THE LIGHT PERCIPIENT ORGANS.

Gunn,⁷ in an elaborate article on the nature of light percipient organs, and of light and color perception, reaches the following conclusions.

1. That all light percipient cells are modifications of epithelial cells, or developed from the same embryonic layer which forms them.

2. The ends of these cells corresponding to the cuticle have generally cuticular structures formed in the shape of rods.

3. That the opposite ends of these cells are either directly continued as nerve fibres or are connected with ganglion cells, and ultimately with nerve-fibres.

4. That pigment is practically always present, either in the light percipient cells or in close connection with them.

5. That all forms of vegetable and animal protoplasm sensitive to light are acted on by the shorter waves corresponding to the violet end of the spectrum, and that the same holds good in a marked degree in the case of all those light percipient cells as yet known to act to light.

6. That the property of phototaxis is universally influential in the manner in which these cells arrange themselves, and in the direction in which they contract upon exposure, *i.e.*, parallel to the incident light in both cases.

7. That the pigment cells have evidently the property of secreting chemical fluids according to their exposure to light and shade, and that the pigment contained in them is doubtless of service, as being a light absorbent, and thus aiding a rapid transformation of light energy into protoplasmic action.

8. That the result of the action of the pigment cells on the segments of the light percipient cells may be demonstrated by the electrical current produced.

9. That seemingly the strength of this current depends upon two factors, *viz.*, 1. the activity developed in the pigment cell under the action of light, and 2, the depth to which the cone is imbedded in it, *i.e.*, the extent of the surface exposed to its action.

10. That in the case of the vertebrates at least, this resultant current is greatest on exposure to yellow light, *i.e.*, to visible waves of medium length and refrangibility.

11. That the differences in the action thus produced, and consequently in the nerve current transmitted to the visual centre, are associated in our minds with sensations of differences of color.

12. That as regards the stationary rods the action induced will probably depend upon the amount of destruction of retinal purple, and the consequent demand upon the pigment cell. As this action is known to depend more on intensity or wave height than on wave length, it is improbable that the rods have any higher function than that of transmitting impressions which will be appreciated in our conscious centres as variations in light intensity.

13. The function of the retinal purple is probably mainly to protect the pigment epithelium from too great exposure, and thus to modify its secretion and its action on the end-organs imbedded in it.

Royal London Ophthalmic Hospital Reports, July, 1888.

Clinical Memoranda.

SPASM OF THE BRONCHIAL TUBES,

LIKE SPASMODIC ASTHMA, EXCITED BY A FOREIGN BODY INHALED INTO THE TRACHEA DURING AN EPILEPTIC SEIZURE.

BY PROF. J. M. DACOSTA, M. D., PHILADELPHIA.

[At the Pennsylvania Hospital, Prof. J. M. DaCosta made the following clinical remarks, at his lecture on December 1st, upon a case of spasm of the bronchial tubes, simulating a severe attack of spasmodic asthma following an epileptic fit, during which a piece of apple was inhaled into the air-passages.]

This case is peculiar, in my experience unique, in character. This boy, about sixteen years of age, was brought to the hospital five days ago by the police patrol, who found him lying on the street in an epileptic fit. Although perfectly conscious when admitted, he was suffering from great difficulty of respiration. He answered questions rationally, but with effort, owing to want of breath. We learned, subsequently, that the patient had received an injury by being struck on the left side of his head by a brick, some six years ago. About two years later convulsions occurred, which were epileptic in character, and gradually became frequent. He is certain that the epileptic attacks did not begin to appear until two years after he was struck upon his head. In spite of medical treatment, the convulsions persisted, and finally he sought surgical advice. Two years ago Dr. John Ashhurst trephined him at a point which can still be recognized by a depression. It is on a line with the border of the left ear, about the centre of the parietal bone. He says that at first there was no improvement from the operation, but that for the last six months he has had much relief; the convulsions now recur only about once in three weeks, though he takes no medicine; before the operation he had them sometimes twice a day. It is a fair inference that he was benefited by the operation, although improvement was not evident until eighteen months subsequent to its performance.

The special point to which I wish to call your attention is this: on the 26th of November, the day on which he was brought to the hospital, he had a fit and fell senseless upon the street, and as he was recovering from the attack he experienced great difficulty in breathing. When he was brought to the hospital he was suffering intensely; his respiration was labored and noisy like that of asthma, and his features showed that he had great respiratory distress. He was immediately seen by one of my colleagues, who happened to be present, and who kindly prescribed for him. Upon examining the lungs, it was found that the breathing was noisy, the inspiratory murmur weak and the expiratory exaggerated and prolonged. It was especially on the left side that the inspiratory sound was feeble; the percussion resonance was everywhere good. He was distressed and struggling for air, and in fact presented the symptoms and physical signs usually found in a case of spasmodic asthma. The heart was accelerated in its action and weak, but gave no evidence of organic disease. He coughed but occa-

sionally, and he had no fits of coughing or of suffocation. He was ordered to take tincture of belladonna in ten-drop doses, with a little ammonia, and subsequently smaller doses of belladonna with digitalis. His chest was dry-cupped, and he was placed in bed with his head and shoulders somewhat elevated.

These prescriptions, which were based on the thought of the relief of spasm, were followed by great benefit; his breathing became better and easier and he went to sleep. It looked as if the antispasmodics had done their work and that the attack had yielded; certain it is that he had no fits of suffocation or alteration of voice, but about twelve hours after he came in, in the middle of the night, he had a terrible attack of dyspnoea lasting about fifteen minutes, finally terminating, during a paroxysm of coughing, by the expulsion of this piece of apple, while the resident physician was preparing to make a laryngological examination. (The specimen shown was an irregularly shaped piece of apple, slightly smaller than it was, owing to the effects of the alcohol in which it had been placed for preservation; about seven-eighths of an inch in length and about one-half by five-eighths in cross section.) We then got the strange history that when the epileptic fit seized him he was eating an apple. During the convulsions this piece was drawn into the windpipe, and, owing to the insensibility of the larynx during the attack, it passed into the trachea down to its bifurcation and obstructed the left bronchus more than the right. Since the expulsion of the foreign body he has had no sign of asthma, and seems well, but he was allowed the use of bromide in order to prevent the occurrence of an epileptic fit.

There are several points of clinical interest in this case. One is the way in which ordinary spasmodic asthma was simulated by the symptoms produced by a foreign body in the air-passages. What was curious was that he had also the physical signs of asthma: noisy, labored respiration, intense dyspnoea, weak inspiration, prolonged expiration, with clearness upon percussion. With the exception of râles he had the signs which we would expect to meet with in a case of asthma. If you ask, "To what were these symptoms due?" we must answer, "To a condition of spasm of the bronchial tubes caused by this foreign body." Therefore, when I say that this is like a case of spasmodic asthma, I may go even further and say that it really was a case of asthma provoked by the presence in the bronchus of this piece of apple. There is almost identity of pathological condition; but instead of the irritant being of internal origin it was this foreign body.

From the liberal use of belladonna and free cupping of the chest, there resulted evident relief of the symptoms; the spasm evoked by the foreign body yielded, the patient breathed more easily, and even fell asleep. Please note, therefore, that the means employed largely removed the irritation, certainly the spasm, although the irritant remained.

Lastly, I may call your attention to the fact that the foreign body had passed the trachea, because if it had lodged in the windpipe it would have given rise to greater difficulty in breathing than even existed, to fits of coughing and strangling, and to impairment of voice. His utterance was distinct,

though somewhat feeble on account of his respiratory distress. I regret that no laryngoscopic examination was made at first. He was in such distress in bed that it was not attempted, and when about being made he expelled the apple. At present his breathing is natural. Upon auscultation, the respiratory sounds are heard on both the right and left sides, the expiration is neither harsh nor prolonged. The breath-sounds on inspiration are perhaps a little less distinct at the lower part of the left lung than at a corresponding point upon the opposite side, but the percussion note is clear; there is nothing abnormal. The heart, which was feeble, has regained its tone.

A CASE OF INTESTINAL OBSTRUCTION: LAPAROTOMY; DEATH IN THREE HOURS; AUTOPSY.¹

BY MAURICE H. RICHARDSON,

Surgeon to Massachusetts General Hospital.

THE following case occurred in the practice of Dr. H. E. Marion, of Brighton, who has kindly sent me the following history:—

"L. H. A., 57 years of age, has been employed in the silk department of C. F. Hovey's for past twenty-five years. Previous history very good.

June 30th, 1888, he called with a friend at my office, giving the following history:—

On the 28th he had a slight chill; since then he has felt uncomfortable; sensation of fullness as if there were a twist (these were his own words) in the bowels. A cup of tea or a very little food made him feel full and uncomfortable, as if he had partaken of a large meal. Was obliged to unbutton his waistband on account of the fullness. He ascribes these uncomfortable symptoms to having drank in rapid succession several glasses of ice water during one of the recent hot days.

Pulse 100, temperature 99.4 degrees. Abdomen somewhat tympanitic and slightly tender on pressure in both iliac and hypogastric regions. He was advised to confine himself to liquid diet in small quantities, and often; to remain quiet during the following day (Sunday), and take elixir pepsin, strychnine, and bismuth, and let me know if he was not quite relieved.

I remarked to the friend that I saw nothing serious in his symptoms except the frequent pulse, and I hoped he would let me know in the morning if he did not feel much better. They spent a half hour socially with myself and wife, and he seemed in his usual good spirits.

July 2nd, 5 A.M., I found him in a good deal of pain, which was soon relieved by hot fomentations and one-fourth grain morphia. The day before (July 1) he felt so well that, contrary to orders, on the invitation of a friend, he took a ride towards evening, and on returning felt as if he was going to have a chill, which was prevented by going directly to bed. The night was passed tossing and turning, with more or less pain in bowels. Three liquid stools. Pulse 90, temperature 97.4 degrees. Abdomen but slightly tympanitic, with less resonance in left inguinal region. Urine, specific gravity 1030, acid. No albumen and no sugar. He spent the afternoon reading, and in the evening expressed

¹ Read at the meeting of the Suffolk District Medical Society, Oct. 27, 1888.