to the paltry sum of R29-8 per annum, half of which goes to the Sawbwa. Should these statements be correct, it is clear why the villagers do not like the work, as it does not pay enough in their opinion.