

and a roller was applied round the chest. Low diet was ordered.

*Vespere.* He had considerable pain in the side, with some dyspnœa. Pulse 104, full. He was ordered to be bled to sixteen ounces; and to have a pill of three grains of calomel, a grain of opium, and a third of a grain of tartar emetic; also, every three hours, an ounce of saline mixture with an eighth of a grain of tartar emetic.

April 7th. He got no sleep at night, though, through a mistake, he took several of the above pills. The pain in the side was rather less. Pulse 96, and less full; tongue moist; no dyspnœa; respiratory sound over wounded lung quite natural.

April 8th. He had some sleep at intervals during the night. He had no pain whatever in breathing, and the emphysema had not extended. The bowels were not open. The mixture made him very sick. It was ordered to be omitted, and an effervescent saline draught given every three hours instead. An aperient draught was ordered to be taken immediately.

April 9th. The wound made by the ball was looking healthy; that for its extraction had nearly healed. The respiration was good.

April 14th. He had gone on well up to the present date; but on the previous night he got no sleep, and now complained of pain in his side. There was also a copious discharge of thin sanious fluid from the wound, made by the ball, which looked rather sloughy, and its edges were inflamed. No bagginess could be felt behind at the place whence the ball was extracted. Pulse 120; tongue furred. He was ordered to have a linseed-meal poultice applied to the wound, and to be removed into a smaller and quieter ward.

April 15th. He passed a tolerable night, felt very weak, and had no appetite. Pulse 104. He was ordered to have ten minims of liquor opii sedativus every night, and half a pint of porter daily.

April 22rd. The discharge from the wound was less in quantity. He took meat and porter daily. He was ordered to take quinine mixture three times daily.

April 26th. There was some dulness on percussion on the right side posteriorly, and metallic tinkling was occasionally heard. He had no dyspnœa nor expectoration.

April 30th. There was now more discharge from the wound, and it was quite purulent. It was forced out when he coughed, together with a bubble or two of air. There was no dyspnœa nor expectoration; but the expansion of the right side of the chest was much less than that of the sound side. He continued his meat and ale daily, and the sedative at night.

May 3rd. A counter-opening had formed at the spot where the ball was extracted, and was discharging pus. The side was visibly contracted.

He afterwards suffered a good deal from rheumatic pains; and his urine was scanty, and deposited a copious sediment. He was quite relieved of these symptoms under the exhibition of bicarbonate of potash and infusion of quassia. The purulent discharge continued more or less from both openings, sometimes almost ceasing, at others being copious, throughout the months of May, June, and July; and he was considerably reduced, and became much emaciated. In August, the discharge had much decreased in quantity, and during the next month was confined to the posterior opening. He remained in hospital during September and October, gradually regaining his strength. All discharge ceased, and the wound healed over; the lung also became considerably expanded, the respiratory sounds being heard much more extensively.

He was discharged on November 17th; and soon afterwards, being unfit for laborious occupation, undertook the duties of recruiting sergeant.

[To be continued.]

## Original Communications.

### RECENTLY OBSERVED FACTS RELATIVE TO THE PATHOLOGY OF THE PROSTATE.

By HENRY THOMPSON, F.R.C.S., Assistant-Surgeon to University College Hospital, etc.

#### III.—ATROPHY OF THE PROSTATE.

By atrophy of the prostate is to be understood a diminution in the bulk and weight of the organ, resulting from a gradual disappearance of some of its constituent structures. Regarding solely the results of this action, it may be considered as the converse of hypertrophy.

Senile hypertrophy, as applied to the prostate, is not, strictly speaking, the converse of atrophy; since the enlargement of the organ which occurs in the later periods of life, is not the augmentation of structure due to increased function, analogous, for example, to the augmentation of a muscle by increased use; but is a process essentially morbid, having no conservative or compensating design and action, such as is the case in hypertrophy of the heart for the purpose of overcoming the increased resistance offered by a calcified valve. Atrophic change cannot, however, be regarded as resulting from any active pathological influences exerted in the organ itself. It is a passive condition rather, and consists in simple wasting of the organ; in the gradual disappearance of elementary structures.

What is the precise physiological action by which atrophy is determined? Is it some active process of absorption removing the constructive elements of the prostate, in the same manner as, but more rapidly than, that ordinary process which results from the wear and tear of life, and effects the constant gradual removal of effete tissues throughout the whole body, in order that they may be, as constantly and gradually, replaced by new material?

I think not; but believe it to be rather the result of failing power in the body to replace, by new material, the effete tissues removed by the natural process of absorption. It is not that the process of degradation is much more rapid; but that the powers of supply and re-formation are less vigorous than heretofore. When the resources of the body are inadequate to supply the plastic material and the formative power in an equal ratio with the expenditure, general atrophy must result.

Nevertheless, there are, undoubtedly, various forms of atrophy liable to affect the prostate, which may be noticed separately.

1. The atrophy of exhausting general disease.
2. The atrophy of old age.
3. The atrophy caused by pressure.
4. The atrophy caused by disease in the prostate itself.
5. The congenital atrophy.

The first is the atrophy which occurs from exhausting constitutional disease, and particularly in phthisis. The extent to which atrophic change occurs from this cause is sometimes very remarkable, as I have several times had opportunities of noting. I have recently dissected a specimen from a man 21 years of age, who died of phthisis, in whom the organ weighs only fifty-four grains, or less than one drachm; the average weight at that period being about four to four and a half drachms. It is not unlikely that, from long-continued disease in this instance, the sexual organs had not been so fully developed as would have been the case at this age in health. In

all cases of this kind there is very considerable wasting of all the structures of the body; and herein this form of atrophy often differs from the second form. But the proportion of diminution affecting the prostate appears to be larger than that suffered by most other organs in the body. There are other diseases in which the prostate becomes atrophied; all wasting diseases produce this condition to a greater or less extent; but in none is it so marked as in tubercular diseases. Now, in this form of atrophy, all the tissues of the organ seem to be about equally affected; one component tissue does not seem to have been diminished in greater proportion than another, judging from the appearances presented on making sections in different part of the organ.

The second kind of atrophy is that which occurs during old age. There is frequently a general diminution in weight and bulk of the solids, as individuals advance in life beyond a certain age. A mere participation in this condition is not what is intended by senile atrophy. A prostate which is the subject of this affection is one in which the diminution is relatively greater than that which affects the rest of the body.

It has been said, but it appears without sufficient foundation, that, when hypertrophy of the prostate is not present in the aged, atrophy will always be found to exist. This certainly is not borne out by the facts here advanced. Thus, by analysis of the 164 dissections referred to in the first paper, we find no less than 50 individuals, at and above the age of 70 years (namely, from 70 to 94 years), whose prostates ranged in weight between  $3\frac{3}{4}$  and  $5\frac{1}{2}$  drachms, a great majority of them being between 4 and 5 drachms. These must be regarded, almost without exception, as cases in which neither hypertrophy nor atrophy could possibly be present. In none of them was there any sign of urinary derangement during life. The number of prostates in this condition is much larger, namely, upwards of 70, if all the individuals between 60 and 70 years be also reckoned; the latter age was selected for this calculation, to place beyond a doubt the statement that a normal condition of the prostate is common at very advanced ages.

Among the 164 examples at and above 60 years of age, 11 only had prostates weighing less than  $3\frac{1}{4}$  drachms. Organs weighing upwards of  $3\frac{1}{4}$  and under 4 drachms, cannot be considered the subjects of senile atrophy from the mere fact of weight. Some of them are certainly normal; but a knowledge of their structure, and of the size of the individual, are data which it is necessary to possess; since, as in other organs, it is not the absolute weight, but that which is relative to the weight of the body, which must be obtained in order to decide the existence or the degree of atrophy present in a doubtful case. Accepting the number of undoubted examples of atrophy as 11, and deducting 2 as occurring in individuals who died of exhausting disease (phthisis and carbuncle), there remain 9, which may be classified here. Consequently, on this calculation, senile atrophy occurs in rather more than  $5\frac{1}{2}$  per cent. of individuals at and over 60 years of age; and with the wanting data supplied, it is probable that this percentage might be a little increased.

Senile atrophy is of a somewhat different character, histologically regarded, from the atrophy of exhausting disease. It has been seen that in the latter all the constituent tissues are about equally diminished, as far as dissection and minute examination enable us to judge. In senile atrophy, on the other hand, the glandular tissue seems more diminished than the fibro-muscular stroma of the organ. This latter is often hard and tough, and may even have some small tumours of the same material existing in it. But the glandular element is in smaller proportion to the stromal, than in the healthy organ. This form of atrophy is, perhaps, also less extreme in its degree than that of exhausting

disease. I have never seen a prostate so affected, weighing less than two drachms and a few grains.

The third form of atrophy is that produced by mechanical pressure. No peculiarity can be affirmed to characterise this form of atrophy. It is that species of diminution, of disappearance of elementary constituents, which is observed in all the tissues of the body under the influence of continued mechanical pressure. Thus, the prostate is sometimes observed to be very considerably diminished in weight and volume, from the action of pressure exerted by adjacent tumours, which may have fluid contents, as abscess or hydatids; or by bony and other solid tumours; or by calculi in the bladder, or imbedded in the substance of the prostate. Not unfrequently also, from long-continued and extreme distension of the bladder with urine, and of the prostatic urethra itself when very confirmed stricture exists, a considerable pressure is sometimes exerted, which, in like manner, seems to result in marked atrophy of the prostate. In these cases, the structures are sometimes thinned to a very considerable degree; the natural ducts and cavities are dilated; and nearly one half of the organ, estimating it by weight, may disappear in the course of long-standing and unrelieved stricture of the urethra.

The fourth form of atrophy is that produced by some local disease of the prostate itself. Abscess in the prostate will produce disintegration of a considerable portion of the prostatic tissues, by impairing the local nutritious supply of the adjacent structures, and thus atrophy may be said to occur. A deposit of tubercle will produce similar consequences; in both these conditions, the proper structures of the organ may almost entirely disappear from the combined effects of pressure and ulceration.

The fifth form, or that of congenital atrophy, is usually associated with congenital malformation of other portions of the genito-urinary apparatus; in extroversion of the bladder, for example. It is rather a condition in which the prostate has never been developed, than one in which it has been atrophied, and it is only named to complete the series, in accordance with the custom of classifying organs of unnaturally small size under the head of atrophy.

DELAYED TEETHING seldom stands as an isolated fact, but is an undoubted proof of some morbid condition in nutrition and general development. In the large majority of cases a notable retardation in the eruption of the teeth is but one of the symptoms of derangement and faulty development of the osseous system and the organism in general. The bones of the infant should be developed with the same equability as its other parts. Premature teething, premature walking, and premature ossification of the cranial bones, usually coexist; so do protracted teething, retardation of walking, and retardation of the ossification of the cranial bones and fontanelles. They are far from being favourable symptoms, and are too frequently the first symptoms of rickets. Old Heister and Storch were already aware of this fact. Another variation, of which there are a very small number of observations, consists in the absence of teeth. Botallus gives the case of a woman of sixty years who never had a tooth. Oudet is of the opinion that the cause of this anomaly must be looked for in an early inflammation and suppuration of the dental germs. Valla reports the case of Pherecrates, and Baumès that of an adult man who never had teeth. Instances are also on record of the absence of a number of teeth. One or two have been mentioned by me. Storch describes the case of his own daughter, who had no canine teeth; Linderer that of a girl, aged fifteen years, who never had either of the four upper incisors. I have myself known a lady with but two upper incisors. (*Dr. Jacobi.*)