Our points of contact with the lower but domesticated animals are so numerous and sometimes so intimate that we cannot afford to neglect the existence in them of such forms of eye disease as occur, and more particularly the prevalence of bacterial and contagious forms. Among those who are specially liable to infection are grooms, shepherds, slaughterers, and farm labourers. Kuata of Palermo has recently (Archivio di Ottalmologia, vol. xix. p. 8) made careful investigation, in regard to a number of animals, of the flora of the conjunctival sac. This interesting and important work has also been done previously, notably by Tschirkowsky and Krüger. The former devoted his attention chiefly to rabbits, in whose conjunctival sacs he found the staphylococcus albus and various Gram-positive micrococci, streptococci, various forms of sarcina, and—less frequently—the xerosis bacillus. He also made observations to discover whether other organisms could be implanted, and established that panophthalmitis could be produced in 48 hours by inoculation with the bacillus perfringens. Krüger's material, on the other hand, consisted for the most part of healthy horses. The chief organisms he met with were staphylococcus, streptococcus pyogenes aureus (?), bacterium coli (?), but most frequent of all was the pneumococcus. The last named was found to be the most usual cause of catarrhal conjunctivitis, though staphylococci and streptococci seemed to be sources of danger also. In his own work Kuata, in order to verify the observations of those others, took as much pains to eliminate sources of error as though he had been dealing with daily clinical work among human patients. His precautions as to his sterile platinum loop, as to avoiding touching the lashes or margins when taking his "smear," and so on, were as strict as though a man's life depended upon them. His conclusions are therefore entitled to every respect. The results which he obtained are briefly thus:

**Horses.**—Number of individual animals examined, fifteen. Pseudodiphtheritic bacillus (? xerosis) was found ten times, streptococcus albus, twelve, aureus, six; pneumococcus, three; sarcina alba, two, and aurea, two. In each case the germs were few in number and appeared to have but low vitality, to be in fact saprophytic rather than pathogenic.

**Cattle.**—Number of animals examined, twenty-five. The xerosis bacillus was found fifteen times; staphylococcus albus, twenty-three,
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aureus, eight, sulphureus, twice; sarcina lutea, ten, alba, five; pneumococcus, once. It will be noted that in the bovine conjunctiva sarcina is a vastly more frequent inhabitant than it is in the human.

Swine.—Number of animals examined, twenty. Staphylococcus albus was encountered eighteen times, aureus, six; xerosis bacillus, fifteen; sarcina aurea, six, alba, eight; bacterium coli, five; pneumococcus, five, etc. In swine and cattle the flora was decidedly rich, indeed in some smears the area was crowded with organisms, and in the cultures made the growth of various forms was abundant. In the swine some Gram-negative cocci were found which appear to be unique in ophthalmology; the culture made from them had a vivid lemon-yellow colour. Certain Gram-positive bacilli also found showed themselves highly toxic to the rabbit, for when introduced into the anterior chamber they caused acute panophthalmitis.

Sheep and Goats.—Number of animals examined, twenty-five. The xerosis (pseudo-diphtheritic) bacillus was found eight times; the staphylococcus albus, eighteen, aureus, once; pneumococcus, twice; and sarcina alba, twice. As a rule in these animals the tests gave but feeble growth of organisms.

Dogs.—Number of animals examined, ten. The xerosis bacillus was found twice; staphylococcus albus, four times; pneumococcus, twice; and sarcina alba, twice. In dogs also the growths were weak, feeble, and uncertain.

It will be seen, then, to make a general survey, that it is rather that the frequency of various organisms is different from what is found in the human subject than that the actual flora differs in any essential manner, though a few organisms, as noted above, were found which rarely or never occur in the human conjunctiva, e.g. sarcinae and the peculiar Gram-negative bacillus, whose culture showed a vivid yellow colour.

Optic Neuritis in Lower Animals.

Another recent paper, dealing with certain of the lower animals, which do not often figure in journals dealing with ophthalmology, is one describing certain cases of blindness coming on suddenly, and associated with optic neuritis, which occurred in young bulls (Royal Lond. Ophthalmic Hosp. Rep., vol. xix. p. 1). Excluding some other cases which were more or less analogous to those first to be dealt with, there were five bulls, all more or less closely related by blood, which were all affected near the close of their first year. None of them showed any other symptom referable to the nervous system, unless the tendency to walk round and round in a circle be held to be so. In none of them was there any reason to suspect any injurious vegetable matter mixed with the food, unless there was in one case only a bare possibility. It will be remembered that veterinary surgeons are fully alive to cases of blindness attributable directly or indirectly to improper food.
In the first case among these bulls the blindness could be practically proved to have come on in two days; on the third day the animal, which had behaved quite normally up to then, refused to leave his stall, and evidently could not find his food by sight at all. When it was brought to him he ate it willingly and with gusto. The animal was after a few months killed in the usual way, and the brain carefully examined. He had never been used for breeding purposes. No possible source of lead poisoning was discovered (and indeed no symptoms except blindness were exhibited); the "patient" and the bull in the next stall, which was, and remained, in perfect health, had been fed and dealt with in exactly the same manner. The gist of the report upon the examination of the nervous system was to the effect that the papilla and immediately surrounding retina were markedly swollen and oedematous, with some little vacuolation of the deeper layers; the nervous tissue had undergone almost complete disorganisation, while the supporting tissue was increased in amount and showed increase of nuclei; the endothelium of the blood-vessels was considerably proliferated, and the walls thickened, and in them there was some leucocytic infiltration; but the choroid and the media appeared quite normal. There was no intracranial tumour and no meningitis. In some respects these pathological changes resemble much those found in poisoning by alcohol and by filix mas, and the whole aspect of the tissues as well as the behaviour of the animal suggests a toxic cause arriving by way of the blood-stream, but what that precise toxin may have been is quite uncertain. The other cases were very similar in regard to all essential points.

**The Present Position of Ophthalmology.**

This was the somewhat vague subject of discussion at the 1913 meeting of a congress which is being held annually nowadays at Oxford in summer (*The Ophthalmoscope*, September 1913). The speakers appear to have allowed themselves considerable latitude in their methods of dealing with it. Some of the remarks made by Doyne when opening the discussion are worthy of being taken to heart by not a few of the profession. For example he comments upon the complete *bouleversement* which has taken place in reference to the wearing of glasses. Thus, not so many years ago they were worn, even by those who needed them badly and obviously, "on the sly," and many even had not the courage to "face the music" and wear them at all, but nowadays there is a tendency (Doyne does not put it so strongly) to wear "correcting" lenses too much. Further it is quite possible that a surgeon may be "righteous overmuch," and insist upon the correction being worn of a minute error in the eyes of such meticulous accuracy as to defeat his own ends. Thus a person between 40 and 50 may seek such a surgeon and say that he is not seeing to read as he used to
do, or as he would like still to do. In addition to presbyopia a very low degree of astigmatism is found, but it by no means follows that in every case this astigmatic error should be corrected; the man’s trouble is due to failure of his accommodation as age goes on, and the astigmatism, such as it is, is not the real cause of his difficulty, perhaps is hardly even a contributing cause. In such a case it is a question for a well-balanced and well-informed medical practitioner whether the cylinder is to be added or not. It is here, in such a case as that, that the mechanical optician (or for that matter the mechanical ophthalmic surgeon) and the sensible man part company. The former says: “Here is an optical instrument with a flaw in it undetected before; let me alone till I correct it”; the latter, before ordering a cylinder, stops to consider that the error has always been there, that vision is just as good and just as comfortable without a cylinder, and asks himself, “Must I correct this?” What has been said must not be taken to mean that in many cases of headache and so on the trouble does not really take its origin in the small permanent error; the point is that that may not be true in this particular case, and each case must be taken on its merits. Mr. Doyne’s solution of the question of the capability of the medical profession to do the refraction-testing work rather than the opticians has taken the form of establishing a degree in the University of Oxford which may be taken by some who are, or who aspire to become, ophthalmic surgeons. We do not need to discuss whether or no this covers the ground; no one who aspires to such a position would be anything but the better of going through the course of instruction in various branches of work which is requisite for the obtaining of this degree. It would at all events eliminate from the ranks of the specialists such men as those spoken of recently by an American ophthalmic surgeon, one of whom showed how obviously impossible it was that mixed astigmatism could exist, for how can an eye be both myopic and hypermetropic at the same time? while another asserted that he had seen scores of cases of glioma of the retina occurring in the adult. But be the establishment of a new degree a good plan or a bad one, Mr. Doyne’s remarks will at least have the effect of bringing out that what is required is not merely the detection of the presence of astigmatism, but the wisdom also which comes from constantly regarding such errors as errors in an organ rather than in a machine, and that organ as part of a human being rather than a mere isolated tool.