present; but taking these five cases, we see three lives saved that would otherwise have been lost. The results of all the operations performed during the past fifteen months in London, shew rather more than one out of two successful; and I have no doubt that when the diagnosis of this disease is more perfect; when the operation is performed earlier; when all the steps of the operation are carefully done; when health is improved by diet and medicine before operation; and when the after treatment is thoroughly understood—then, and not till then, must we expect to be able to lay down any table of comparison. Let us, however, be encouraged by the experience of herniotomy, lithotomy, and lithotripsy, and the more recent amputations of the thigh; and, observing how improved treatment has told upon their statistics, let us confidently anticipate that surgery will yet triumph in ovariectomy, and thus benefit humanity.

17, Connaught Square, Hyde Park, May 1889.

REMARKS ON DR. INMAN'S PAPER "ON THE INFLUENCE OF VITALITY UPON SECRETION".

By JOHN KENT SPENDER, Esq., Surgeon to the Eastern Dispensary, Bath.

I HAVE read with considerable interest Dr. Inman's paper in the JOURNAL of April 30th, "On the Influence of Vitality upon Secretion". His observations embody much that has probably occurred to the thoughtful physiologist, though perhaps never before put into so intelligible and practical a form. But the question is at once suggested: Is not Dr. Inman confounding two essentially different processes—active and passive secretion? Active secretion is a sign and product of life, and is coincident with the activity of all the other organic processes. Passive secretion is almost entirely a physical act, and is independent of nerve-power: nay, it even goes on better when nerve-power is diminished or suspended. It scarcely deserves the name of a vital function at all; but I apprehend that it pretty accurately defines that phenomenon of which Dr. Inman has given so many appropriate illustrations.

In true secretion, we have three elements to bear in mind—the blood from which the secretion originally comes; the blood-vessel through which the secretion transudes; and the gland-structure which is the anatomical instrument for separating and eliminating it. Now, the most ultimate gland-structure always possesses the several constituents of mucous membrane; namely, areolar tissue, basement-membrane, and epithelial cells; and the special characters of the different secretions are usually said to depend upon the elective faculty with which these epithelial cells are endowed.

Active secretion being an index of present life and force, the epithelial cells are busy in the work; but the term passive secretion literally expresses the fact that the aqueous portion of the blood, and very little else, simply filters through the blood-vessels and gland-walls; and that vital agency has very little to do with it. For example, increased cutaneous perspiration is of two kinds—active, when it accompanies bodily exercise; passive, when it is the effect of exhausting diseases, and the prelude of death itself. In the former case, it is the symbol of augmented function; in the latter, it is merely that the diminished tone of the capillary walls allows the water of the blood to permeate them. Paralysis of the vaso-motor nerves, or any particular dyscrasia, produces the same result. I lately attended a case which illustrates this point. A child of seven years old had threatening mesenteric disease: her skin was cold and dry by day, and covered with profuse passive sweat at night. By alterative and tonic medicines, and a regulated diet, a constitutional improvement quickly ensued, and the passive sweat was stopped; and, in the course of a few weeks, the skin was constantly moistened with the warm dew of active perspiration.

A so-called diuretic drug may appear to exercise a marked effect in increasing the amount of urine; and, if the organic and inorganic principles of this secretion are increased in proportion to the aqueous constituent, it is a true instance of accelerated functional activity. But, in hysterical and nervous persons, who pass a large quantity of nearly colourless urine at a time, the haste with which the water filters through the Malpighian tufts leaves scarcely any time for it to be impregnated with the contents of the epithelial cells that line the uriniferous tubes, and which are the agents for imparting to

the urine its special characters. The act is less a vital than a physical one, and cannot with precision be termed a secretory process at all.

Pathology supplies us with numerous facts illustrative of the same distinction. The primary stages of bronchorrhoea, gonorrhoea, and diarrhoea, have particular features in common; and the exudative products of these forms of local inflammation have analogous appearances and qualities; but, if these inflammations become chronic in duration or asthenic in degree, the hyperæmia in which they severally originated is unnaturally prolonged, and this local blood-stasis causes a corresponding change in the nature of the exudations.

It is an old doctrine, that secretion is only a form of molecular nutrition; the tissue nourished being the epithelial cells, and the nutriment supplied to them that which is ultimately destined to be the secretion itself. This being granted, we have a right to assume that the influence of innervation is as much required for the formation and growth of gland-cells as for the ultimate elements of every other animal tissue. Consequently, when nerve-force is lessened, gland-cells cannot form and grow so rapidly, and the secretory product must be diminished in an equal ratio. Hence, whenever we have an apparently augmented secretion as the accompaniment or result of weakened power, we ought to regard it, not as an exaltation of a physiological act, but rather as a retrogression into the domain of purely physical processes.

ON UNUNITED FRACTURE.

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UNLESS there be some constitutional cause, either already persistent, or the result of circumstances, as locality, situation, diet, etc., immediately after the accident, it will seldom happen that Nature's reparative process is insufficient to consolidate a fractured limb, treated with ordinary care both by attendant and patient. When such non-consolidation does happen, it must always be regarded as a grave and serious occurrence, and the more so the nearer the trunk it may be situated. Thus both as regards the inconvenience to the patient, and the difficulty and dangers attending attempts at cure or relief, the bones of the forearm or leg will give more anxiety to the surgeon than those of the foot or hand; and, again, in their turn the tibia, ulna, and radius, are less a cause for uneasiness than when the femur or humerus is the bone affected. This remark is not only true regarding operative attempts at cure, but applies with double force to those unfortunate cases where the state of the limb requires amputation as a *dernier resort*.

The bones in which false joints most frequently occur are according to the statistics collected by Mr. Norris, those of the thigh and arm (*American Journal of the Medical Sciences*, vol. xxix, 1842); but my own experience would lead me to infer that the occurrence took place at least as frequently in the bones of the forearm as in those of any other part of the frame. South (*Chelius*, p. 888) states that unnatural joints are most frequent in the upper arm; next, the femur would appear to be the one generally affected; and the tibia seems least liable to such result. This is, indeed, what one would, *a priori*, suppose to be the case, as it is evident that a broken leg can be kept in perfect apposition with greater ease and security than a broken thigh; and thus one source of unnatural joint does not act with the same frequency on the former part.

The causes of non-union of broken bones, and of unnatural and false joints, are numerous; but foremost may be mentioned a debilitated or cachectic condition of system. See Astley Cooper, in his work *On Fractures and Dislocations*, p. 568, observes: "In numerous instances, the failure of union may be traced to a defective state of the constitutional powers. This debility may arise from divers causes, such as bad food, habitual loss of blood, as from hæmorrhoids; residence in the impure localities or underground tenements of crowded cities. Malarious atmosphere will also produce a condition in which union is with difficulty obtained. This was exemplified in the case of a sailor under my care, when in medical charge of the naval station of Bassadore,* in the Persian Gulf, where the disposition to non-union was happily combated by a lengthened course of quinine and wine.

* For an account of Bassadore, see a paper by the author "On the Climate of the Persian Gulf", *Association Medical Journal*, November 1884.