

that in from five to eight months both the bovine and human bacillus can be made to acquire the cultural characteristics of the avian bacillus, and to a certain extent its pathogenic action also. A few passages from fowl to fowl during four to six months increased this greatly. By passage through the blind worm Moller¹ has in the course of a year so changed the human tubercle bacillus that it grows like the organism of fish tuberculosis, and has the same temperature reactions. It grows best at 20° C., and ceases to grow entirely at 30° C. The bacillus of fish tuberculosis, discovered by Dubard,² had for its origin the human bacillus, the fish having fed on the sputum and dejecta from a patient far advanced in phthisis. The fish had been subjected to this for about a year before the disease was noticed.

With these facts before us I do not think we are forcing a point in believing that it is at least possible for the bovine bacillus to become rapidly so changed in the body of man that it will show the cultural and pathogenic peculiarities which we find usually in cultures of human origin. For these reasons our observations should be made by preference on cases which are rapid and acute.

Conclusion.—The evidence at hand forces us to conclude that human and bovine tuberculosis are but slightly different manifestations of one and the same disease, and that they are intercommunicable. Bovine tuberculosis is, therefore, a menace to human health. We are not in a position at present to define positively the extent of this danger, but that it really exists cannot be denied. In the past there has probably been a tendency to exaggeration, but however great this may have been, it does not now justify any attempt at belittling the risk, and it is folly to blind ourselves to it.

The eradication of bovine tuberculosis is amply justifiable from a purely economical standpoint; viewed in its bearing on human health it becomes a public duty.

A CASE OF SUPERNUMERARY DIGIT IN THE OX.

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IT is due to the courtesy of the Editor of this *Journal*, who very kindly placed the specimen at the writer's disposal for dissection, that the following account of a most interesting specimen is submitted.

The subject is the pes of an ox, showing a most perfectly formed supernumerary digit, which is of interest more on account of the perfection of its development than of the scarcity of such a specimen.

Accounts of cases of supernumerary digits in the horse and ox are not by any means rare, but, as a rule, in such instances the abnormal digit does not show a degree of development anything like approaching that attained by the normal ones, and is also usually more or less of a deformity. In this case, however, as a glance at Fig. 1 will show, the abnormal digit, in addition to being to a certain extent weight-bearing, which is in itself somewhat remarkable, is most symmetrical

¹ Moller: "Lancet," 27th July 1901, p. 204.

² Dubard: "La Revue de la Tuberculose," April 1898.

in outline, and is developed to a degree which is almost on an equality with the normal ones.

The principal points of interest brought to light by the dissection of the pes were the following:—

Muscles.—Just above the fetlock the extensor proper of the middle digit gives off a branch which is continued downwards over the anterior aspect of the abnormal digit. When about the middle of the os suffraginis, this branch divides (Fig. 2, *a*), but a little lower down these subdivisions reunite, and there thus seems to have been an arrest in the progress of development, and a tendency, as it were, to revert to the prevailing type. Lower down, however (Fig. 2, *b*), the reunited tendon

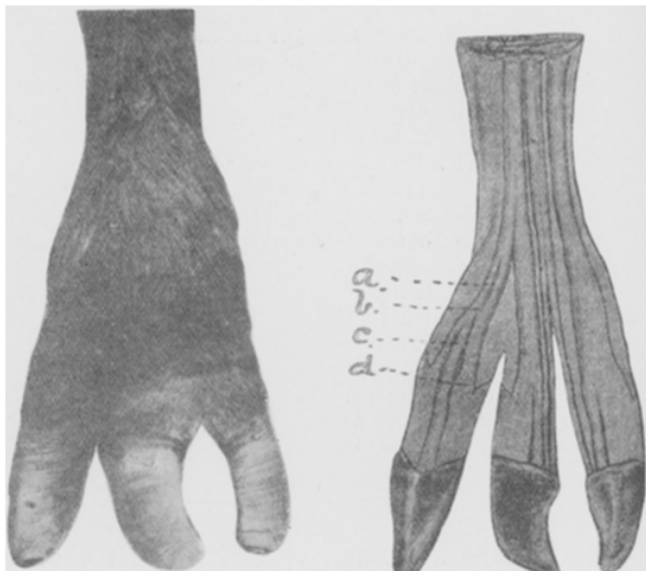


FIG. 1.

FIG. 2.

again divides, and we have an arrangement comparable to that found in the normal case, namely:—

I. An external division, which may be said to correspond with the extensor proper of a normal digit, and which in turn divides into:—

(*a*). A thick cord-like tendon, which is continued downwards and becomes inserted into the anterior face of the second phalanx (Fig. 2, *c*).

(*b*). An expanded sheet-like portion which becomes inserted into the side of the pedal bone. This flattened portion receives the branch of the suspensory ligament, which in Fig. 3, *a*, is seen to pass round the external lateral aspect of the accessory digit.

II. An internal division, Fig. 2, *d*, thick in front but flattened posteriorly, and becoming inserted into the pyramidal process of the pedal bone. This division may be said to represent one of the branches of the common extensor of the two normal digits.

The above-mentioned branch of the suspensory ligament has the

usual arrangement, being given off from the more deeply seated of the two main branches into which the ligament divides. In Fig. 3 it is also distinctly seen that the more superficial of the two main divisions of the suspensory gives off a branch (Fig. 3, *b*) which descends almost vertically to the back of the fetlock, where it assists the perforatus tendon in forming the ring through which the tendon of the perforans passes.

In the same illustration the perforans tendon is also seen entering the ring, and lower down (Fig. 3, *c*) it is again visible after passing through the little fibrous band below the fetlock.

A posterior view of the specimen is given in Fig. 4, and in it the three divisions of both perforatus (*a a a*) and perforans (*b b b*) are

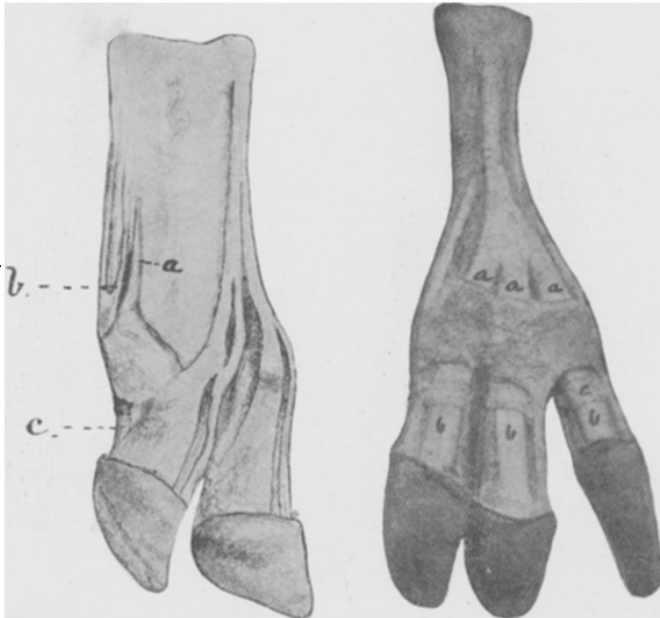


FIG. 3.

FIG. 4.

observed to be almost equal in size (the perforatus tendon has been pushed slightly aside above the fetlock to bring the perforans into view). Another point which is here worthy of notice is the extremely well-developed band (Fig. 4, *c*) through which the perforans passes below the fetlock.

Bones.—The posterior surface of the large metatarsal is flattened, and gradually widens out at its lower extremity, which is about double the width of the upper. Near the latter extremity this surface shows two foramina which are the inferior openings of canals leading from the upper articular surface. Two faint grooves traverse the length of the bone and terminate inferiorly, one in a foramen which is the posterior opening of a canal conducting to the anterior surface, the other in a cleft about an inch in length which also passes through the

bone. The inferior extremity presents three pulley-like articular surfaces, the abnormal one differing from the other two in possessing an antero-posterior ridge which divides it into two areas almost equal in size and upon the same level.

There are five sesamoids, the accessory digit having only one. This one, however, is peculiar, inasmuch as it seems to suggest that the digit at one time possessed two, for in appearance it very much resembles two sesamoids which have become fused together. Anteriorly it has four facets, the two central ones being for articulation with the ridge and the other two for articulation with the remainder of the pulley-like inferior extremity of the large metatarsal. Inferiorly it articulates with the *os suffraginis* by two facets which are separated by a non-articular depressed area, and posteriorly it is divided by a vertical groove into two markedly convex areas. It is thus entirely encircled by a constriction which may possibly indicate the line of fusion of two originally distinct bones.

The supernumerary first phalanx in shape more nearly approaches that of the horse, whilst the upper extremity of the second phalanx has a much more extensive articular area than the corresponding normal bones, and is devoid of the small upward projecting peak-like process found in the latter. The two buttress-like processes which posteriorly bound the upper articular surface of the *os coronæ* differ from the normal in being almost equal in height, and the recurved non-articular area which encroaches on the posterior surface is much smaller. The articular area at the inferior extremity is much less extensive, but the antero-posterior groove is very well-marked, being much deeper than those found in the corresponding bones of the other two digits.

Three navicular and pedal bones are present. The additional navicular is smaller than normal, but is very well formed and possesses facets for articulation with the *os coronæ* and pedal bone. The abnormal pedal bone is quite equal to the other two in size, but is slightly different in shape, being more compressed from side to side. The preplantar grooves on the external and internal laminal surfaces are much more distinctly marked. The solar surface is quite flat, and in form resembles an elongated isosceles triangle with the apex at the toe.

EXPERIMENTAL TUBERCULOSIS IN THE ASS.

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In a former paper on the above subject (*Journal of Comparative Pathology and Therapeutics*, June 1899), I mentioned that Chauveau, experimenting with tuberculous material of bovine and human origin, had demonstrated that tubercular lesions could be produced in the lungs of the ass by intravenous inoculation. To see the lesions, however, the animals had to be killed within thirty days of the inoculation, because the nodules disappeared and the animals recovered. It was generally concluded, rather rashly, from these experiments that the ass was refractory to tuberculosis, whereas it would appear