seynghe that ther beth vj. here entention is or schal be that there beth vj. portions of a gutte and that in every man or beest, having his begynnyng at the nethere mouth of the stomak, and so continueth forth and is endid in the bredde of the foundement or the ers. Nethelless he hath divers partis and formes afir that he hath in the body divers operations and helpings, and therefore it is that divers portions of him haveth divers names. But hereupon the philosophere seith primo de historiis animalium that the lower wombe of a man, that ys to seie the guttis, is lyk unto the wombe of a swyne and rizt as the wey of the mete, and as the stomak hath tweye tunclis; in the same maner han alle the guttis tweye tunclis. The firste gutt is called duodenum for it is twelve ynchis in lenkthe, for he closith the nethere part of the stomak, and this gutt is evne for the draggis schulden the litzloker and the sunere disceden fro the nethere mouth of the stomak. The secunde gutt is called jejunum, the which is conteyned with duodenum and he is clepid jejunum for he is evermore empty bothe in the quike and in the deed, and that for tweye causis. The firste for to him discendith color fro cista fellis and bitith him sore and drivith out of him dritt or the draggis clenly. The secunde for manye misraike veynes beth rotid in him the whiche drawn away fro him al foul filthe and corruption. The thriddie gutt is called ylion, and this is the laste of the smale guttis.

Vicary writes as follows:

Galen sayeth that the Guttes were ordeined in the first creation to 'convey the drosse of the meate and drinke, and to cleanse the bodie of their superfluities. And here it is to be noted that there be six portions of one whole gutte, which both in man and beast beginneth at the nether mouth of the stomack, and so continueth forth to the end of the fundament.....And hereupon the Philosophers saye that the lower wombe of a man is like unto the wombe of a swine.....The secunde portion of the guttes is called jejunum, for he is evermore emptie, for to him lyeth evermore the chest of the Gal beating him sore, and draweth forth of him al the drosse, and cleaseth him cleane.

Here the curious phrase, "beating him sore," makes absolute nonsense in Vicary, though it was never corrected in any of the editions. It was evidently a misreading of "bitith him sore" in the MS. This word "bite" is curious. It must refer to the supposed irritant properties of the bile. Lanfrank and Mondeville have similar, not identical, passages, which could not have been the original of Vicary.

I will quote one more instance where an unintelligible passage in Vicary becomes clear when compared with its original. Vicary has, speaking of the neck and throat: "Furthermore, cana pulmonis via trachea arteria—all these be one thing; that is to say, the throte boll." This has puzzled Dr. Furnivall, as it would puzzle anyone who paid sufficient attention to the work, and he suggests in explanation reading "cava pulmonis via." This is not a recognised expression, however. In the MS. I read: "Canna pulmonis, via aeris, trachea arteria ben al oon thing, and ben as much to say the throte bolle." The change of phrase is notable. The phrase "canna pulmonis, reed going to the lung," is used also by Mondeville, who has the whole sentence.

The following seems to refer to the ligamentum nuchæ:

The secunde principal part of the neck beth ij services, the which both contain longitudinal flesh ligging in the middle up the two sides of these aforesaid spondils from the basilar bone to the seventh spondil, and also on the sides of all the spondils of the riggebone, down to the nethermost side.

And this manner of flesh is called in sum countrie in English vix vax, and of summe young children it is called yolowe heer; and these long services were made for this cause, that when the sinewis ben weary of her mevyng and travail mowen raste upon it as upon a quilte or upon a materas.

Vicary.—The first is pix wex or servisis, and it is called of children gold hair or yellow hair, the which are certain longitudinalis; and they are ordered for this cause, that when the servisis ben wery of overmuch moving and travail they may rest upon them as upon a bed.

It will be asked, Is there nothing in Vicary which is not in the older writer? There are a few short passages:

1. The curious names of the teeth, which are not in the MS or in Mondeville; whence they come I do not know.

2. A rather long account of the bones of the foot is not in MS.

3. The curious name "gwidge" for the jugular veins, explained by Dr. Furnivall as coming from the Arabic, is not in MS.

4. A few references to Guido=Guy de Chauliac, who must have been about a contemporary of our author, and is never mentioned by him.

Vicary omits a great deal and abbreviates a great deal of the MS. His treatise cannot be more than half as long. The

quotations from ancient writers are given very loosely and inaccurately by Vicary, but are the same as given fully in the MS. Most, however, are given by Mondeville.

I will not weary you with more quotations. These, I think, show either one of two things: (1) Vicary was in possession of a copy of this treatise, of which he made an abridgment, using the same words, sometimes not understanding them, and brought it out as his own. One does not like to think of Vicary as an actual literary impostor, and there is, perhaps, another supposition. (2) Possibly Vicary did not profess to be the author. The only absolutely known printed edition was brought out fifteen years after his death by his colleagues at St. Bartholomew's Hospital, and they may have found a manuscript tract which they regarded as Vicary's, though he had never laid claim to it, and published it as his. In any case the real author or compiler was our anonymous friend of the fourteenth century, about whom I wish I knew more. His book is, I think, interesting as an example of the medical language of the time. Vicary's book is not really an example of the language of his time, his nomenclature being quite out of date, though the spelling and diction are modernised.

ON CERTAIN GRAVE DEFECTS IN THE SYSTEM OF ARTIFICIAL RESPIRATION

AS ORDINARILY APPLIED TO THE TREATMENT OF CHLOROFORM COLLAPSE AND ASPHYXIA.

By A. E. WRIGHT, M.D.DUB.,

Professor of Pathology, Army Medical School, Netley.

A SOMEWHAT large experience of the results of the application of unassisted artificial respiration to the treatment of animals whose respirations and heart beats have ceased under the influence of an overdose of an anæsthetic has convinced me that this method of treatment gives very unsatisfactory results. Experience upon animals is, in this respect, in perfect accord with clinical experience upon man. I therefore wish to direct attention to a method of treating such cases of chloroform collapse, which has proved itself extremely efficacious in the case of the ordinary laboratory animals. The method consists in opening a major artery before proceeding to apply artificial respiration. At least nine out of every ten dogs may be resuscitated from a condition of apparent death from chloroform by the application of this method of combined arterial bleeding and artificial respiration. On reflection it becomes intelligible why this should be so. The essentials of a successful treatment of cases of chloroform collapse are evidently the following: First, we must have a proper ventilation of the chloroform-charged venous blood in the lungs; and, secondly, we must have a rapid distribution of this duly ventilated blood through the arterial system. Now, unassisted artificial respiration undoubtedly makes provision for the ventilation of the blood in the lungs. It, however, makes no effective provision for the immediate feeding of this aerated blood into the left heart and the arterial system. The method, in fact, fails to take into account two important facts. It fails to take into account the fact that the passage of the duly aerated blood into the arterial system is blocked by the venous and chloroform-overcharged blood, which passed through the pulmonary capillaries before artificial respiration was resorted to. And it further fails to take into account the other equally important fact that no blood (or at most only a minimal quantity of blood) can be expelled from the left heart into the arterial system until sufficient pressure has been got up in the ventricle to distend the walls of the collapsed arteries to something approaching their original size. When, therefore, we set to work with the ordinary methods of artificial respiration to re-establish the circulation we place ourselves under very distinct physiological disadvantages. We not only undertake to drive on in front of the aerated blood a considerable volume of vitiated blood, but we set ourselves to overcome a very considerable mechanical resistance in the arteries. By opening an artery, we immediately place ourselves under infinitely more advantageous conditions. In the first place, we provide an outlet through which we can

evacuate the greater part of the vitiated blood (in the dog a very considerable quantity of such venous and chloroform-charged blood comes away); and in the second place we reduce the resistance in the arterial system sufficiently to allow of the enfeebled heart resuming its beat. This method of combined artificial respiration and arterial bleeding would appear to be applicable not only to the treatment of chloroform collapse in man, but possibly also to the treatment of carbonic acid poisoning, drowning, and asphyxia. In the case of man, it would be well to divide both temporal arteries, and to allow the hæmorrhage to go on unchecked until a certain amount of arterIALIZED blood had run away.

In conclusion, it may not be inappropriate to direct the earnest attention of the practitioner to the eminent utility of preliminary injections of atropine as a means of preventing the fatalities which occur in the early stages of chloroform administration. This method, which was recommended originally by Dr. J. Harley,¹ but which was first placed on a scientific basis by Dastre and Morat, does not appear to have come into general use yet. The method is based upon perfectly sound physiological principles, inasmuch as it is directed to the prevention of the heart stoppage, which in the case of early chloroform collapse appears generally to be brought about by the inhibitory action of the vagus. The atropine² removes this source of danger by paralysing the nerve endings of the inhibitory fibres in the heart. In the case of dogs and rabbits, this atropine method is of almost absolute efficacy against the otherwise frequent fatalities of the early stage of chloroform administration.

SOME EFFECTS OF THYROIDECTOMY IN LOWER ANIMALS.³

By GEORGE R. MURRAY, M.A., M.B.CAMB.,
M.R.C.P.Lond.,

Heath Professor of Comparative Pathology in the University of Durham;
Pathologist to the Hospital for Sick Children, Newcastle-on-Tyne.

THE relative importance of the thyroid gland in different species of animals is a subject of considerable interest, for the comparative pathology of this gland is not as yet clearly understood. The importance of this gland to the well-being of any given species can be most readily determined by observing the effects which follow the removal of it alone or together with any accessory thyroid glands which may exist in that particular species. The effects of thyroidectomy have now been studied in a good many different species of animals, and although the results have been negative in some cases, they appear to show more and more clearly the importance of the thyroid gland in many different animals. In the lower vertebrata experiments indicate that the gland is not so important as in the higher vertebrata.

In fishes O. Lanz⁴ found that no changes followed the removal of the thyroid gland in 50 dog-fish (*scyllium catulus* and *canicula*). In lizards, however, we already have evidence that the thyroid gland exercises an important function, for although Lanz did not observe any change in 12 lizards (*lacerta viridis*) after thyroidectomy, Christiani⁵ found that lizards do not survive the removal of the thyroid gland more than six weeks, and that they generally die within a month. Christiani has also shown that in adders thyroidectomy is followed by loss of appetite, loss of strength and activity, shedding of the skin, and death. In rabbits, of which I wish specially to speak, the results obtained by different observers have varied considerably. Schiff, Colzi, Tizzoni, Ughetti and Mattei, and Rogowitch all obtained negative results, and thus a general opinion was formed that rabbits could live quite well without the thyroid gland, and that consequently it did not exercise any very important function in that particular species of rodent. This, however,

is not the case, for the rabbit enjoys no special immunity from the effects of thyroidectomy.

Gley⁶ has found that when the accessory thyroid glands which are present in the rabbit are removed along with the principal gland, very acute symptoms are induced, which in the great majority of his experiments—14 out of 16—ended fatally. The chief symptoms of this acute cachexia are muscular tremor commencing in the masseter muscles, clonic and often tetanic contractions of the voluntary muscles, paralysis, first of the extensors of the fore feet, then of the hind limbs, difficult and often rapid respiration, copious flow of saliva, dilatation of the pupils, and rise of temperature. Death is rapidly followed by the onset of rigor mortis.

Gley found that no symptoms followed removal of either the thyroid gland or of the accessory thyroids alone, whereas when both the principal and the accessory glands were removed, either simultaneously or on different occasions, the acute symptoms rapidly followed. This, however, is not the only effect of thyroidectomy in rabbits, for under certain conditions a slowly-developing chronic condition occurs analogous to the myxœdema which follows total thyroidectomy in man. I have found that removal of the thyroid gland alone in adult rabbits may be followed after a long interval by this peculiar condition, and shall now describe two experiments to illustrate this:

1. On January 12th, 1893, the thyroid gland was removed from a grey buck rabbit while the animal was under the influence of chloroform. The wound healed rapidly by first intention. No change was noticed in the condition of the animal until three weeks had elapsed, when it was found to be less lively and slower in its movements than before. A

Fig. 1.—Showing the myxœdematous swelling of the head and the bare patches of skin due to loss of hair.

month after the operation the appetite began to fail. During March and April the rabbit remained in a somewhat dull and apathetic condition, and often sat still for long with the eyes half closed. When roused it could run about quite well. The temperature remained normal. The appetite diminished, but during these two months it only lost 4 ounces in weight. No further change took place in this rabbit for a long time, as it remained in much the same condition until the following winter. Early in December, about 11 months after the operation, it became more apathetic, and would no longer run about when let out on the grass. When forced to move it did so less actively than it had during the summer. The face, and especially the upper lips, became swollen. The hair began to come out rapidly, and a very light pull was sufficient to detach whole tufts of it. Bare patches of dry scaly skin were left at the lower part of the outer border of each ear, and the hair on the back of the neck became very scanty. The genital organs were swollen, and bare patches appeared

¹ BRITISH MEDICAL JOURNAL, vol. i, 1868, p. 320.

² For use in man Dastre (*Les Anesthésiques*, Paris, 1890) recommends the injection of 1 milligramme (= *circa* $\frac{1}{4}$ grain) of sulphate of atropine combined with 1 centigramme (= *circa* $\frac{1}{4}$ grain) of hydrochlorate of morphine twenty minutes before the administration of the chloroform.

³ Read in the Section of Pathology at the Annual Meeting of the British Medical Association held in London, July-August, 1895.

⁴ *Zur Schilddrüsenfrage*, Leipzig, 1894.

⁵ *Archives de Physiologie*, April, 1895, p. 356.

⁶ *Archives de Physiologie*, Tome iv, 1892.