

Fig. 4.—Chronic gout. Asymmetrical lesions and deformities.

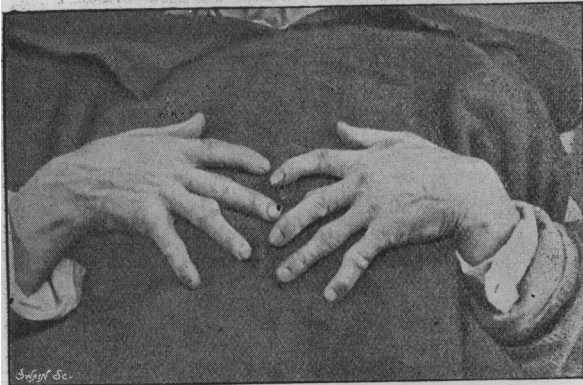


Fig. 5. Chronic gout. Asymmetrical lesions and deformities.

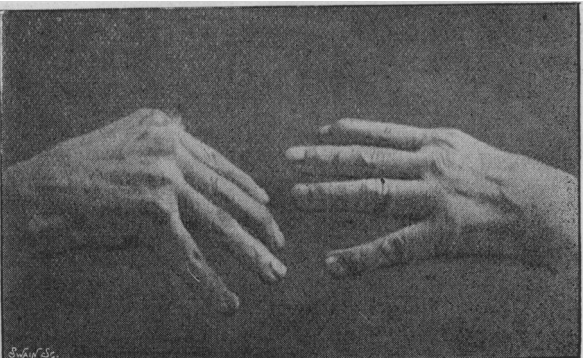


Fig. 6.—Chronic gout. Ulnar flexion of right hand. Asymmetrical lesions and deformities.

similar to what I have just described. As disease progresses, the joints become more or less fixed in this position by either bony or uratic deposit, and the position is by degrees magnified into a marked deformity.

### ON THE RHYTHMIC CONTRACTILITY OF THE SPLEEN.<sup>1</sup>

BY

E. A. SCHÄFER, F.R.S., and B. MOORE.

Jodrell Professor of Physiology at University College.

(From the Physiological Laboratory, University College.)

THE authors have investigated the rhythmic contractility of the spleen, which was discovered by Roy<sup>2</sup>, and the influence of nerves, drugs, and animal extracts upon it. For this purpose the changes in its volume have been studied by aid of a specially constructed plethysmograph, so arranged as to afford the least possible obstruction to the blood vessels entering and leaving the hilum. Under these circum-

stances the spleen exhibits evidence of responding immediately by alterations in volume to every alteration in blood pressure, respiratory and cardiac, and *a fortiori* to such greater changes as are produced by compression of the aorta (contrary to Roy). This is even manifest when the organ is left connected with the rest of the vascular system, by one artery and vein only. The conclusion which Roy arrived at, that the spleen is practically cut off from the arterial system, and that its circulation is maintained by its own contractions, is thus shown to be incorrect.

The rhythmic contractions are independent of the central nervous system, for they will proceed after all the nerves passing to the organ are severed, and they can also be shown in an excised spleen perfused with defibrinated arterial blood.

They are excited to increased activity by intravenous injection of certain drugs and animal extracts which act specifically upon the organ. Prominent amongst these are curare, water extract of suprarenal, and water extract of brain. Suprarenal extract causes an enormous contraction, followed by increased extent of rhythmic waves; curare and brain extract, mainly the latter, without a preliminary contraction. Indifferent fluids, such as normal salt solution, produce in moderate quantity no such effects (contrary to Roy), and the same is the case with many animal extracts.

As was shown by Roy, a condition of dyspnoea causes marked contraction of the spleen. The authors show that this contraction is of central origin, for after severance of all nerves to the organ it is replaced by a passive dilatation, due to the rise of general blood pressure, this being soon followed by an increase in extent of the rhythmic contractions. Temporary cessation of the blood flow through the organ also has the effect of increasing their extent, probably because the splenic tissue is thereby deprived of oxygen and rendered temporarily more excitable.

The splanchnics, both right and left, contain not only nerve-fibres which produce contraction of the spleen (Tarchanoff, *Pflüger's Archiv*, vol. viii; Roy, *loc. cit.*), but also others which cause dilatation of the organ.

There is no evidence that the vagi contain any centrifugal fibres which influence the volume of the spleen (contrary to Roy). Provided their inhibitory action upon the heart is neutralised by atropine, even the strongest stimulation of the peripheral end of either cut vagus produces no direct effect upon the spleen.

Stimulation of any of the nerve twigs which accompany the arterial branches to the spleen causes strong contraction of the whole organ. The contractions which result from splanchnic stimulation are also obtained even when there is only a minute twig left, all other nerves being severed. There is, therefore, probably a very free nervous communication within the organ. We have obtained evidence of the existence of numerous afferent (sensory) fibres in the nerves supplying the spleen.

### A CASE OF CHOLECYSTOTOMY: A REMARKABLE GALL STONE.

BY MARK WARDLE, L.R.C.P. AND S. EDIN.,  
Bishop Auckland.

A WOMAN, in her 70th year, had been under my treatment at intervals for several years, for a condition that had passed for the last 30 years under the name of "spasm of the stomach." During one of these periodical attacks the gall bladder became considerably distended, and could be plainly felt. She could not at that time be brought to consent to surgical treatment, and under the influence of palliative drugs the pain ceased, the gall bladder resumed its normal size, and the gall stone that was supposed to have caused the attack was presumed to have passed into the gut. Several subsequent attacks of a similar character, but without the bladder distension, served to confirm the diagnosis of stone. The patient steadfastly refusing to be operated on, the "olive oil treatment" was instituted, and resulted in the discharge of a large number of supposed gall stones with the fæces. These on analysis proved, however, to be composed of oxidised oleic acid, food debris, etc., with no trace of chole-

<sup>1</sup> Abstract of a Paper read before the Royal Society.  
<sup>2</sup> *Jour. Physiol.*, vol. iii.