ENDOCRINES AND THE NOSE

By E. WATSON-WILLIAMS (Bristol)

I. Atrophic Rhinitis and Goitre

VERY little has been published on the influence of the endocrine system on the nose, at least in a form readily accessible in this country. Yet most of the older textbooks contain brief references to "struma", myxœdema or sexual excess as causes of nasal symptoms.

When we examine the inside of a normal nose in the usual way, the most conspicuous object is the inferior turbinal, above and behind which we see the head of the middle turbinal; between the inferior turbinal and septum is a narrow space which fades behind into obscurity. Occasionally however, this space is wider, and we can see past the turbinal into the nasopharynx, observing the light reflected from the posterior wall and muscular movements during swallowing: such a condition may be considered the minimum criterion of "atrophic rhinitis". When the condition is more advanced, the inferior turbinals are obviously smaller than normal and the middle, usually less affected, are prominent by contrast. With severe atrophy the inferior turbinals are hardly to be seen, the middle are smaller than normal, and the outward curve of the vomer against the sphenoid can be observed: and in extreme atrophy there is practically no turbinal tissue and we can look directly at the roof of the nose, the front of the sphenoid, and the ostia of the sphenoidal sinuses.

It seems impossible to draw a hard and fast line between one stage and the next, every gradation being seen. Observing a large number of cases and watching some for months or years, one is forced to conclude that the atrophic process affects primarily the erectile tissues, and hence particularly the inferior turbinals: and only in the more advanced cases is there actual absorption of bone. Of course, with syphilitic or suppurative rhinitis a rapid and extensive destruction may occur and the sequence of events may be different.

The mucous membrane in the early stages is pale, thin and "poor looking", and ciliary activity seems diminished or lost. The surface may be bathed in a considerable excess of rather viscid, glairy mucus: or it may be dry with small scabs of drying mucus adhering to it. When the passage is very wide the lining appears to be of stratified epithelium and the secretions tend to dry into gross crusts, which decompose and produce the offensive odour or "ozæna". Drying rather than any specific

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cause seems to determine their appearance. Pus is uncommon unless there is sinus disease in addition, an event which in my experience is quite unusual.

The patient complains frequently of " catarrh "—an omnibus word which is made to include almost every nasal symptom, obstruction, discharge, cacosmia, anosmia, etc. : less often of fetor, " a lump in the throat ", hoarseness, deafness, etc. For the mucous membrane of the pharynx, larynx or ear may be involved. The fetor which is most usual is a sourish, sickly, " mucous " smell, often much more noticeable just before the menstrual period : many patients are conscious of this variety. True " ozæna ", the disgusting stink produced by decomposing crusts (often quite small crusts), is less frequent ; indeed, with the milder degrees of atrophy it is rare ; in most cases the patients themselves do not perceive the smell which makes them social and industrial outcasts.

My interest in this condition dates back 30 years, when I was first struck by its frequent association with " Gloucestershire Neck ". And from 1926 I have kept a careful index of all cases seen. Since 1939, it is true, events beyond my control have interfered ; but a few omissions will not materially affect the result. In 1934 (Watson-Williams, E., 1934) I published a detailed tabular analysis of some hundreds of cases, which I need not repeat. Instead, I have merely arranged cases (omitting all due to trauma—wounds, surgery, radium, etc.) in groups according to the probable origin of the atrophy.

TABLE I.

PROBABLE ÆTIOLOGY IN 1,382 CASES OF ATROPHIC RHINITIS.

(Figures in brackets are cases of perforation of septum.)

Syphilis : 60 per cent. over 30 ; other groups 60 per cent. under 30, and 30 per cent. under 15 years old.

" Infection "			" Goitre "		
In each group : Sexes about equal. Severe atrophy in 45-55 per cent Fetor in 70 per cent.			In each group : Males 15 per cent. Severe atrophy in 10-12 per cent. Fetor in 30 per cent.		
Syphilis	207	(68)	Simple Goitre	486	(2)
Lupus	38	(5)	Toxic Goitre	11	
Exanthemata	53	(4)	Hypothyroid	41	
Anæmia	21	(4)	Menopause (all females)	89	
Coal Miners (all males)	16	(7)	Relatives have Goitre	137	
Miscellaneous	17	(3)			
(26 per cent. of total)	352	(91)	(55 per cent. of total)	764	
			Clinically similar	266	

INFECTION

It is remarkable how closely the groups in which atrophy is ascribed to exanthemata, anæmia or coal mining, etc. resemble those in which it is due to syphilis—in sex distribution and in proportion of severe cases,

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fetor and perforation of septum. Naturally, the greatest care has been taken throughout, but especially where atrophy is advanced, to exclude syphilis as a cause. But the different groups tend to overlap: thus two girls with goitre attributed the nasal condition to exanthemata, a third was gravely anæmic, etc. Only those cases are ascribed to exanthemata in which the patient *volunteered* this origin for symptoms: scarlatina, diphtheria, measles were blamed frequently but also pertussis, typhoid, varicella, mumps and pneumonia.

GOITRE

Simple goitre, including simple adenoma, is taken as evidence of some disturbance of thyroid secretion, either in quantity or quality. The exact correlation with atrophy is not clear: a large or old-standing goitre is not specially related to severe atrophy. Twelve patients with simple goitre had obvious hypertrophy of the turbinals. But as a general rule I have found with simple goitre a definite tendency to atrophy: in contrast with toxic goitre (below). Sometimes indeed it is difficult to assign a case to "simple" or "toxic"—there may be exophthalmos without tachycardia, etc. Nor do all patients with goitre exhibit nasal changes. I should, however, like to emphasize that although severe atrophy is less common in the "goitre" groups, examples of *every* degree of atrophy appeared in each group.

Hypothyroid. Nine cases after thyroid operation, ten of classical myxœdema, three cretins. (Connal (StClair Thomson, 1926) states that *hypertrophy* of the inferior turbinals is sometimes associated with myxœdema: I have not observed it.)

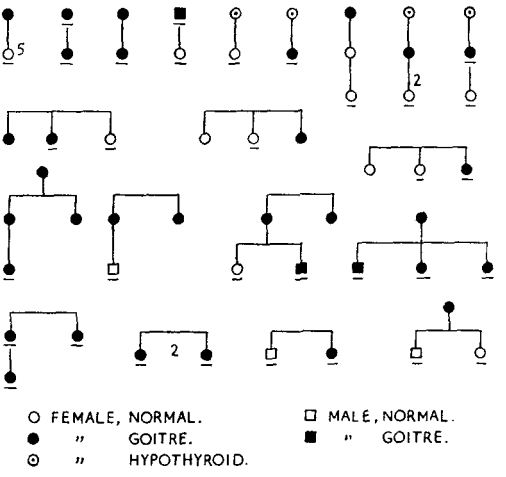
Menopause. The distinction between this group and the "hypothyroid" is somewhat artificial; six patients had had premature menopause produced by surgery or irradiation—they were all very resistant to treatment (see Section II).

Relatives. The tendency for goitre "to run in families" led me to include a group of patients who did not themselves suffer from goitre but whose near relatives had goitre or myxœdema: some of them were distinctly impressed when I enquired about this. It seems as if the same tendency shows itself in one member of the family as goitre, in another as atrophic rhinitis. Of course, some of the relatives showed both conditions. (The tendency for atrophic rhinitis to affect several members of one family has long been noticed.) Fig. 1 shows some of the relationships.

Clinically similar. When one sees a number of patients with atrophic rhinitis one is struck by the clinical similarity of some of them to those of the goitre group; though neither patients nor relatives have goitre. Such patients are included in this group. They are doubtless a mixture and in distribution come between the "exanthemata" and the "goitre"

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groups. A number of patients have confirmed my opinion by the subsequent development of goitre in near relatives: twice, in sisters born after the original diagnosis. Such patients have been removed to their proper groups.



[From *Bristol Medico-Chirurgical Journal*

FIG. 1.

Relationships in cases of goitre, hypothyroidism and rhinitis. Cases of rhinitis are underlined. [Watson-Williams, E., 1934.]

CASE I.—Female, age 6 years. Seen March, 1928, complaining of catarrh for two years: severe atrophy, crusting, fetor; Wassermann negative, antra normal; no goitre in family. Ordered thyroid in January, 1929, for 13 months, then "cured": normal in March, 1933. Called up for examination January, 1934, and found normal; brought with her her small sister aged 3 *with a large goitre* but no nasal symptoms.

It is important to recognize these changes early; response to treatment is better, and the patient is spared unnecessary examinations of the sinuses, Wassermann tests, etc. It is specially important where the pharyngeal mucosa is also atrophic, the tonsils somewhat conspicuous by contrast, and throat dryness and discomfort the main symptom (Watson-Williams, E., 1937); removal of tonsils may increase the discomfort—at least, the patient is almost certain to attribute her persisting symptoms to the operation.

The thyroid is doubtless not the only gland concerned. But it is the easiest to study both because derangements produce well-known local and general effects and also because "substitution" therapy is comparatively simple.

Treatment. That the connection between the goitre and the atrophy is real, and not merely fortuitous, is confirmed by the response to treatment. Excluding those with toxic goitre, and the menopausal (discussed

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below), nearly all the patients in the goitre groups have been treated by administering thyroid gland—small doses over a long period give good results. Where this was not well tolerated, iodine was given, but was not so effective. No local treatment was given, lest it should confuse the estimation of results. Until the war stopped me I examined all patients throughout treatment and for some years after. The results have been gratifying, though somewhat irregular. About four out of five of those taking thyroid have been completely relieved, and three out of five of those on iodine; and roughly half the remainder are much improved. Relief of fetor is often the first evidence of benefit. Where only a moderate atrophy was present the nose may be normal in six to ten weeks, though the course may have to be repeated in following years. But almost as high a proportion of those with severe atrophy have eventually become normal.

Toxic goitre. Some of the patients showed evidence of hyperthyroidism—exophthalmos, tachycardia, etc. This small group proved very interesting: a few had atrophy, though none showed the more severe degrees. But in over half I found a condition of *hypertrophic* rhinitis with engorged turbinals, excess of watery secretion and a tendency to sneezing attacks. Similar conditions were observed in five patients who were taking rather large doses of thyroid when first seen, and in two ladies who were secretly dosing themselves to reduce weight.

II. The Reproductive System and the Nose

Menopausal rhinitis. When hypothyroidism is associated with amenorrhœa it is obvious that the thyroid is not the only gland affected, and doubt may arise as to which is responsible for any nasal changes; though if the administration of thyroid substance brings relief, we may feel that this gland is the most important. On the other hand, is menopausal nasal atrophy directly due to cessation of ovarian activity or to associated thyroid changes? *

A few of my first "menopausal" patients in the list were given ovarian substance by mouth, but the response was poor and I reverted to thyroid. Most of the patients improved with this but few were completely relieved. In 1937 natural œstrogens became available, and with the kind co-operation of Dr. G. L. Foss I was able to treat with these preparations a few women suffering from atrophic rhinitis. The results were very encouraging, but the expense and the need to attend for weekly injections over a long period limited our observations.

Artificial œstrogens which can be administered by mouth have removed these difficulties. The course I generally advise is stilbœstrol 1 mgm. twice daily for two weeks; two weeks' rest; repeat the course

* "Atrophic rhinitis is a chronic inflammatory degeneration of the mucous membrane . . . which is often connected in some obscure manner with sexual development or involution."—Watson-Williams, P., 1894.

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three or four times, and again in six months or a year if it is effective. The results have been good : about four out of five completely relieved. Even very advanced atrophy has cleared up. In a few cases a recurrence of menstrual bleeding has made it necessary to reduce the dose or to increase the intervals. I am assured that there is no risk with the small dose used of provoking neoplastic changes.

" *Old Man's Drop* " is a condition seen in men usually well over sixty ; mild atrophy, pale mucosa, more or less profuse watery discharge tending to hang as a drop at the nostril until wiped away. I have treated 23 patients by testosterone propionate tablets (placed beneath the tongue, *not* sucked) ; one 5 mgm. tablet daily for three weeks. Seventeen patients were completely relieved. In eight, stovaine lozenges having a similar appearance and taste were employed as a check ; all eight were quite definite that these were ineffectual. The course may need repeating once or twice a year.

Sexual Activity

Since menopausal atrophy closely resembles that of hypothyroidism it affords a convenient link between two subdivisions of our subject : though it is not strictly logical to consider first the changes associated with *retrogression* of sexual functions. But those which tend to accompany sexual activity are far from easy to investigate for several reasons. They are often transient ; unless severe they tend to be dismissed as " a cold " or " hay-fever ", perhaps regarded as unimportant ; there is no obvious sign such as a goitre to direct our attention, nor is substitution therapy available to confirm a diagnosis ; from the nature of the case, it is frequently impossible to get the necessary information, especially in the out-patient department ; and finally, we may well feel doubt whether the cause is connected with the endocrine or with the autonomic nervous systems.

Puberty.—Nasal congestion (often, indeed, actual bleeding) is so common at puberty, just before the menstrual period and during the second half of pregnancy as hardly to be considered abnormal : unless, that is, there is so much discharge also as to attract attention. Very few of those affected are likely to seek consultant advice. " At puberty there is often considerable turgescence of the nasal mucosa" (Tilley, 1919 (d)). And it is well to remember this may occur in boys as well as in girls. How often is the accompanying laryngitis attributed to " a cold he didn't seem able to throw off ".

Pregnancy.—The changes that sometimes occur in pregnancy can make the patient really unhappy. And they are not very easy to treat. Generally they appear about the fifth month and tend to improve during the last few weeks, but may persist until after parturition. It is better not to use the cautery for the congestion of pregnancy ; and I consider it

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wise to avoid ephedrine, adrenaline, benzedrine inhalations and the like. Relief may be found from a normal saline or mildly alkaline spray, or something of this sort used in a heavy-oil-type atomiser :

℞.	Menthol	gr. ii	0·13	gm.
	Cocainae (Alkaloid)	gr. vi	0·4	gm.
	Ol. Cinnamon	m. xv	1	mil.
	Ol. Arachis ad	unc. i	30	mil.

f. ol., m.d.u.

I have notes of some thirty ladies who were sufficiently troubled to come for advice ; only a few of these suffered as badly as the following :

CASE II.—Female, age 29, complained of "sinusitis". For six weeks she had been getting discomfort in the nose, thick mucoid discharge, and loss of sense of smell. The nasal passages showed the turbinals, particularly the inferior, swollen and bathed in discharge, opaque, mucoid, sterile and containing a few epithelial cells. X-rays showed the sinuses perfectly normal. She was six months pregnant, and gave a history of an exactly similar attack four years before, with her first pregnancy. This had been diagnosed in Canada as sinusitis, but it resolved soon after parturition without treatment. On this second occasion a mildly alkaline spray used thrice daily very much reduced the discomfort, but the nose did not revert to normal until six weeks after parturition.

CASE III.—Mrs. P., age 22, complained of cough and loss of voice during six weeks, ascribed to a severe cold. She had a simple catarrhal laryngitis, which resolved quickly under routine treatment. Eighteen months later she came again. On this occasion she said she had been quite healthy until marriage early in 1947 ; the " cold " came on soon after. She continued to have sneezing attacks, nasal obstruction and watery discharge almost daily, especially in the early morning after sexual intercourse. These symptoms became worse when she was five months pregnant and there was then a free mucous discharge. She has always lived in the same neighbourhood, though in another house with large garden after marriage ; nothing to support any suggestion of allergic response to pets, occupation, furnishings or dust. All nasal symptoms disappeared when she was eight months pregnant. After parturition she was no longer troubled as she had been when first married, and remained free from symptoms until she again became pregnant late in 1948, when the same cycle recurred.

These two cases are fairly typical of many others, showing merely exaggeration of the nasal changes so frequently noticed. It is important that the true cause of the condition should be recognized, and that the patient should not be subjected to elaborate search for " sinusitis " or " focal sepsis ". I have twice seen a remarkable change in classical ozæna, with gross atrophy, crusting and typical fetor. One woman had been under my care for four years, the other for seven : and no treatment effected more than temporary improvement. In each case after the

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birth of a baby the fetor and crusting disappeared, although the atrophy was unchanged.

SEXUAL INTERCOURSE

Many writers mention sexual excess, including masturbation, as a cause of nasal symptoms. " Sexual excesses conduce to chronic rhinitis " (StClair Thomson, 1926 (a)); "Vascular engorgement of the nasal mucous membrane . . . is generally an indication of nervous prostration, imperfect digestion or of sexual excess" (Watson-Williams, P., 1901). But such symptoms are frequently due to normal relationships, where there is not the least suggestion of excess—it is the happy wife rather than the harlot who is affected. " Paroxysmal sneezing has often been noted in connection with sexual excitement" (Tilley, 1919 (e)). I believe that minor reactions are very common, though transient and unimportant (Watson-Williams, E., 1939). It is only when they are severe or prolonged that advice is sought.

There is no great difference between the sexes in the symptoms. It may be that men are more shy than women in discussing such things, but I have found some four women for each male patient. In the mildest cases there is a short attack of spasmodic rhinorrhœa within a few minutes of coitus: sneezing, watery nasal discharge, perhaps some congestion. In the more severe the attack may last one or even two days, and present all the symptoms of a " cold in the head " except fever. " J. N. MacKenzie had a patient who invariably suffered from coryza after sexual indulgence" (Watson-Williams, P., 1901). I have had one man who suffered a typical " hay-fever " attack: so severe were his symptoms that his marriage was threatened—his wife said she could not live with a man who sneezed and spluttered for two or three days after every coitus. (There is something to be said for her view.)

The severity of symptoms seems in most cases to diminish as the years pass. But in two men, in the middle fifties, the sneezing attacks have been replaced by well-marked asthma: in both cases this has been rather difficult to relieve. The treatment I have found most useful, in those patients for whom quite simple measures were not enough, is cauterization of the septal crest on either side, with a deep linear cauterization of the inferior turbinal. As always when using the actual cautery in the nose, remember that it is much easier to do rather more if the initial application seems inadequate than to restore matters if you have done too much.

" *Honeymoon Catarrh.*"—I have only five times been consulted by agitated couples whose troubles were sufficiently severe to interrupt this happy time. But from enquiries I am led to believe that some degree of disturbance is quite frequent—perhaps almost usual. Ordinarily it amounts to no more than a " slight cold ", attributed to *un dévêtissement*

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trôp galant. If any treatment is needed, two or three "quiet nights" should suffice. But sometimes the trouble continues much longer:

CASE IV.—Mrs. W., age 27, came on July 23rd, 1946, complained of complete loss of taste and smell during four months, with severe sneezing attacks each morning followed by profuse watery discharge. Only abnormality was moderate turgescence of turbinals. But the general "look" of her nose made me enquire the date of her marriage. It was March 16th and the "very bad cold" with which symptoms had begun started the next day!

CASE V.—Mrs. J., age 36, was brought by her husband in July, 1948, complaining of nasal congestion, sneezing attacks and discharge, sometimes watery but often thick, four or five days a week for 11 years—rather worse in summer; headaches and depression; only temporary relief with various local applications; X-rays of sinuses perfectly clear. I went carefully into questions of change of residence, pets, handling feathers, cleaning rooms, family history. All was in vain, until the husband revealingly remarked; "It all began, doctor, when we were courting." *Verb. sap.* Cauterization: almost complete relief for the two years during which I maintained contact.

CASE VI.—Mrs. H., age 32, complained of attacks of "hay fever"—violent sneezing, followed by watery nasal discharge "like a tap", lachrymation, etc.; about once a week. The attack began on rising, was bad all day, and tended to last until well into the next day. They came all the year round, and had been worse since late 1948, when she moved from Corsham into Gloucestershire. A little mucus in the nose, the inferior turbinals engorged and pale violet: nothing else abnormal. Further questioned she said her husband had pointed out that the attacks usually came on after intercourse: and she herself had found that she generally had a minor sneezing fit at the end of coitus. The trouble had begun in the second half of her second pregnancy, with severe congestion of the nose and much discharge: this ceased after parturition, but when intercourse was resumed the attacks began; they lasted until the beginning of her third pregnancy (1947) and recurred when this child was born.

It is a matter of some interest that in women the nasal effects occur, as a rule, only after full orgasm. My observations have been limited to a few patients only, of whom I felt I could make the necessary enquiries; but these were all quite unanimous on this point. Another is that with the menopause the period of congestion is much reduced—perhaps a few hours instead of two days. But symptoms persist for some time after the menopause.

CASE VII.—Mrs. V., now 57, first consulted me for vertigo in 1934. At that time she noticed quite severe congestion and rhinorrhœa for a day at least after coitus, sometimes two days. She declined treatment for this. Ovarian irradiation, 1943, for menorrhagia; this completed the menopause. For three years after this she was accustomed to experience the usual nasal sequelae, but these gradually faded. Now, although she enjoys full orgasm there are no

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nasal symptoms. This lady told me, when questioned, that she had had quite severe nasal congestion and discomfort when pregnant with her first two children, but not with the others.

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