

had a patient who complained of car-sickness who [if returning to report] was not free from it after wearing glasses. Besides these and sick-headache cases the cases of nausea and vomiting connected with use of the eyes and relieved by "artificial emmetropia" are quite numerous. But by far the most important disorder of the digestive system due to eye-strain, is anorexia—sometimes alternating with excessive appetite. These case of anæmia and malnutrition are almost always young girls or young women, and my records show almost without exception that after relief of eye-strain, the appetite becomes more regular and strong, there is a gain in flesh, health, spirits etc. I am thoroughly convinced that typical cases of anæmia have finally drifted into hysteria and chronic invalidism, when, if taken early, a simple pair of proper spectacles would have brought and preserved health. It is thus, by reducing the general vitality or resisting power of the nervous and assimilative systems that to eye-strain may be indirectly due any type of general organic disease of disastrous consequence or fatal issue. The work of the naturally hyperopic eye, set to unused and impossible tasks by civilization, is directly or indirectly a prolific source of indescribable mischief. If the theory of evolution be true it follows that an organ slowly evolved during millions of years for a special task, distant vision, cannot, in a century or less, be made to different work without disorder and trouble. With one little artificial help, the whole disaster and trouble may be forefended. Just how these strange reflexes are brought about no one would be bumptious enough to pretend to say, since no one can tell why pain follows a pin-prick, or why a nutastatic orchitis may follow parotiditis. These symptoms and results of eye-strain are infinitely diverse, apparently illogical, wonderfully concealed and subtle. Every case is a rule unto itself, so that one can give few general laws to one learning the art. Refraction is a science and an art in intimate union and requires as much patience, delicacy of perception, fineness of judgment and discrimination as any scientific work in the world. In relation to it there are vast fields of inquiry the wisest have hardly begun to explore. The amount of human misery caused by those ocular defects is appalling, and if the prevention and relief of that misery be the motive of scientific medicine, no branch is more important or demands higher powers of mind than that of ophthalmology—and nine-tenths of modern ophthalmic practice consists of refraction!

DISCUSSION OF DR. GOULD'S PAPER.

DR. H. MOULTON asked Dr. Gould if in any of his cases he had seen the axis change after passing from under atropia. Said he had met

such a case, the axis under atropia being 90° and without 110° .

DR. SAVAGE said there could be but two causes for the best meridian under and after atropia. He attributes the difference to deviation of the vertical axes of the eyes caused by the oblique muscles.

DR. G. W. ALDYN said if spasm of accommodation is to be regarded as a fiction, as implied by Dr. Gould, he desired him to explain how a change so great as the following could be accounted for:

O. D. + 2. \bigcirc — 3 cyl. horizontal = $\frac{2}{3}^\circ$,
under atropine. O. D. + 5. \bigcirc + 3 cyl. vertical
= $\frac{2}{3}^\circ$.

PAPILLOMA OF THE CORNEA, WITH REPORT OF A CASE.

Read in the Section of Ophthalmology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY S. C. AYRES, M.D.,
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It sounds somewhat contradictory to say that a papilloma can develop from a surface which is not naturally supplied with papillæ. At first it would seem impossible, but the vagaries of neoplasms are numerous, and this seems to be one of them.

Von Ziemssen, in *Ziemssen's Archives*, Vol. vii, in speaking of papillæ of the larynx, says:

"The development of papillary growths occurs not only off the mucous surface originally provided with papillæ, but, as is especially shown by Virchow (*Krankhafte Geschwulste*, 1, pp. 334 and following), also in regions where papillary structure of the mucous membrane is entirely lacking. The first step is the proliferation of the superficial connective tissue, the development of a little amorphous granular or homogeneous nodule, in which cells are not to be recognized until later. As the cells multiply, they gradually grow and put forth buds, just as is done by the preëxisting papillæ. The capillary loops of the papillæ are large; the surface of the neoplasm is covered with a thick layer of epithelial cells.

"The size and form of papillary tumors are very various. At first they represent little buttons or pegs; afterwards warty formations, as those representing a cock's comb; in case of luxuriant development, high growth similar to a berry, grape or cauliflower in form, which may partly or entirely fill the upper and middle, more rarely the laryngeal cavity."

Cornil and Ranvier say in relation to the development of papillomata, "that mucous papillomata generally spring from the villi or papillæ of the mucous membrane, but they form [where there are no papillæ, for example, in the ventricles of the larynx." The minute phenomena of these hypertrophies and new formations have not

yet been followed very closely, but the analogy of their structure with that of inflammatory granulations, supports the supposition that their mode of formation is similar. They say further as to location, that we find papillomata seated upon nearly all parts of the cutaneous and mucous surface.

Dr. Sajou, in his work on Diseases of the Nose and Throat, says that "papillomata are wart-like growths occasionally found in the nasal cavities of young subjects. They are most frequently attached to the septum and to the inferior turbinate body. They vary in size from that of a lentil to that of a small chestnut, and present a very light brownish color, with an irregular corrugated surface."

In relation to papillomata of the larynx he says: "This class of growth does not present a characteristic appearance which enables a positive diagnosis to be made; they, however, possess certain properties in common which render an approximate recognition of the nature possible."

They often present small round projections which cause them to be termed raspberry, mulberry, cauliflower, etc., because of their resemblance to them; they are usually located at the anterior portion of the larynx, and on the vocal bands near the anterior insertion.

Mackenzie, in his work on the Diseases of the Nose and Throat, says that papillomata are by far the most frequent of all benign growths of the larynx. He says also that papillomata are found in the nose, and are more common than is generally supposed.

Throughout the ophthalmic literature I see numerous reports of cancrroid of the cornea. In the seventh volume of Graefe's Archives is a report by von Graefe of two cases of cancrroid of the cornea which he scraped off, and which, from the description, resembled my case in its early stages, but it was composed of epithelial cells with a very little connective tissue. In the fourteenth volume of the same, Dr. Knapp reported two cases of cancrroid of the cornea and limbus conjunctiva, but nothing is said of the microscopic appearance of the growths. Cases defined positively as papilloma are not very numerous in the literature at my command.

In the *Lyons Medical* for 1879, M. Gayet reports a case of papilloma of the cornea. It was seated on the left cornea of a man 67 years of age. The disease was two years in reaching its present size and had never caused much pain. It occupied four-fifths of the cornea and left only a small portion of the periphery free, vision being only lateral and reduced to $\frac{1}{10}$. The tumor, flat, and compressed by the action of the lids, was of a rose gray tint, and presented a characteristic appearance. Examined histologically it was demonstrated to be a papilloma to the exclusion of sarcoma and epithelioma. It was treated by a

powder of alum dusted on its surface with a hair pencil and the result was surprising. It disappeared in the course of two months and there was a *restitutio ad integrum* of the cornea, and vision was increased to one-fourth. Berry, in his excellent work on the eye, in speaking of tumors of the conjunctiva, says, that of the non-malignant forms, perhaps the most common are papillomata. They usually occur as multiple excrescences from the conjunctiva at the inner angle of the eye in the region of the caruncle, but are found at the same time springing from the palpebral conjunctiva. These surfaces are often uneven and crenated, but may also be smooth.

Pollock in his work on Histology of the Eye, say that Sczokalsky has described a tumor arising from the limbus conjunctiva, in which the papillary processes composed of spindle shaped cells containing blood vessels, were covered with a stratified epithelial layer.

Alt examined a growth of the conjunctiva in which there were epithelial papillæ, amongst, and in the cells of which lay granules of pigment.

In the Transactions of the American Ophthalmological Society for 1879, Dr. Wm. F. Morris of Philadelphia reports a case of recurrent papilloma of the corneo-scleral junction. It was in the person of a man 56 years of age. It was about half in the sclera and half on the cornea, and the tip of the growth extended about to the center of the cornea. It was first dissected off and then cauterized. It returned and in five months the operation was repeated. It was then cauterized with nitric acid, and this time it was successful, there having been no return of it since.

At the meeting of the Ophthalmological Society of the United Kingdom, December 13, 1883, Mr. Anderson Critchett and Mr. Juler exhibited a case of papilloma of the conjunctiva. It had been first noticed when the patient was nine years old and she was now fourteen.

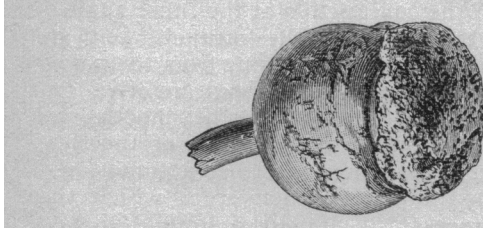
Schiess Gemeuseus observed a case of papillary excrescence on the conjunctiva of both lids in a young man 17 years old. It had a whitish rough surface. It had existed for about six months. In the cheek of the same side there was a lupus. The papilloma was treated by scarification and the use of silver nitrate in solution and astringent applications.

In the *Recueil d'Ophth.* Jules Fontan reports a case of adeno-papilloma of the conjunctiva.

H. C. Boenning, in the *Philadelphia Medical Times*, reports a case of hairy papilloma of the conjunctiva.

Ewetzky describes a case of papilloma of the cornea and conjunctiva in the person of a woman 50 years of age. It covered the entire cornea except a part of the outer and lower quadrant. Upwards and inwards from this tumor and about 2-3 mm. distant on the conjunctiva was another similar growth.

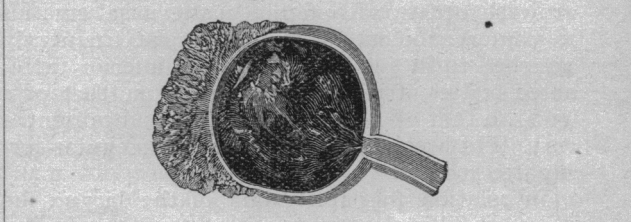
The case which I here present was in the person of Mrs. K. G., æt. 50, a healthy, well-nourished woman, who was seen first on the 7th of May, 1889. There was a large growth on the anterior portion of the left eye, involving the entire front of the ball. It had the appearance of a cauliflower, and its edges spread out beyond its attachment to the globe. It projected 1 cm. from the sclera, and its horizontal diameter is



3½ cm., and its vertical diameter 2 cm. Her history is as follows: She says that six years ago she noticed some veins extending from the outer portion of the ball inwards towards the cornea, where there was a slight elevation on the sclera. This continued to grow and enlarge until about two years ago, at which time it was about as large as a small hazel nut. It was then removed by her physician, but it grew very rapidly, and he removed a portion of it every week or two. He kept up this method of treatment for about six months, when he discontinued it. The tumor was allowed to grow unchecked until August, 1887. At that time it had grown to the size of a large hazel nut, and protruded between the lids. It seems, however, that up to this time it had not encroached very far on the cornea, as she says she could still see very well. In August and September, 1887, it was operated on several times, a small portion being cut away each time. Since then it has been allowed to grow unchecked by any surgical interference (a period of twenty months), until it has assumed the proportions I have given above. There is no history of cancer in the family, and it has not been accompanied by any pains which might be indicative of a malignant growth. It annoys her by its immense size, and the consequent exposure of its surface to the air, as the lids do not completely cover it. I advised enucleation, as the eye was very unsightly, and there was no possibility of restoring any vision. To this she readily consented, and the globe was enucleated without much difficulty in the ordinary way. She made a rapid recovery, and since then, now two years, there has been no return of the growth. The specimen was examined for me by Dr. James M. French, who gave the following report:

The specimen from the eye of Mrs. G., which you recently gave me for examination, proves to be a papilloma. Its structure consists of exceedingly delicate papillæ, which appear to spring

from almost the entire anterior surface of the cornea. I have not yet been able to make an altogether satisfactory section of it, but I think that the growth must have originated from the conjunctiva, and that its presence upon the cornea is only an extension of the tumor upon its surface; for I cannot conceive of the possibility of a papillary growth originating from a tissue like the cornea. I cannot state positively that



the connective tissue of the central portion of the papillæ is, or is not, directly continuous with the corneal tissues, but such appears to be the case, the cornea having become vascular.

The only interesting feature, microscopically, of the tumor, aside from that to which I have just referred, is the very long, slender and delicate character of the papillæ, which appear to be primary.

I have not yet been able to find any secondary off shoots, and if any are present, they originated at, or very near to, the apices of the primary papillæ. The central fibrous framework of the papillæ is very delicate, and supports little more than a single layer of columnar epithelial cells, without a well-marked corneous layer. The tumor was, of course, benign in character.

In this case there seems to have been no doubt as to the microscopic structure of the growth, its distinctive histological characteristics being beyond doubt. I regret I am not able to present to you more confirmatory reports of parallel cases.

EXCISION OF DISEASED EYEBALL, FOLLOWED BY RELIEF OF REFLEX CEREBRAL SYMPTOMS.

Read in the Section on Ophthalmology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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The following case seems rather unique, hence is reported:

Mr. R., æt. 40, single, and a farmer, was sent to me May 19, 1890, by Dr. Thomas, of Booneville, Ark. When 6 years old, some lye thrown into his right eye had destroyed its sight. The eye then gave no special trouble until twenty years afterwards, when it became inflamed and ruptured, discharging the lens and part of the vitreous. During the past twelve years it has