of the other sex. The retractor preputial covering of the
glans was quite natural in appearance, except the oval
aperture before mentioned, which will no doubt be readily
closed at a future period; and the new canal, being formed
of non-contractile material, is of that character which has
the advantage of being of adequate calibre. The sores
resulting from the incisions were at the same period far advanced in healing, and their cicatisation
was soon completed under a continuance of the same mode
of dressing.

There can be no doubt that the irritation caused by fer-
menting urine has hitherto been a great cause of failure in
plastic operations in this situation; for which, therefore,
we fully anticipate a far greater measure of success in
the future.

While this paper has been going through the press,
another case has occurred so illustrative of this department
of the subject that it seems deserving of introduction. A
nine years old being brought to me on account of dif-
culty of micturition, I found that, though, on superficial
inspection, the meatus urinarius appeared natural, it was
merely represented by a shallow sulcus in the integument,
except at the posterior extremity, where an orifice existed
so minute as only to admit the eyed end of a fine sewing
needle. It would have been an easy matter to have extended
this aperture by cutting backwards; for the soft parts be-
tween the urethra and the surface were very thin at the
central aspect of the organ, so that the edges of the divided
skin and mucous membrane could have been readily brought
together by sutures for primary union. But such a pro-
cedure would have resulted in an imperfectly situated meatus urinarius of a degree of hypoplasia to the other hand, to cut forwards through the substantial
spongy texture of the glans seemed at first sight most un-
promising, because it would be impossible to cover in the
wound with skin or mucous membrane, and the lateral
granulating surfaces which must result would have a powerful
tendency to coalescence at their angle of union in front.
But on reflection I determined to try this latter method, in
the hope that a more favourable solution might be arrived
at through avoiding as much as possible all irritation of the
divided textures, by providing a smooth metallic surface
for contact with them, and at the same time preventing the
urine from becoming acrid through putrefaction. The op-
eration was performed, on the 9th of March, by making suc-
cessive notches forwards with a tenotomy knife guided by
successively larger metallic rods till the incision extended
through the whole length of the superficial sulcus which
indicated the natural position of the meatus, and a No. 10
bougie could be passed freely into the canal. I then intro-
nuced with a T bandage a gum-elastic catheter, of about No. 9 size, having its anterior end sheathed for an inch and a half or so with a tube of Berlin silver,
the metal being of a more favourable degree of rigidity than a metal to the divided textures and conferring rigidity upon the
portion of the flexible tube which occupied the terminal
part of the canal and that which projected beyond it, so
that it might be tied in with perfect security. The metallic
portion was also expanded at a short distance from its free
end into a collar presenting a concave surface towards the
glans, to protect the new meatus from irritation by the
threads used for tying in the instrument. The catheter was
made long enough to reach back to the membranous part
of the urethra, but not into the bladder, in order to allow the
patient control over his urine; and the eye was terminal
into a collar presenting a concave surface towards the
heart. This is true of amylene, of amyl hydride, and low boiling points render them dangerous in action. It is
rapidly acting anesthetics, but their extreme insolubility
is further worthy of note that, when they kill, they kill from
syncope. The patient was much perturbed mentally, and
the mode of death was not by asphyxia, as is common from
ether, but by failure of the heart.

While this paper has been going through the press,
I died at Manchester it is perfectly clear that the death was
produced by pure anhydrous ether, for not one of the
special evidences of that agent was present. The evidence
is all but conclusive that the death occurred purely from
syncope. The patient was much disturbed mentally, and
the mode of death was not by asphyxia, as is common from
ether, but by failure of the heart.

From the post-mortem appearances in the patient who
died at Manchester it is perfectly clear that the death was
not produced by pure anhydrous ether, for not one of the
special evidences of that agent was present. The evidence
is all but conclusive that the death occurred purely from
syncope. The patient was much disturbed mentally, and
the mode of death was not by asphyxia, as is common from
ether, but by failure of the heart.

The etheral fluid employed on the occasion named was
the compound fluid which I introduced some years ago,
solely for local anaesthesia. It is a mixture of amyl hydride
and anhydrous ether, the two fluids being blended until the
specific gravity is .600. This exceedingly light fluid has
advantages over the simple anhydrous ether for local appli-
cation as spray; it acts for this purpose almost instantaneously in rendering the part insensible by cold, and
it causes less irritation of exposed parts; but it was never
intended for general anaesthesia, and it has always, I
believe, been sent forth by the manufacturers, Messrs.
Robbins, distinctly labeled and described as for local use.

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THE TREATMENT OF PRIMARY DISEASES OF THE HEART.*

By J. Milner Fothergill, M.D., M.R.C.P., Junior Physician to the West London Hospital.

The successful treatment of disease of the heart, perhaps more than that of any other class of ailments, rests upon an accurate diagnosis. Doubtless, in an organ acting so mechanically, the good effects of rest are ever apparent. But our remedial measures are not to be restricted to the negatively good results of diminished demand upon the organ. Much, often very much, can be done by well-selected remedial agents. In the selection of these agents it is of the utmost importance that the real and actually existing state of matters be distinguished and clearly appraised. For instance, the patient may present all the symptoms of a somewhat feeble heart, with occasional attacks of dyspnœa, which are both distressing and alarming. Now, it is perfectly obvious that here we may have one of two distinct ailments to deal with, and that the treatment should be widely different, according to the pathology of the case. There may be primary debility of the heart itself—how induced we cannot decide. But in occasional periods of pronounced anemia, usually induced by the demand of effort; or, on the other hand, the heart may not be a powerful one at best, but the attacks of dyspnœa &c. may be the consequence of arteriole spasm, raising the blood pressure, and in cases of wounds we must distinguish the difficulty of contraction in the face of an increased arterial tension. I submit that the treatment will vary much in these two similar but really unlike cases. The treatment of the first is the treatment of primary debility in the heart itself; the treatment of the second is the treatment of the condition of arteriole spasm, the removal of which relieves at once the labouring left ventricle. The attempt to whip on the failing heart by digitalis, &c., in this latter case, is unsatisfactory, and not rarely produces a hammering action of the heart more disagreeable and alarming than the primitive ailment. A great many of the cases of heart affection presented to us for treatment are secondary and not primary affections. In these cases, we must first of all seek to treat the causer. These affections are very interesting; but their consideration must follow and not precede that of the primary affections of the heart.

Different affections of the heart are of various kinds. The most frequent, doubtless, are those where the valvular apparatus of the heart is injured. In other cases there is muscular debility alone, arising from sustained over-exertion, myocardinii, &c. When muscular atony or adynamy exists without valvular disease, the treatment of the case is satisfactory in many instances. If of recent standing, by means of rest, good food, and cardiac tonics, the tone of the ventricle may be restored in a brief time, and that restoration may be permanent. Two such cases I have related in my book on the "Diseases of the Heart," and I can now add that both persons are still working away without any evidence of cardiac failure. In the case of the two" young men, this is less remarkable than in that of the second, an elderly woman, who had a dilated heart, an irregular pulse, and edema of the ankles, brought on by sustained effort in nursing her dying husband. My first impression was that the exertion had been too much for the weakness of her heart, already the subject of morbid change. But the effects of treatment were such that it soon became evident that no pre-existing disease had laid lurking and unknown, but that the condition was simply due to over-exertion. In a few weeks the evidences of cardiac weakness fled, and the woman has since maintained herself as a field hand, and has enjoyed excellent health. From 1868 to 1875 (nine years), continued labour has been undergone without any return of the heart symptoms.

When some permanent injury to the valves exists compensation is attained by increased muscular growth. In its earliest form the heart is merely a pulsatile sac, but as evolution proceeds it becomes four-chambered, while folds of the internal lining form valves, by which the muscular force is aided and economised. When these valves become affected they either become contracted (in which case they offer an obstruction to the forward flow of blood) or insufficient, and no longer arrest the backward flow of blood on the ventricular systole or the arterial recoil. When the muscular chamber behind the injured valve enlarges and becomes stronger, we denominate that growth compensatory, and we know that such growth endows the patient with a power which is wanting where such compensatory growth does not exist. The indications for treatment, then, are these: to conserve by all means compensatory muscular growth, and, having attained this, to secure it permanently, if possible.

The plan of treatment by which such ends may best be brought about is now pretty well agreed upon. The first indication is to reduce to the minimum the demands upon the heart, to conserve to the utmost its powers. By reducing to a minimum the demands upon the heart, we admit of its recovering itself, as is well seen in the effects of rest in bed in hospital, without any treatment whatever, in many cases of cardiac failure. When the exertion requisite to earn the daily bread is in action day by day, the heart grows feebler and less equal to the demand upon it; when enforced by the heart is not practised, the heart is not called upon to meet a diminished demand upon it, but day by day it recovers its tone and approaches its pristine condition. Such a rest for a few weeks at intervals enables many a person with incurable heart disease to undergo the toil inseparable from the struggle for existence. In addition, however, we know that there are remedies which exercise a specific effect over the heart; of these digitalis is the most certain and effective. We cannot here review, however cursorily, the action of digitalis. We may say that under its use, when rightly administered, the pulse becomes stronger, more regular, and the number of beats per minute fewer. There is, in fact, a reduction in the number of beats, and a distinct and pronounced augmentation in their power. By this means longer rest is given betwixt each systole, and the aggregate of the heart’s sleep is increased. To use the language of Balthazar Foster,* "The diminution in the frequency of the heart’s beats under digitalis always means an increase of the period of dilatation of the ventricles. Pulse traces readily show this."

Another effect of digitalis is to fill the arteries and to empty the veins.† Consequently there follows a better supply of blood to every part, and better than the physical and mental sleep and a better supply of arterial blood the heart recovers itself. Chalybeates, good food in liberal quantities, fresh air, &c., are all useful and excellent auxiliaries. Very often, however, the treatment must be followed out steadily and persistently for months, even years, under my care a patient who has taken digitalis and iron for seven years uninterruptedly, for the reason that she cannot go a week minus the remedies without suffering in consequence.

These measures, which act directly upon the heart, and which increase its tone and improve its nutrition, are usually sufficient to secure the desired end. At other times, when the case is more pronounced and there is droopy present, it becomes highly desirable to reduce the bulk of blood by diminishing its aqueous constituents, at the same time relieving the venous congestion. This end can be well secured by purgation of the bowels and by a diet low in solid food. But here such means of relieving venous congestion are too little resorted to. Doubtless, at first sight, it would appear that a patient panting for breath and far advanced in heart disease is not a proper subject for free purgation. But the fact is, for five or six copious purgations per week in the case of the burdened heart; they reduce the bulk of blood on the one hand, while they improve its quality on the other. The profuse discharges, which would certainly be felt very acutely by a person in health, give such relief in these cases that the relief afforded more than counterbalances the exhaustion which results directly from the purgation. Like digitalis, which disturbs the action of a healthy heart, while restoring the rhythm of a diseased one to a sounder state.

* Read before the Harveian Society, Feb. 18th, 1875.
† Clinical Medicine, p. 87.
‡ Niemeyer, vol i., p. 365.