THE BRITISH JOURNAL OF OPHTHALMOLOGY

MARCH, 1932

COMMUNICATIONS

A SHORT HISTORY OF OPHTHALMIA DURING THE EGYPTIAN CAMPAIGNS OF 1798-1807*

BY

MAX MEYERHOF, M.D., PH.D., Hon. Causâ (Bonn).

OPHTHALMIC SURGEON IN CAIRO (EGYPT)

MUCH has been written about the ophthalmia which ravaged the European armies during the first half of the XIX century. The largest bibliography, although in no way complete, is to be found in Dr. J. Boldt's book on trachoma as an epidemic. He tried to trace the origin of this disease back to Egypt, and to clear up several of the problems concerning its wandering through the armies of Europe. He did not fully succeed, and it will not be possible to identify exactly the different forms of conjunctivitis described during the pre-bacteriological era. I myself began at the time of my first journey to Egypt, in 1899, to collect all the available material concerning the eye diseases which attacked the French, British and Turkish soldiers during their campaigns in Egypt. I tried, moreover, to compare the old reports with the actual condition of eye disease in Egypt, in order to come to a better understanding of the historical facts. One of the most pleasing results of my investigations was to establish the part played by British army surgeons in the discovery of the contagious nature of the ophthalmias with which they had to deal.

* A paper read by Mr. MacCallan before the Section of the History of Medicine, at the Royal Society of Medicine, on November 4, 1931.

In response to the invitation with which the Royal Society of Medicine has honoured me, I have great pleasure in recalling to your memory the important rôle played by British medical men in the progress of medical and ophthalmological knowledge.

I.—Retrospect concerning Ophthalmia in Egypt before the French Expedition

Eye diseases have been recognized in Egypt since the early historical period of the Old Kingdom. The Ebers papyrus gives hundreds of recipes for different eye troubles, and clearly distinguishes, for example, leucoma of the cornea and trichiasis, both of them sequelae of severe acute or chronic forms of conjunctivitis. An oculist to the royal court of one of the kings of the VI dynasty (about 2,600 B.C.), is known to us from his tomb stele, recently discovered by Prof. Junker near the Giza pyramids. But from that date onward, we do not hear anything about the occurrence of eye diseases until the late Islamic period under the Mamluks in the XIV century A.D. At that time, the Egyptian oculist Sadaqa ash-Shâdilî wrote in his still unedited Arabic treatise on eye diseases, that "the inhabitants of Egypt are more frequently attacked by ophthalmia than other people on account of the abundance of dust and sand in their land." This theory of the origin of eye diseases in Egypt prevailed during the following centuries, and is still uttered in our own days by foreign travellers in that land.

The first serious European medical observer in Egypt was Prospero Alpino, physician to the Venetian Consul in Cairo from 1580 to 1584, who afterwards composed the famous book *De Medicina Aegyptiorum* (first edited at Venice 1591). He had observed, already at that date, the seasonal occurrence of ophthalmia in Cairo. "Sparsim vero per urbem toto anno hae oculorum inflammationes vagantur, atque epidemice plurime in prima aetatis parte calidissima. . . Eo enim anni tempore e centum hominibus quinquaginta saltem lippientes observantur. . ." He observed, moreover, pterygium, corneal ulcers and opacities, cataract, mydriasis (probably glaucoma) and hemeralopia. The standard of the medical profession was, however, very low, as anyone could buy a licence to practise on applying to the Turkish chief-physician (*Hekimbashy*).

Since Alpino's time, several hundreds of travellers have described their journey to Egypt, very few of whom fail to mention the prevalence of eye diseases and blindness. I mention only the Bohemian nobleman Harant of Poljic, because he gave, in the Czech language, a most original and intelligent description of what he saw. He was the first to describe the masses of flies on the

eyes of the natives, especially children, and he attributes very justly the prevalence of eye disease to this and to the general filthiness of the poor population. The French physician Tourtehot-Granger was, in 1745, the first to call Egypt "the land of the blind" ("l'Égypte peut à juste titre, être appelée le pays des aveugles"). In 1735, a section for blind students was founded in the Theological College of the Azhar Mosque; it had some 80 to 150 inmates and still exists in our days. Many prominent foreign travellers themselves became victims of ophthalmia; James Bruce and Eyles Irwin were attacked by light forms of this complaint, while the Greek dragoman of the former lost one eye by the same disease during their stay in the Nubian desert.

In general, we may assume that eye diseases, in particular trachoma, have been frequent in Egypt ever since Pharaonic times. The terrible increase of their frequency and of the resulting blindness is in all probability due to economic distress under the rule of Mamluks and Turks beginning in the second half of the Middle Ages. When Bonaparte undertook, at the end of the XVIII century, his adventurous expedition to Egypt, he found this rich land inhabited by two millions of peasants (Fellahîn) living in the most appalling misery, a prey to all kinds of infectious diseases.

II.—Ophthalmia in the French Army

On July 1, 1798, the young general, Napoleon Bonaparte, landed near Alexandria with an army of about 40,000 men, occupied that town and proceeded to march on Cairo on July 9. During this forced march in the fiercest of the North African summer heat, the troops suffered the tortures of thirst, followed by delirium, dysentery and night blindness. After the so-called battle of the Pyramids (July 21) and the occupation of Cairo, it was immediately found necessary to organize a large military hospital at Giza (the southwestern suburb opposite Cairo), to accommodate wounded, dysenteric and ophthalmic soldiers (Desgenettes I, p. 13). A general order from Berthier, *chef d'état-major*, on August 17 (Jonquière II, p. 478) called attention to the fact that the rise of the Nile made the nights cooler and moister, and warned the soldiers against sleeping without having the head well covered. The humidity of the nights was supposed to generate several diseases, and in particular, "inflammations of the eyes which, without being dangerous, are very troublesome and painful." This order seems to me an evident proof that the "ophthalmia" which attacked the French army was in the beginning harmless, and that it must have been mostly of the type of the very contagious but not dangerous conjunctivitis caused by the Koch-Weeks' bacillus; for this disease is prevalent everywhere in Egypt from April to

November. On the other hand it is manifest that the French army physicians were far from suspecting the contagious nature of the epidemic; they continued to be so during the Egyptian campaign as well as for a long time after it.

In spite of General Berthier's warnings the epidemic spread very rapidly. At the end of September the Chief Surgeon, Dr. Larrey, stated (p. 30) that few soldiers had escaped ophthalmia and that it had had fatal consequences in some of the cases. As he wrote expressly that it was of an acute inflammatory character there is no doubt that some of the cases were gonorrhoeal conjunctivitis, which is of frequent occurrence among the Egyptian population in autumn. Another military surgeon, Assalini, wrote about the same time from Cairo (p. 117) that the duration of the ophthalmia was from seven to eight days. "I have seen many recover in less time, and I have seen others continue to suffer under it for several months." This latter assertion tells us that some of the acute ophthalmias (by Koch-Weeks' bacillus ?) may have been followed by a superimposed trachoma.

In the provinces things were in no way better: General Reynier, in command of the Eastern Province (Sharqiya) of the Delta, sent a report, on September 29, 1798, saying that every one of his battalions had been reduced by ophthalmia from 350 to about 125 men. This is confirmed by the memoirs of Lieutenant Vertray and Sergeant François, who gave dramatic narratives from the small town of Bilbeis. There the number of combatants was so reduced that ophthalmic soldiers with eyes completely blinded by the swelling of the lids had to be employed to man the trenches, their muskets being pointed at the enemy by comrades whose sight had not been affected.

In Upper Egypt the ravages of ophthalmia were still worse. The brilliant General Desaix set out on August 25 with his division of 3,000 men in pursuit of the Mamluks southwards along the Nile. On October 7 he overtook Murâd Bey and defeated him at the entrance of the oasis of el-Fayyûm, but was unable to follow the beaten enemy on account of the ophthalmia which had rendered 1,400 men incapable of service, besides the other sick and wounded (Jonquière III, pp. 206 and 224). Desaix himself, his Brigadier-General Robin, and many other senior officers were themselves suffering and unable to leave their tents. On October 27 Desaix took refuge with his division in the town of Fayyûm itself. "We were," says Captain Savary, "more like a hospital being evacuated than troops on the march. . . . There were more blind men than there were healthy. Every soldier who was able to see or who had only one eye attacked served as guide to several blind comrades who had, however, to carry their arms and baggage." General Desaix still hardly restored to health, resumed the pursuit of the

Mamluks southwards, as far distant as Aswân in Nubia. He left the still suffering General Robin with 350 ophthalmic soldiers in a provisional hospital at Fayyûm. The unhappy men were attacked by several thousands of Egyptian peasants guided by Mamluks; the tragic scenes of Bilbeis were here repeated, the blind soldiers being obliged to mount on the terrace of the building, and to repel the assailants by "blindly" aimed musketry fire. Less fortunate were the ophthalmic soldiers in a temporary hospital at Mansoura; they were attacked at the end of 1798 and cruelly massacred by the population (Report by Lavalette), as were also the blind and sick with Desaix's baggage on Nile boats on March 9, 1799. Many blind or weak-sighted soldiers had to be sent back to Cairo where a special military ophthalmic hospital was inaugurated on the farm of the Mamluk leader, Ibrahim Bey, at Giza. It must have been situated practically on the site where there now exists the modern ophthalmic hospital organized in 1923 by MacCallan, and the Memorial Ophthalmic Laboratory founded with the help of the British War Graves' Fund.

In September, 1798, the young physician Bruant (who died later on from plague) published, at the request of the Chief Army Physician Desgenettes, a pamphlet on ophthalmia. He describes, however, only light cases almost entirely without corneal affections. He was quite unable to deliver a definite opinion, as he was manifestly baffled by a strange and unknown disease. I omit the many reports written by officers, officials, savants and artists of Bonaparte's army on their own experiences with ophthalmia. I collected carefully all these records, but did not get any other evidence from them than that they all suffered from light forms of ophthalmia, leaving no weakness of the sight and no chronic sequelae.

Far the best medical description of ophthalmia as it was observed at the end of 1798 is that furnished by the aforementioned Assalini (p. 124-5). I am giving only the gist of it: "On examining the eyes in this state, the vessels of the conjunctiva appeared red and distended; often the conjunctiva was elevated to such a degree that the transparent cornea appeared quite buried in it, and of very small diameter. Then the palpebrae became oedematous, the patient could no longer endure the light, the flow of tears increased, and generally became changed into a thick and sometimes yellow matter." Here, Assalini appends a note in which I find the remarkable sentence: "The inflammation of the conjunctiva in the ophthalmia of Egypt, and that of the membrane of the urethra afford discharges of which the appearance is exactly similar." When regressing from this stage he calls the ophthalmia *simple*, although very severe; and *complicated* when it gives rise to corneal lesions, of which he mentions "specks, staphylomas, hypopions and

other diseases." "Among the causes, I consider the intense light of the sun as the principal." Later on (p. 128) he mentions, moreover, "the chalky, argillaceous and calcareous particles in the atmosphere" as causes, and also "suppression of the perspiration, cold air and damp" by night. "I observed that the sappers appointed to manage the flying bridge established on the Nile between Gizeh and the isle of Raoudah, were nearly all attacked with this disorder. . . ." On the other hand he found that the soldiers crossing the deserts of Upper Egypt or the Sinai Peninsula were free from ophthalmia. No idea of contagion came to his mind. He boasts (p. 135) that during his stay in Egypt "of 2,000 attacked with the ophthalmia, whom I attended, no one lost his sight, except the Abbé Elias, interpreter, a man of 60 years of age, and who at last contracted a speck which prevented him from seeing with the left eye."

It must be remarked that Assalini was very lucky; for, regarded from the point of view of to-day, the treatment which he applied was not an efficacious one: bleeding in the arm, foot, jugularies and temples, leeches, scarifications of the skin on foreheads and temples, blisters, setons, purgations and instillation of a solution of verdigris (suggested by the oculist Janin of Lyon, in 1772). Assalini adds, incidentally (p. 155), that he sent a powder composed of verdigris and acetate of lead to General Belliard in Upper Egypt who had been suffering severely from ophthalmia. This officer used to dissolve it himself in rose water when suffering a relapse. Assalini gives a very circumstantial report on eye diseases and blindness among the Egyptian population and records their remedies which were all in accordance with the old Greco-Arabic pharmacopoeia. He specially mentions the *shishm* (black seeds of *Cassia absus* L., a Sudan plant) which is to-day in use with the natives in Egypt.

Already on November 25, 1798, Bonaparte was obliged to despatch a first convoy of 150 amputated or blind soldiers—among the latter three army surgeons—to France (Larrey, p. 82). Their fate was terrible; obliged to land near Augusta in Sicily, they were all cruelly murdered by the mob, which was infuriated against the French. A second transport of 200 blind invalids was sent to France in February, 1799 (Correspondance de Napoléon Ier., T.v., Nos. 3912 and 3925); and reached its destination. According to Assalini (p. 144-5) several of these invalids recovered later on a good vision either by clearing up of corneal opacities or by Demours' operation (artificial pupil) and became able to do service in the Consular Guards. In Egypt, Larrey tried on blind eyes some operative interventions, but was not very lucky, a fact which Assalini ascribes to the climate. Several French grenadiers committed suicide in Egypt because they had lost their vision by ophthalmia (Larrey's second publication, p. 136).

During the winter, as ordinarily in Egypt, the ophthalmia subsided, and in the summer of 1799 it was less severe than before. Moreover, it was overshadowed by the dangers of the plague which decimated the French Army during the adventurous and unsuccessful campaign in Palestine and Syria. Desaix's division, however, in Upper Egypt, continued to suffer from ophthalmia, and after Bonaparte's return to France, his successor, General Kléber, had to send back another convoy of blind (end of 1799).

In 1800, the ophthalmia took a milder form. The army physician Savaresi published in this year a short pamphlet on ophthalmia which was printed in Cairo and re-published later on. It has been frequently quoted, but is a rather poor compilation. He ascribes the ophthalmia to the chalky and argillaceous composition of the Egyptian soil, and distinguishes, not very happily, inflammation of the globe, the tarsi and the conjunctiva. As local remedies he recommends vinegar water and a dry collyrium composed of sugar, sulphate of aluminium and nitrate of potassium.

In the spring of 1801, during the siege of Alexandria by the British army, ophthalmia broke out anew among the French garrison of this town. In a short time 3000 soldiers were attacked, but as, according to Larrey (pp. 31-33), none of them lost his eyesight, it must have been the harmless Koch-Weeks' conjunctivitis. Here again, the idea of contagion never entered the mind of Larrey or of army physicians. The German, Dr. Ludwig Frank for example, who did voluntary service in the French army, fully shared Larrey's views.

The French garrison of Cairo suffered equally from ophthalmia. On June 27, 1801, Desgenettes (I, p. 225) wrote that of 633 diseased soldiers (out of a total of 8,000) over 300 were suffering from ophthalmia. When they surrendered (July 7, 1801) they had, according to Wilson (pp. 173 and 253), besides this number, 500 other invalids, partly blind. On September 1 the capitulation of Alexandria followed, when 1,400 sick and 240 invalid French soldiers had to be sent to France on 16 British hospital ships. Of Bonaparte's original army only 13,000 men were left, that is to say, less than one-third.

During the long passage by Italy to France most of the ophthalmic sufferers recovered under the influence of the fresh Mediterranean breeze, while several others suddenly lost their vision after their arrival in France, in Larrey's (p. 33) opinion, from the sudden change of climate. I suppose that these were cases of acute secondary glaucoma following adherent leucomata.

Many other French army surgeons wrote, years after the Egyptian expedition, on their experiences with ophthalmia. Amongst these were Ceresole, Deruez, Renoult, Vautier, Lattil, Pugnet, Lassus et Desessartz. But their writings do not furnish new points of view

nor did any of them recognise the contagious nature of the disease. Nor was the Belgian physician Decondé able to profit from their publications when he wrote, in 1840, his history of ophthalmia in the French armies. The most important remarks which I found are contained in a study by R. Chamseru, who was not himself in Egypt, but took abundant information from the medical officers of the expeditionary forces, and examined in 1802 in Paris, a great number of ophthalmic soldiers who had just come back from Egypt.

He bases his description of the "Egyptian" ophthalmia largely on the data furnished to him by Renoult, chief surgeon of Desaix's army in Upper Egypt. This latter observed the seasonal occurrence of the acute form of ophthalmia, as well as its increase during the blowing of hot south winds (so-called *khamsin* winds). He found, moreover, the attacks of the disease more frequent during the sojourn of the troops in damp cultivated land than in the desert. As to the causes Renoult and Chamseru share the opinions of their predecessors and do not take into consideration contagion. Among the sequelae of severe ophthalmia Renoult mentions the hypertrophic ectropion of the lids. We know to-day that this is a consequence of insufficiently treated gonococcic conjunctivitis.

Examining the invalids of the Egyptian army who were specially sent to Paris, Chamseru found a certain number of shrunken globes resulting from total melting of the cornea, and several men blind by "gutta serena or glaucoma" (probably secondary to adherent leucomata). He observed, moreover, "varices" of the conjunctiva (chronic congestion) and "fungus" (probably trachoma), moreover, pterygium and corneal opacities of different size. He recommends excision and scraping for the first-named diseases and "artificial pupil," after Demours, for the leucomata. At the end of his report he makes suggestions for improving sanitary and economic conditions in Egypt, particularly by creating and maintaining more canals and by extending the culture of various crops.

Among the great many other publications which followed the Egyptian expedition I will mention only that of Ph.-J. Roux, a celebrated surgeon of Paris who went to London, in 1814, in order to study British surgery. He visited the Military Asylum of Chelsea under the guidance of Sir Patrick MacGregor (see below) and saw there a great number of ophthalmic children. On this occasion he mentions that several of the French invalids, returned from Egypt, suffered for years from chronic eye-trouble; but that contagion had not been observed, either in the regiments which received the details of the Egyptian divisions or in military asylums or in the civil population. It is, indeed, an uncontested fact that the French army during the decennium following the Egyptian expedition suffered less from ophthalmia than all the other armies of Europe. It is this which confirmed the French medical men in

their stubborn resistance to the adoption of the doctrine of the contagiousness of ophthalmia. Roux himself was severely rebuked by Larrey (*Clinique chirurgicale*, Vol. I, Paris, 1829, p. 451), because he had been inclined to adopt the English opinion that ophthalmia was transmissible.

There are practically no records of eye diseases in the French army during and after the Napoleonic wars, with the exception of the Russian campaign of 1812, where the Belgian army-surgeon van Kerckhove observed (but mentions cursorily only) a severe ophthalmia (the same probably which spread, from 1813 onwards, in the Prussian army). Generally speaking, the standard of ophthalmological science was rather low during this period, particularly in France, because the surgeons and medical faculties were violently opposed to the recognition of this speciality as a separate branch of medicine. The above-mentioned surgeon, Professor Roux, *e.g.*, speaks in his book (p. 280) of "le funeste préjugé des gens du monde en faveur des oculistes!" The name of oculist had, indeed, acquired in France a bad reputation through a series of wandering quacks and cataract couchers who had profited from the decline of ophthalmological education during the great revolution, and the following incessant wars. This is one of the chief reasons why French army physicians failed to discover the contagious nature of ophthalmia, and why they had to leave this honour to the British.

III.—Ophthalmia in the Turkish Army

The Turks undertook three campaigns against the French forces in Egypt: in 1799, when they were defeated by Bonaparte at Aboukir, in 1800, when they were beaten by Kléber near Cairo (Héliopolis), and in 1801, in co-operation with the British forces. About the first two campaigns no medical reports exist, while al-Gabarti, the Arabic historian, does not say anything about the health of the Turkish army. The third expedition which started at the end of 1800 from Syria, under the command of the Grand Vizier, was accompanied by a British military mission. The surgeon to this mission was Dr. William Wittman, who published a very interesting account of his experiences with the Turkish army, accompanied by his medical journal. As to ophthalmia, it began immediately the Turks, after having crossed the Sinai Peninsula, reached the first Egyptian town, Bilbeis, on May 14, 1801. By June all kinds of diseases were multiplying in the Turkish and British armies which were besieging Cairo; the soldiers "were attacked by fever, dysentery, diarrhoea and ophthalmia." During the winter 1801-2 the ophthalmia ceased, but plague appeared. In his special paragraph "On Ophthalmia," Wittman sums up that "in the months of May, June, July, and part of August, 1801, ophthalmia raged among the

English and Ottoman armies in Egypt." He describes it as an acute purulent conjunctivitis with severe swelling of the lids; among the soldiers of the British mission he did not have to complain of any loss of eye-sight. "The apparent causes of the disease are the application of heat and light; irritation from particles of sand or dust; and the occasional exposure to night air" (p. 541). "Some circumstances have recently occurred among the troops on their return to England from Egypt, which have given rise to an opinion that the disease is infectious" (p. 542). Wittman does not share this opinion, but relates that the women and children of the British mission were attacked with ophthalmia during a short sojourn at Larnaca, in Cyprus, where this disease was prevalent. Wittman's therapy was fairly reasonable: a vinegar-water lotion with acetate of lead instilled, sometimes blisters and leeches against pain and congestion. He had some difficulties in treating the distrustful Turks, although the vizier himself when suffering from ophthalmia in his only eye did appeal to the English doctor's art. On the further development of ophthalmia in the Turkish army no reports are in existence.

IV.—Ophthalmia in the British Army and Navy A.—The Campaign of 1801

From July, 1798, to September, 1801, the Egyptian coast was blockaded by the British navy. But as no landing operation was possible before March, 1801, we do not learn anything about "Egyptian" infections among the English sailors. On March 8, 1801, General Sir Ralph Abercromby landed at Abukir (Abû Qîr, the place where Nelson had destroyed Bonaparte's fleet on August 1, 1798) with an army of 17,500 men and took the French fort. On March 21, 1801, he attacked and defeated the French army (then under General Menou) near the site of the ancient Canopus. After this battle Menou was besieged in Alexandria, but did not surrender until September 2, 1801. We have already seen in Chapter II that the blockaded French troops suffered very much from a harmless ophthalmia during the siege. As to the British fleet we have the evidence of Dr. Douglas Whyte, Navy-surgeon, in a letter written in the Bay of Abukir, on July 8, 1801. He observed a rapid increase of ophthalmia among the British sailors, and held sun-glare, dust of the desert and humidity responsible for the disease and denied contagion. He held the same opinion concerning plague, inoculated himself twice with the pus of plague abscesses and died, after a third experiment, on January 9, 1802, "a victim to his own visionary speculations." (Power, p. 9).

A little later, by September, 1801, ophthalmia had already appeared

on board the ships. Dr. Brigges, surgeon of the man-of-war *Ajax*, wrote a letter, on February 12, 1802, to Trotter, editor of *Medicina Nautica*. In this letter Brigges emitted with emphasis the opinion that the "Egyptian" ophthalmia was of contagious matter. The priority in forming this opinion was no doubt his; the literary priority, however, belongs to Edmondston and Power, as Brigges's communication was published in 1804 only by Trotter, who added moreover some disapproving remarks.

The first to publish his experiences with Egyptian ophthalmia was Edmondston, in 1802. As he had not been himself in Egypt I prefer to give first the reports of the surgeons and officers who accompanied the British expeditionary forces.

George Power was assistant surgeon to the Royal Welsh Fusiliers. He observed ophthalmia first at Rosetta on the seashore, and then in the interior of Egypt after the capitulation of Cairo in July, 1801, when he was in charge of the Giza Hospital where all the ophthalmic French and British soldiers were collected, nearly 800 in all. Here Power himself and his assistant, Dr. Davis of the 26th Dragoons, were simultaneously attacked by the disease, as well as the surgeon of the 89th regiment of foot which was stationed in Cairo. This surgeon was probably Reid, who himself wrote, in 1806, a pamphlet on his observations. Power describes a purulent conjunctivitis which must have been partly gonococcic, as he enumerates among the sequelae chemosis, specks and "redness" (vascularisation) of the cornea. His therapy was more reasonable than that of the French surgeons: removal of the "acrid" matter, by washing the eye with a syringe, lotion of lead sugar and opium, and blisters or bleeding.

As to the causes of ophthalmia he admits those supposed by his predecessors, but adds as the most important a *putrid virus* rising from "foul and pestilent vapours" out from the filth and rubbish of oriental towns and villages. To this putrid virus he ascribes the origin of plague, dysentery and "eruptive fevers;" as he considers these fevers infectious, he thinks that *ophthalmia may likewise be contagious*, not always, but in certain instances. He adds (p. 27) an interesting note on a former occurrence of ophthalmia in Great Britain: "A species of ophthalmia prevailed in these kingdoms about the year 1790, which was thought to be contagious; and a species of it is frequently prevalent amongst the Irish peasantry, which is considered by them to be infectious."

His first observation, however, does not seem to us conclusive: Mrs. Rosetti, wife of the Austrian Consul in Cairo, caught the ophthalmia from a diseased gentlemen who was sitting opposite her at table! Much more important is his remark that several sailors on troop ships apparently caught ophthalmia from suffering soldiers on their passage home from Egypt. Among the Hompesch

Hussars which were encamped near Abukir "one tent only in the line . . . had been particularly remarkable for infecting the men with ophthalmia." Power then mentions apparently from reports of his colleagues, the infection with ophthalmia of two regiments at Gibraltar which had never been in Egypt, but acquired the disease from their intercourse with sailors and soldiers returning from Egypt.

Lieut.-Col. R. Th. Wilson wrote in 1802 the best report on the British expedition to Egypt. He includes (pp. 247-9) a short paragraph on ophthalmia in which he repeats in general the ideas of the French surgeons. But he adds that ophthalmia is partly due to "the barbarous inattention of parents" to their children which "have from earliest infancy at the corner of their eyes a great quantity of little insects continually settled. . . ." He mentions that the British troops "during their short stay, have suffered considerably, one hundred and sixty being totally blind, and two hundred having lost one eye irrecoverably." These figures are extracted from the accompanying report (pp. 253-4) by Sir Thomas Young, Inspector-General of the army's sanitary service. In the 4th edition of his book (1803, Vol. II, p. 123 note) Wilson includes a remark on the recent discovery of the contagious nature of ophthalmia.

Major Walsh in his journal of the campaign confirms Wilson. He mentions that the division of General Coote was the worst sufferer from ophthalmia. He does not speak of contagion.

Henry Reid*, surgeon of the 89th regiment, and Dr. Dewar wrote about their experiences with ophthalmia several years after the expedition, the latter declaring himself an adherent of the doctrine of contagion; their pamphlets were, however, not at my disposal.

The best and most complete report on ophthalmia during the campaign of 1801 was produced by James MacGrigort†, superintendent surgeon to the Indian expeditionary force. This army was sent from India (Bombay) to Kosseir (Qusayr), on the coast of the Red Sea, where it landed on June 15; after a fatiguing march through the Eastern Desert and Upper Egypt in full summer heat, it reached Cairo in August, where, in the meantime, the French garrison had capitulated.

The Comte de Noé, a French emigrant who served as a lieutenant in the 10th English regiment, has described and illustrated this expedition. He mentions the occurrence of ophthalmia among the troops several times and declares that he himself was the only officer who was not attacked, owing to his regular use of an eyewash and

* In Johnston's *Roll of Army Medical Service*, his name is spelt Reed.

† He is frequently confused with Sir Patrick MacGregor, who will be mentioned below.

dark spectacles. This is contrary to the statement (*vide infra*) of MacGrigor that officers were rarely victims of ophthalmia; de Noé was writing 25 years after the expedition.

MacGrigor states that the Indian division was composed of 8,000 men, half of whom were British soldiers. Ophthalmia began in July, 1801, during the march through the desert and reached a climax during the sojourn in Cairo (August), and the following march to Rosetta on the sea-shore (September). In this latter town the division had 600 ophthalmic patients, 350 of them from the 10th and 88th English regiments alone. In October, a second climax was reached with over 1,000 ophthalmic patients. In November and December, 1801, the number decreased, there being 90 cases at the end of the year. On April 1, 1802, 50 blind British soldiers had to be invalided out of the Indian corps and sent to England. The remainder of the division marched in May, 1802, from Alexandria to Suez. During this march ophthalmia again began its havoc among the troops, but ceased during the following sea passage to India. It was remarkable that during the whole time the native Indian troops suffered less from ophthalmia than the English soldiers. The total of British soldiers invalided out of this division was 117 out of 3,759 men, and that of Indians, 41 out of 4,127.

MacGrigor's description of the disease corresponds to that of an acute purulent conjunctivitis, followed often by total loss of the eye or by corneal specks, ectropion, and sometimes a chronic state of inflammation, lasting several months. We find in MacGrigor's record some very judicious remarks: "Several gentlemen thought that this disease, in Egypt, was contagious. So singular an opinion I would hesitate to offer on slender grounds. However, the remarkable prevalence of the disease in particular companies of regiments, while the same general causes prevailed everywhere, will not be easily accounted for, without admitting something of the kind" (p. 149). A little later he adds: "I believe that several diseases are contagious which are not suspected to arise from such a cause: the theory of contagion is but very imperfectly understood." It is very rare indeed to meet at that time a similarly sound discrimination.

At the end of his book MacGrigor inserts another important remark (p. 157): "It could not escape observation how rarely officers were the subjects of this disease . . . I lay most stress on the attention which officers pay to cleanliness. In the 88th regiment where, I believe, forty men did not escape an attack, only two officers out of thirty had ophthalmia." He says, moreover (p. 158) that only one officer lost an eye, ensign Paton, a former medical student who devoted himself to the attendance of ophthalmic soldiers and contracted the disease in its severest form. Surgeon Bellars was attacked by the same form of ophthalmia during his

service in the Giza Hospital and suffered during several months, but escaped corneal complications.

As therapeutics MacGrigor advocates, in the beginning of the ophthalmia, syringing with tepid filtered water, afterwards application of sugar of lead with camphor, "vitriolated zinc" with, in case of severe pain, the addition of opium. A new feature is the treatment of leucomata by splitting of the corneal vessels leading to them, eventually followed by application of the old *aqua phagedaenica* (a composition of sublimate and lime water). He praises the efficaciousness of the preventive measures taken by the unfortunate Dr. Douglas Whyte to protect the eyes of sailors: frequent washing of the eyes with cold water and wearing of an eye-screen.

As to the spreading of ophthalmia from the troops serving in Egypt to other places and in particular to Great Britain the two pamphlets by Arthur Edmondston*, a young Scottish surgeon to the second regiment of Argyleshire Fencibles (Territorials), are the most important contemporary documents. In his first publication, as early as 1802, *he insists energetically on the contagiousness of the disease*, and so the priority in this important discovery is his.

It is to be noted, however, that Edmondston, like Power, was not able to free himself entirely from the time-honoured prejudice of ancient Greek medicine that ophthalmia could be acquired by the mere looking at a diseased person: "I am inclined to believe" he says (p. 46), "that the influence of this contagion operating through the medium of the atmosphere, does not in ordinary circumstances exceed the space of a foot. As the discharge of morbid matter, however, from the eyes, in cases of virulent ophthalmia, is continual and abundant, an ample source of infection is constantly present. . . ."

Edmondston observed that his regiment was free from ophthalmia during its stay at Gibraltar where it had no intercourse with troops returning from Egypt. On January 9, 1802, it embarked on the transport *Delft* which was considered "an unhealthy ship." She had brought the regiment of Guards from Egypt to Gibraltar, and they had suffered a great deal from fever and ophthalmia during the passage. In spite of the fact that the *Delft* had undergone a two months' washing and frequent fumigations during its stay at Gibraltar the Argyleshire men had during the passage to Spithead and quarantine there, nine cases of ophthalmia; in the month of March during the marches to Hilsea and Colchester 25 cases; in Colchester Barracks from March 23 to April 11, 75 cases; and later on 24 cases. Edmondston himself contracted the disease while officers in general were spared. "I impressed early upon

* His name is nearly always misspelt in later publications (Edmonson, Edmonstone, etc.). He was born in 1780.

their minds an idea of its infectious nature, and they carefully guarded against any intercourse that might have produced it." Edmondston observed that men sleeping in the same bed or even in the same room with ophthalmic patients often got the infection within 24 hours. Some of the Argyleshire men having enlisted, later on, in the 49th regiment, carried the infection to the latter.

Edmondston, moreover, collected information from those of his colleagues who had remained at Gibraltar after his departure. Dr. Robinson, surgeon to the Banffshire Fencibles, wrote to him that his regiment caught the contagion from the 8th regiment, coming from Egypt; and Dr. Ives, surgeon to the Cambrian Fencibles, informed him that the *ophthalmia Gibraltariensis* appeared among his men during their passage to England. He had seen blind patients arriving from Egypt, and he concludes: "I very much suspect some infection in the case." Edmondston heard later on that the Prince of Wales's Fencibles were equally affected during their stay at Gibraltar and afterwards. From the end of 1801, regiments from Egypt were subsequently sent to Gibraltar where ophthalmia "broke out anew and with increased severity. Many who had escaped it entirely in Egypt were now affected, and the garrison surgeon, Mr. Pym, an accurate and intelligent practitioner, and who had also become a contagionist, informed me that the men of the Argyleshire, Banffshire, and others who had enlisted into the Egyptian regiments, had suffered in a peculiarly violent degree." Two battalions of the 5th regiment which had not been in Egypt were likewise infected and had several cases of blindness, as the form of the ophthalmia was severe, closely resembling the "Egyptian."

The civil population of Gibraltar and, later, that of Malta was infected in a similar manner. In the latter island "the inferior class of courtezans" was the first to contract the disease. After the peace, in May 1802, when many regiments were disbanded in England, the soldiers carried the infection with them to the civil population, the lower classes of which did not at that time have much notion of cleanliness. ". . . the disease was considered as local and uninfectious. Owing to these circumstances, ophthalmia appeared at the same time in the most distant parts of Great Britain, and that peculiar modification of it, denominated Egyptian ophthalmia is now (in 1806!) familiar to almost every medical practitioner" Edmondston mentions (p. 115) that trichiasis is rarely a primary affection, but a consequence of previous inflammation.

Edmondston who was, without a doubt, a keen observer, notwithstanding that he was only 23 years of age, relates that he found, in 1803, in Paris, and its suburbs a mild form of ophthalmia, lasting 24 hours only, but very contagious and joined with a kind of

influenza. This is the extent of Edmondston's own experiences with ophthalmia. The main part of his book is filled with an historical sketch and quotations of former authors on ophthalmia. Thus we find that, in 1806, "Egyptian" ophthalmia was already a wide-spread disease in Great Britain. It is not possible, within the limits of this paper, to record the very many publications by British surgeons and oculists, from that year onward, on the further development of the disease in the United Kingdom. I will mention, however, on account of their importance, the two published by the Scottish army surgeon John Vetch. In 1807, he reported on the ravages of ophthalmia in the 52nd regiment of foot. This was one of those which had suffered severely in Egypt, being subsequently brought up to strength by recruiting in England and stationed in barracks near the town of Hythe in Kent. The second battalion alone had, from August, 1805, to August, 1806, out of 700 men 636 ophthalmic patients under hospital treatment; 50 of them lost both eyes, 40 one eye. Inspector-General Knight was a fervent advocate of phlebotomy which was still for many years to dominate the therapy of ophthalmia. Vetch, however, has the credit of urging the application of nitrate of silver: "Lunar caustic, as far as my observation goes, seems to be the most efficacious application."

He describes, moreover, the conjunctival granule as a specific tissue change resembling the villi of the small intestine, and *he gives typical pictures of granulations.*

In his second book, published in 1820, he inserts in the second section a complete history of ophthalmia in the British armies. He admits transmission by the purulent discharge containing an "animal virus," from conjunctiva to conjunctiva, and he insists on the dangers of common use of towels and hand-basins by the soldiers. Of importance is, moreover, his recommendation of copper-sulphate-stone for granulations. Vetch inoculated successfully ophthalmic pus on the urethra and so he is a forerunner of Pieringer who proved, 20 years later, by experiments, the identity of the severe form of ophthalmia and gonorrhoeal conjunctivitis.

Of all the others, more than twenty English publications on ophthalmia between 1806 and 1820 I quote here only the two papers read at the Society for the Improvement of Medical and Chirurgical knowledge by Sir Patrick MacGregor, surgeon to the Royal Military Asylum. In this educational institution ophthalmia began in April, 1804, probably introduced by the visits of soldiers returning from Egypt who came to see their children; by the end of that year, 392 children, 105 of them girls, had been attacked. Ulcers of the cornea, specks, and sometimes loss of the eye by melting of the cornea were the consequence. In the summer of 1809, a second epidemic broke out. In general, the sequelae for children were less severe than for adults; of all the thousands of

children who suffered from ophthalmia between 1804 and 1810 six only lost both eyes, twelve one eye. Sir Patrick gives (pp. 51-54) a narrative of the ophthalmia developed by three nurses who had received some discharge of diseased eyes in the face while they were syringeing sick children. The ophthalmia broke out in each case within 24 hours, and one of the three ladies lost the right eye within 4 days from the infection, by an abscess of the cornea. MacGregor says about this form of ophthalmia: "The disorder appears to be communicated by the purulent matter of a diseased eye being applied to that of a sound person. It so much resembles the venereal gonorrhoea in its manner of being communicated, and its symptoms that some well-informed medical men have entertained the idea of their being the same disorder. But till the identity can be proved by a series of well-conducted experiments, such an opinion ought to be received with caution (p. 51)." "The contagion was, as formerly, more active in warm than in cold weather. Flies, in warm weather are seen in great numbers surrounding patients labouring under ophthalmia; and, I much suspect, are very frequently the medium by which the disease is communicated (p. 54)." It is to be mentioned that Ware, in 1808, equally insisted upon the likeness between the "Egyptian" and gonorrhoeal ophthalmia.

Patrick MacGregor proved himself to be a judicious observer not only here but also in his description of the granulations which he observed in March, 1802, on the conjunctivae of fifty-six ophthalmic sufferers of the Coldstream Guards, just returned from Egypt. "In all of them the eye-lids were more or less affected; and when the inner surface of the eye-lids was examined with a magnifying glass, the small sebaceous glands situated there were found increased in size, and of a redder colour than natural (p. 38 note)." Although this description of the conjunctival papillae is an incomplete one, it is, as far as I know, the first description of granulations met with after the outbreak of the epidemic, and therefore of importance.

B.—The Campaign of 1807

The official documents on this short and unlucky expedition are still not available in print. There exist indeed some private narratives (Butt, Yeates and an anonymous one with the title "Disasters"), but no medical report. I rely chiefly on the narrative of the French Consul F. Mengin, who was an eye-witness of the events, and on the modern study of Sh. Ghorbal, largely based on hitherto unpublished material in the Foreign Office.

The political situation in the Near East having entirely changed, it was now the turn of Great Britain to try to conquer Egypt from the Turks. Unfortunately the enterprise was undertaken

with wholly insufficient forces: on March 14, 1807, General Fraser landed at Alexandria with 5,000 men, occupied that town without resistance and sent a force of 1,400 men to occupy Rosetta. This detachment failed to take precautions and was suddenly attacked by Albanian troops serving under the orders of Mohammed Aly Pasha, Turkish governor of Egypt and founder of the present Egyptian reigning dynasty. The British detachment lost half of its effectives, 120 prisoners being sent to Cairo. In April, a force of 2,500 men was sent against Rosetta, but was defeated by the Turks and Albanians near the village of el-Hamâd. This time 800 British prisoners were sent to Cairo, many of them severely wounded. They were all thrown pell-mell into native boats together with the cut-off heads of their 450 dead comrades who were destined to be put on spikes to form a horrible alley in the middle of the Ezbekiya square in Cairo. These unlucky soldiers arrived at their destination, the Citadel of Cairo, in a pitiable condition, most of them suffering from acute ophthalmia. The Pasha, however, immediately ordered that the prisoners should be well treated; the French consul was allowed to have them attended by his surgeons, while the European colony of Cairo got permission to provide them with garments and food. The well-known Austro-Italian practitioner Dr. Morpurgo, established a hospital for the prisoners in the Old Serail of the Citadel (according to Seetzen, Vol. III, p. 205). It seems that by September, when a convention was concluded between General Fraser and Mohammed Aly Pasha, most of the ophthalmic prisoners had been cured. They were sent back to Alexandria, from which harbour, on September 23, 1807, the British expeditionary force set sail for Sicily whence it had come.

We do not know whether these troops carried the infection to British garrisons in Sicily. But we learn from a publication by Dr. Farrell (in 1811), that the British troops in that island had been infected with ophthalmia since 1806, when a part of the severely infected garrison of Malta had been transferred to Sicily. In general, the ophthalmia prevailing in Sicily seems to have been mild in character. It lasted until 1811 when it began to diminish little by little.

It is well known that ophthalmia continued its ravages in the British army for about ten years more. In 1818 the number of blind men invalided out of the army was over 5,000, and the Government was forced to make an annual grant of £100,000 for pensions. Italian troops were infected, in 1801, at Elba and Leghorn by French troops, later on in Sicily by British. The epidemic lasted until 1826; meanwhile the Italians had carried the contagion to the Hungarian (1809) and Austrian (1814) armies. The epidemic in the Prussian army, from 1813 on, was one of the severest ever seen. Thence it passed to the Swedish troops in 1814.

In the Russian army it appeared in 1818 only, in the Dutch in 1815, in the Belgian in 1825, in the Danish in 1848, and in the Portuguese army from 1849. For the occurrence of ophthalmia in the British army and colonies I would refer you to Treacher Collins's excellent *Introductory Chapter* to Boldt's work.

V.—Concluding Remarks

We have seen that the descriptions of "Egyptian" ophthalmia given by the army-surgeons of the period are in general vague; except in the case of the acute purulent form which is to be identified with gonorrhoeal conjunctivitis. The description of the chronic sequelae of the disease is insufficient, and without Vetch's pictures of granulations it would not have been possible to decide whether or not a trachomatous element was blended with the other forms of conjunctivitis. There is nowhere a good description of pannus and only once mention of trichiasis as a consequence of long standing ophthalmia. In general, the different forms of conjunctivitis were still not clearly distinguished in the first three decennia of the XIX century; I would remind you that such striking forms of disease as the pseudo-membranous (croupous) and diphtherial conjunctivitis were not "discovered" until about 1821 (by Bécларd). Moreover, all the above-mentioned medical men were army officers, none of them trained ophthalmic surgeons. Ophthalmological education, as mentioned before, was in the hands of general surgeons, many of whom, particularly in France, very much neglected this special branch of surgery. Victor Stoeber, himself later on an excellent professor of ophthalmology, mentions incidentally that at the time when he was a student in Paris, from about 1810 to 1815, only *three lectures a year* were given by the professor of surgery on diseases of the eyes! It is only after 1820 that more accurate descriptions of *ophthalmia militaris seu Aegyptiaca* are to be found in the literature of the subject and that we are able to state with confidence that genuine trachoma was frequently a sequela of this form of conjunctivitis.

It is chiefly by the light of our present-day knowledge of the condition of conjunctival infections in Egypt that we are able to make a retrospective diagnosis of the eye-diseases raging in the French and British armies 130 years ago. In the summer of 1883, Robert Koch found, at Alexandria, in acute cases of conjunctivitis, Neisser's gonococcus and the small bacillus now called after Koch and Weeks. In 1901, Morax discovered the periodicity of the different kinds of conjunctivitis and their blending with trachoma which he found to be, in Egypt, a disease of early childhood. From 1903 to 1911, I was able to prove, by a long series of bacteriological examinations, that the gonococci and Koch-Weeks' bacilli may

persist during many months in the conjunctiva of patients, particularly in trachomatous cases and during the hot season. I was also able to show that gonorrhoeal conjunctivitis is spread in hot climates by extra-genital means. In 1913, MacCallan recapitulated, in a conclusive study, his long experience with trachoma and the various forms which it assumes in Egypt.

Consequently, we are now able to compare the imperfect descriptions given by the military surgeons of about 1800 with the clinical forms of conjunctival affections as observed in Egypt to-day, and to complete Treacher Collins's short, but very judicious remarks on the same question (see Boldt, Introductions, p. 13, foll.). The forms of "Egyptian ophthalmia" described by our predecessors of a century ago, correspond to the following forms of conjunctivitis as observed in Egypt:

(a) *Acute catarrhal conjunctivitis* caused by the Koch-Weeks' bacillus; it may become purulent, and even pseudo-membranous with severe swelling and pain. It may also become chronic, but it is hardly ever followed by dangerous ulceration of the cornea.

(b) *Acute purulent conjunctivitis* caused by the gonococcus, sometimes blended with strepto- or pneumococcus; the conjunctiva may be covered by a fibrinous membrane; in such cases the cornea is in the greatest danger. A large percentage of these ophthalmias terminate in partial or total destruction of the cornea and sometimes of the entire globe. Leucomata, adherent or not, and secondary glaucoma may follow.

(c) After a gonorrhoeal conjunctivitis the conjunctiva may persist in a state of papillary hypertrophy, sometimes leading to ectropion of the lids. It is advisable to call this affection *meta- or post-gonorrhoeal conjunctivitis*. It requires treatment with strong solutions of nitrate of silver; in the severest cases of ectropion, excision of a large strip of the hypertrophic conjunctiva is necessary. This form is easily confused with trachoma.

(d) *Genuine trachoma* in its various clinical forms; for practical purposes these are divided by MacCallan into four stages with their sub-divisions. It is frequently a complication or a sequela of the three first-mentioned forms of acute conjunctivitis, existing either as a primary disease or developing slowly after the healing of the acute ophthalmia. Many old and several modern ophthalmic surgeons have been, for this reason, inclined to consider trachoma merely as a chronic stage of gonorrhoeal or Koch-Weeks' conjunctivitis. This is, however, not admissible, because trachoma can develop quite alone, without a foregoing acute conjunctivitis, as is the rule in Northern countries. This form of trachoma, according to my own observations made in Poland and Silesia, is much less contagious than trachoma when blended with acute forms of conjunctivitis. A quite elementary degree of cleanliness is sufficient

to prevent the spread of trachoma in families where one or two members have been attacked. In Egypt, on the contrary, I have seen cases where the various members of a European or Asiatic family have mutually infected one another; where, for example, a trachomatous mother got an acute Koch-Weeks' conjunctivitis from one of the children, and transmitted afterwards her trachoma to all the other members of the family. Here I observed that several members had an acute catarrhal conjunctivitis followed by chronic secretion with formation of follicles, and later on by pannus and other sequelae of genuine trachoma.

It is in the same manner that we must explain the descriptions given of the various forms of "Egyptian" or "military" ophthalmia, 130 years ago. A rapidly spreading acute ophthalmia in the French garrison of Alexandria without the loss of a single eye cannot well have been anything but a Koch-Weeks' conjunctivitis. This is in Egypt seasonal, making its appearance in April, precisely the period in which it began to rage in the besieged city. On the contrary, an ophthalmia like that described by Vetch in the second battalion of the 52nd regiment, causing 636 cases with the loss of 140 eyes, cannot have been anything but a conjunctivitis of largely gonorrhoeal form. In many cases a hypertrophic post-gonorrhoeal condition of the conjunctiva, or trachoma, may have allowed the microbes to persist in the mucous membrane of the eyes and so cause a fresh outbreak elsewhere.

We must not forget that the importance of bodily cleanliness was very little appreciated a century ago, and that the spread of personal hygiene is a triumph of the last fifty or sixty years only. The difference in the incidence of contagion amongst officers and men had been observed already in 1801, by James MacGrigor. What a striking difference there is between the period 1801-2 when British troops, occupying Egypt for a year only, were very severely infected with the eye diseases common in that land, and the present time when, in an occupation lasting more than 50 years, only very rare and isolated cases have come to the observation of the medical staff. It is still more noteworthy that during the Great War, when hundreds of thousands of British and Colonial soldiers passed through Egypt, no serious outbreak of infectious conjunctivitis occurred. This in spite of the fact that these diseases were, until 1905, as wide-spread in the Egyptian population as they were in 1800; for it is only in the last twenty years that a marked decrease in the frequency and severity of contagious eye diseases is to be noted. This improvement is due partly to the increased wealth of the whole Egyptian population, partly to better hygienic conditions amongst the middle and higher classes, and in a high measure to the effective and progressive organization of ophthalmic hospitals created by MacCallan and now continued by his Egyptian pupils.

My conclusions are the following :

1. The ophthalmias affecting the French, Turkish and British armies in Egypt during the campaigns from 1798 to 1802 and in 1807 were—as far as the rather vague descriptions left by military surgeons allow them to be identified—the same as those which are still prevalent in Egypt. That is, a combination of Koch-Weeks', gonorrhoeal and post-gonorrhoeal conjunctivitis with trachoma. The high percentage of blindness was due to gonococcic infections (which are transmitted, in hot climates, by extragenital means).

2. The contagious nature of the disease, not admitted by French surgeons, was discovered by several young surgeons of the British Army and Navy (Edmondston, Power, Brigges, Reid and Dewar) and established by judicious observations.

3. The improved conditions which have prevailed in the British Army of Occupation in Egypt with regard to ophthalmia, throughout a stay of over half a century, are due to the personal cleanliness of the troops and the high standard of their education in hygiene.

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Abbreviation: R.S.M.—Library of Royal Society of Medicine.

THE TREATMENT OF LIMBAL TUMOURS WITH RADIUM

BY

T. HARRISON BUTLER

BIRMINGHAM

THERE appears to be some doubt among ophthalmic surgeons regarding the effect of radium upon tumours of the limbus. The following cases may therefore be of some interest.

Mrs. A. C.—In this case there was a sessile tumour measuring about five millimetres in circumference at the limbus. There was a pedunculated portion about as large as the parent growth. The surface of the tumour was nodular, and the surrounding conjunctiva showed numerous enlarged vessels. Examination with the slit-lamp and corneal microscope showed that there were sprays of growth spreading into the superficial part of the clear cornea, and in places reaching as far as the level of the margin of the pupil. Gallemaerts has described and figured such sprays in a case of limbal sarcoma. The tumour was considered on clinical grounds to be sarcomatous. The pedunculated part was removed and examined. It was found to be a haemangioma. The patient was treated at the Radium Institute, and after two applications the