

as he remarks, a good idea of the very complicated mixture which constituted an ancient medicine. It reads: "Take equal parts of calcined glass, of the ashes of scorpions, of the ashes of the roots of colewort, of the ashes of a hare, of the ashes of egg shells from which the chickens have escaped, of the stones found in the sponge, of goat's blood dried and powdered, of lapidis judaici, the same of parsley, wild carrots, marsh mallow seeds and gum arabic. The whole to be made into an electuary with honey." After this a salt of Tartar, probably potass. carb. in an infusion of parsley, with some mixture containing lime, was freely used, or a dram of the powder of calcined egg shells in white wine was given twice a day. But perhaps the most remarkable of all these prescriptions is that of Mrs. Joanna Stephens, which was purchased by the English Government from its inventor for the sum of £5,000, for the purpose of being made public. The document thus obtained reads as follows:—"My medicines are a powder, a decoction and pills." The powder consisted of egg shells and snails, both calcined. The decoction was made by boiling some herbs with a ball in water. The ball consisted of soap and honey, with swine's cresses which had been burnt to blackness. The pills consist of calcined snails, wild carrot seeds, burdock seeds, ashen keys, hips and hawes, all burned to blackness and made up with soap and honey.

Morand, the famous French surgeon, who came to London about this time to report to the French Academy on Cheselden's operation of lithotomy, made some very careful experiments as to the utility of these medicines. In his report he says that he is unable to certify to a single case in which the stone was dissolved, but that four patients thought themselves cured. The bodies of these patients were examined after death, and one or more small stones existed in every bladder.

In looking over these extraordinary formulæ we must be struck with the fact that they all contain, in some form, potash and lime; soap leys or salt of tartar furnishing the potash, and the calcined egg shell, snails, bones, etc., the lime,—and a considerable amount of evidence has been published on good authority to show

their utility at least in allaying pain where stone existed. Gradually, as the use of alkaline solvents became more general, vegetable products were also used—at first, to produce by their combustion the active agent, potash, and later in the form of decoctions of the fresh plant, the chief virtue in which existed in their soothing effect on the walls of the bladder. So in the last two centuries we find in constant use the uva ursi, saxifrage, pimpinella, fraxinella, broom, garden radish, common nettle, couch grass, etc., etc.

In the present day, the medicinal remedies used by the profession everywhere are hydrate of potash, liquor potassæ, the bicarbonate, acetate and tartrate of potash. The less frequently used are soda and lithia in different forms. The reason why this alkaline treatment has in all ages been looked upon with favour is easily discovered if we look at the composition of calculi in general. Three-fifths of all the calculi which form in the kidney or bladder of adults are composed of uric acid or the urates. The other two-fifths, or nearly so, are phosphatic. In three or four per cent. the stone is formed of oxalate of lime, and in one in a great many hundred of cystine. The uric acid calculus is found in water abounding in acid, the excess of which is expressed by the stone. The phosphatic stone is the product of alkaline urine, generally ammoniacal, of which condition it is the result. The urates, oxalates, and a few of the phosphates are found in the kidney, and are the product of certain constitutional derangements above alluded to. The greater part of the phosphatic material, whether in mixed or in phosphatic stones, is produced solely in the bladder, and is the product not so much of any constitutional state as of a local diseased condition. If we examine these calculi still further, we will find that a difference exists in their nuclei also. The nucleus of the oxalate of lime calculus consists, not of mucus of epithelium, as is generally the case in the phosphatic stone, but is of the same composition as the exterior. The little mass is seen under the microscope to consist of a number of dumb-bell crystals firmly attached to one another. Dr. Lionel Beale, more than twenty years ago, found these collections in the uriferous tubes of kidneys obtained from post