VOLUME II. NUMBER 2.

THE JOURNAL

OF

THE SOUTH AFRICAN VETERINARY MEDICAL ASSOCIATION.

Official Publication of
The South African Veterinary Medical Association.

OCTOBER, 1931.

Printers:
Good Hope Printing Works, 195, Koch St., Pretoria.

1931.

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J.L.S. AFR. VET. MED. ASSN.
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PAPERS AND COMMUNICATIONS.

The Veterinarian and the Law. I.

By C. P. BRESLER, M.A., LL.B., Pretoria.

INTRODUCTION.

I do not think that the title to this series of articles is inspired or even accurate, but it is as comprehensive as it could be without being misleading. It is proposed to examine in detail the various Courts of the Union, their relation to one another, their sources and their procedure; the course of cases both civil and criminal, the position of a witness especially the expert witness, the law relating to fees, to the purchase and sale of animals, to the hire, boarding, and insurance of animals, to the responsibility of the veterinary surgeon for negligence and so forth, to the responsibility of Agents attending animals, to the responsibility of a Master for injuries received by a servant from animals, etc., to compensation, to the legal position such as it may be of the veterinary profession in South Africa, and to kindred matters.

Now while it is only within the scope of this article to deal with the law as one finds it in these various respects one may be allowed to say that the absence of a charter for the veterinary profession makes the task doubly difficult; one may even be pardoned for expressing surprise at the fact that a country which demands so much of veterinary science and which is justly so proud of the international reputation which has been achieved for it by its veterinary officers of all degrees should have failed to provide that profession with the badge of legal recognition. Small wonder, therefore, that the veterinary profession is anxious that its position in the eye of the law be defined and that it derives little comfort from the consideration that in England too the struggle was both difficult and prolonged, especially as the incidence of historical development is lacking here to any real extent. It is not, for the moment certainly, proposed to enquire into the merits of the rejection of the Veterinary Bill, but it suffices to say that the lack of statutory recognition and with that the absence, inter alia, of the protection of registration is something that must on more occasions than one result in detriment to the public. It is, moreover, questionable whether the existing control by the government—excellent in many ways—is the soundest way of creating a free and vigorous profession. But more of this later. At this stage it is more desirable to give the veterinary expert a complete picture of the Courts into some of which either viva voce or otherwise his evidence may be received.

COURTS OF THE UNION OF SOUTH AFRICA.

The various Courts of the Union of South Africa consist of:—

(a). *The Appellate Division of the Supreme Court* of South Africa, established by Section 96 of the South Africa Act. It is situate at Bloemfontein and is presided over by a Chief Justice and four Judges of Appeal (Act No. 12 of 1920). There is no right of appeal from the Appellate Division to the Judicial Committee of the Privy Council except under and by virtue of the Colonial Courts of Admiralty Act, 1890; but though there is no right of appeal with the exception named, yet the King-in-Council may, in virtue of his prerogative right, grant special leave to appeal (Section 106 of the South Africa Act). This special leave applies to both civil and criminal cases. In the former the Judicial Committee has indicated that it will grant leave only when the issue raised is of constitutional importance nor will it in the latter grant special leave readily. This will only be done "very cautiously and after great consideration" *Esnouf v. A.G. for Jersey*, 8 A.C. 304) and in "very exceptional cases" *(Ex parte Carew* 1897 A.C. 719). It will only intervene where there has been an interference with the elementary rights of an accused or a violation of the natural principles of justice demonstrating manifest *(Arnold v. The King Emperor,* 1914 A.C. 644). The King-in-Council has framed certain rules to regulate appeals from the Appellate Division. These rules, fifteen in number, dated 4th March 1911, were published in the Union Gazette of 9th May 1911, where they may be consulted. Reverting now to the Appellate Division it should be noted that it exercises civil and criminal jurisdiction in respect of appeals from the various Provincial and Local Divisions (Section 103, South Africa Act). When the appeal is from a Court of single judge the quorum is three, while it is four when the appeal is from two or more judges (Section 1, Act No. 11 of 1927). In addition the Appellate Division hears appeals from the High Court of South-West Africa (Section 3, Act 12 of 1920) and from the High Court of Southern Rhodesia (Section 103, South Africa Act). In the case of criminal decisions from Superior Courts the Appellate Division derives its jurisdiction from Section 368 of Act 31 of 1917. This Act prescribes certain matters in respect of which an appeal will lie, i.e. upon an arrest of judgment (Sections 334 and 369), upon a special entry on the ground that the proceedings before the Superior Court were irregular or not according to law (Section 370), or upon a question of law reserved on the ground that bad law was laid down by the Judge (Section 372). By Act 1, 1911, special leave may be given in cases of (a) judgments given by the full bench of the Natal Native High Court sitting as a Court of first instance, (b) judgments on appeal from a single judge of that Court, (c) judgments on points of law, reserved by a single judge thereof. Once a Superior Court has heard and decided an appeal from a Magistrate's

Court there is no right of appeal. Under Section 105 of the South Africa Act, however, special leave to appeal to it may be given by the Appellate Division. If the question in issue is of considerable importance to a large class of persons or involves an important matter of law such leave will be obtained *(R. v. Vlotman,* 1911 A.D. 632: *R. v. Schiff,* 1913 A.D. 151). At this stage an exception may be noted whereby with the concurrence of both the prosecutor and the accused expressed in writing recourse may be had to the Appellate Division without the necessity of resorting to the Provincial Division. It should also be noted that there is no appeal as of right upon the facts whether the facts were decided by a jury, by a special criminal Court, or by a Judge sitting alone with assessors *(R. v. Judelman,* 10 S,C, 12). The process of the Appellate Division runs throughout the Union and its judgments or orders have full force and effect in every province (Section 111 of the South Africa Act). Rules drawn up by the Chief Justice and the Judges of Appeal under Section 7 of the South Africa Act govern the conduct of proceedings to the Appellate Division and prescribe the time and manner of making appeal.

(b). *Provincial and Local Divisions of the Supreme Court.* In each of the provinces there is a division of the Supreme Court known as a Provincial Division, while in addition there are permanent Local Divisions in the Transvaal and in the Cape; the one situate in the Transvaal at Johannesburg is known as the Witwatersrand Local Division, while the two in the Cape situate at Kimberley and Grahamstown are known respectively as the Griqualand West Local Division and the Eastern Districts Local Division. There are further Local Divisions in the shape of Circuit Courts which are established from time to time by the Governor-General by promulgation in the Gazette. The various Provincial Divisions have both Appellate and original jurisdiction and are Courts of Appeal from decisions by a Local Division, a Judge in Chambers, or a Magistrate. As a general rule Local Divisions have no Appellate jurisdiction except in the cases of the Eastern Districts and Griqualand West Local Divisions. Section 98 of the South Africa Act which established these Courts reads as follows:—

(1) The several Supreme Courts of the Cape of Good Hope, Natal, and the Transvaal, and the High Court of the Orange River Colony shall, on the establishment of the Union, become provincal divisions of the Supreme Court of South Africa within their respective provinces, and shall each be presided over by a Judge-President.

(2) The Court of the eastern districts of the Cape of Good Hope, the High Court of Griqualand, the High Court of Witwatersrand, and the several Circuit Courts, shall become local divisions of the Supreme Court of South Africa within the respective areas of their jurisdiction as existing at the establishment of the Union.

(3) The said provincial and local divisions, referred to in this Act as superior courts, shall, in addition to any original jurisdiction exercised by the

corresponding courts of the Colonies at the establishment of the Union, have jurisdiction in all matters—

(a) in which the Government of the Union or a person suing or being sued on behalf of such Government is a party;

(b) in which the validity of any provincial ordinance shall come into question.

(4) Unless and until Parliament shall otherwise provide, the said superior Courts shall mutatis mutandis have the same jurisdiction in matters affecting the validity of elections of members of the House of Assembly and provincial councils as the corresponding courts of the Colonies have at the establishment of the Union in regard to parliamentary elections in such Colonies respectively.

The decision of a Provincial Division upon an election petition is subject to an appeal if the Appellate Division grants special leave to appeal therefrom (Section 132, Act 12 of 1918). The Provincial Divisions have complete jurisdiction in respect of all matters arising within their respective areas except in so far as certain matters have by statute been relegated to Magistrates and other inferior Courts. The Local Divisions have a restricted jurisdiction over persons resident and matters arising within their respective areas. Section 27 Proclamation 14 of 1902 provides that:—

The (District) Local Division of the Supreme Court shall be a Court of Record and shall within the district in which it may be holden have and exercise concurrently with the (High) Supreme Court (of the) Transvaal Provincial Division all such and the same jurisdiction, powers, and authority as are by this Proclamation vested in the said last mentioned Court save and except apellate jurisdiction and the power of reviewing the proceedings of inferior Courts; (and save and except that in proceedings in insolvency and other proceedings in which a limited jurisdiction is conferred by the laws of the late South African Republic on Circuit Courts established therein, the said District Court shall have the same limited jurisdiction).

Now by Section 2 of the Insolvency Act 32 of 1916 the jurisdiction of the Witwatersrand Local Division has been increased, but it has been held that this Court has no jurisdiction to review any decision, ruling, or order of the Master of the Supreme Court under Section 151 of the Act (*Jooste v. Laubscher,* 1926 T.P.D. 196). With regard to criminal cases Section 1 of Ordinance 10 of 1903 provides for jurisdiction over all offences committed in the Witwatersrand District. Both the Eastern Districts Local Division and the Griqualand West Local Division have certain review and appellate jurisdiction limited to matters appertaining to insolvency, registration of title, and administration of estates. The Circuit Courts together with the Wiwatersrand Local Division are specifically by Section 11 of Ordinance 10 of 1903 deprived of any appellate jurisdiction or the power of reviewing the proceedings of inferior courts. The several Provincial and Local Divisions, including Circuit Courts, have the jurisdiction in respect of the trial of an accused which is prescribed in the laws relating to the constitution and jurisdiction of those Courts (Section 4, Criminal Procedure and Evidence Act, No. 31 of 1917). A Provincial Division has thus original jurisdiction in respect of all crimes committed in the particular Province save where by a particular statute exclusive jurisdiction is given to some other court (*R. v. Jolosa.* 1903 T.S. 694), as

also in respect of such extra-territorial crimes as are by Imperial legislation made triable in British possessions (are we a British possession?). The Provincial Division is the Court of Appeal in respect of convictions by any Magistrate's Court within the Province (Section 100, Act 32 of 1917). An exception is made in the case of the Eastern Districts Local Division which ousts the Cape Provincial Division except in cases coming from the Transkeian Territories (Section 108 (4), Act 32 of 1917). The Cape Provincial Division is the Court of Appeal in criminal matters from the High Court of Southern Rhodesia (Act 22 of 1928, Cape). The Eastern Districts Local Division has within its area concurrent jurisdiction with the Cape Provincial Division (Section 13, Act 35 of 1896, Cape). The Griqualand West Local Division has within what was formerly the Province of Griqualand West and within British Bechuanaland concurrent jurisdiction with the Cape Provincial Division (Section 35, 1896, Cape). Its jurisdiction as to Magistrate's Court appeals is not sole but concurrent (Section 100, Act 32 of 1917). The Witwatersrand Local Division has original criminal jurisdiction concurrent with that of the Transvaal Provincial Division over all offences committed in the Magisterial districts of Johannesburg, Boksburg, Germiston, and Krugersdorp (Section 1, Ordinance 10 of 1903). It has, as has been stated, no appellate jurisdiction. The Circuit Courts have within the area assigned to them by the Governor-General concurrent original jurisdiction with the Provincial Divisions concerned. They have no appellate jurisdiction (Section 100, Act 32 of 1917). In all criminal cases depending before a Superior Court the trial of an accused is usually heard before a Judge and a jury of nine men of whom not less than seven determine the verdict (Section 165, Act 31 of 1917). An accused may on giving notice to the Registrar of the Court require that he be tried by a Judge only, who may summon two assessors to act in an advisory capacity to him (Section 216, Act 31 of 1917).

In addition to these Superior Courts there are two more that remain to be mentioned. (1) Special Criminal Courts. Under Section 215, Act 31 of 1917 the Governor-General may at the request of an Attorney-General (now probably the Minister of Justice under and by virtue of Section 1, Act 39 of 1926) constitute a Special Criminal Court consisting of two and not more than three Judges to try without a jury certain offences, namely treason, sedition, public violence, illicit dealing in precious stones and metals, illicit supplying of liquor, etc. Such Courts were constituted in 1922 to conduct the trials of persons on charges arising out of the Rand Revolt. (2) The Natal Native High Court which has jurisdiction to try without a jury all crimes committed by natives, excepting criminal cases under the Insolvency Laws, offences relating to municipal corporations, townships, villages or immigration settlements, to customs, excise, railways, post, telegraph, stamps, ports, harbours, licences, other than those required

under native law, mines, private prosecutions in which the complainant is not a native (Section 1, Act 30, 1910, Natal; Section 5, Act 49, 1898, Natal). The jurisdiction of the Natal Native High Court may be exercised by a single Judge thereof in Maritzburg or on Circuit (Sections 19 and 31, Act 49, 1898, Natal) save in cases of murder, treason, and rape which can only be tried by a full bench consisting of three judges (Sections 2 and 8, Act 30, 1910, Natal).

(c). *The Inferior Courts.* Section 6 (2), Act 31 of 1917 specifies inferior courts as

(1) the several magistrates' courts established under any law governing magistrates' courts.

(2) the courts of Native Commissioners or Native Sub-Commissioners constituted under any law.

(3) the courts of resident or special Justices of the Peace established under any law.

(4) any court (other than a superior court) which now or hereafter possesses under any law criminal jurisdiction.

The courts of a Native Chief or a Native Headman are not included.

(1) Magistrates' Courts derive their jurisdiction from the statute which creates them. They are courts of record; they can fine and imprison for contempt of themselves or for other substantial offences; determine disputes between litigants; the records of their proceedings are preserved and constitute conclusive evidence of that which is recorded therein. Magistrates' Courts have no appellate jurisdiction, but certain statutes such as those governing municipal licensing and valuation courts frequently provide for appeals to Magistrates. They are, e.g. by Section 4 (1) Act 2 of 1918, Courts of review of sentences imposed by a Special Justice of the Peace. They have concurrent jurisdiction with the various periodical courts within their area (Section 27 of the Consolidating Act, 32 of 1917). Civil jurisdiction in respect of persons is provided by Section 28 and in respect of causes of action by Section 29, which limits the claim or the value of the matter in dispute to £200. Special jurisdiction is conferred inter alia by the Fencing Act 17 of 1912, and the Insolvency Amendment Act, No. 29 of 1926. Certain matters are placed beyond the jurisdiction of the Magistrate's Court by Section 44 of the Act, e.g. divorce, separation, testamentary documents, status in respect of mental capacity, a decree of perpetual silence, specific performance without an alternative claim. A Magistrate's Court is by Section 104 prohibited from enquiring into the validity of a Provincial Council Ordinance. Appeals on the ground of mistaken findings on law or fact and review on the ground of gross irregularity to the Provincial Division concerned are provided for by Sections 79 *et seq.* of the Act. Criminal jurisdiction is likewise

hedged by the Statute except when particular statutes confer further jurisdiction or where on remittal the Attorney-General confers increased jurisdiction. By Section 86 of the Act, Magistrates' Courts have jurisdiction over all offences except murder, treason, rape; local limits are laid down in Section 87; jurisdiction in the matter of punishments by Section 89, namely,

(i) imprisonment for a period not exceeding six months with or without hard labour and with or without solitary confinement and with or without spare diet;

(ii) fine not exceeding fifty pounds or in default of payment such period of imprisonment as aforesaid;

(iii) whipping, subject to the provisions hereinafter contained, not exceeding fifteen strokes.

Automatic Review and appeal to a Provincial Division are also provided for by Sections 93 and 100.

(2) Courts of Special Justices of the Peace. The Special Justices of the Peace Act, No. 2 of 1918, a Consolidating and Amending Act, provides for both civil and criminal jurisdiction. Section 6 reads as follows: "A court of a special justice of the peace which sits at a place more than twenty-five miles from a place where a Magistrate's Court is held (including a Periodical or Detached Court) shall have jurisdiction to try a civil action in which is claimed a liquidated sum not exceeding twenty-five pounds together with costs of the proceedings but in which no other relief is sought and to give judgment for such a liquidated sum so claimed together with costs aforesaid: Provided that if the sum claimed exceeds five pounds the defendant may apply to have the case removed to the Magistrate's Court of the district and the case shall thereupon be so removed." The criminal jurisdiction is limited strictly by the First Schedule and it is interesting to note that the following offences are embraced, inter alia, therein:—theft, other than stock theft, where the value does not exceed five pounds; receiving stolen property (other than stolen stock), not exceeding five pounds in value, knowing it to have been stolen; contravention of any provision of or regulation made under any law relating to:—pounds; the preservation of game, wild birds or fish; eradication of noxious weeds; the prevention of animal diseases; the prevention of cruelty to animals; the prevention of infectious or contagious disease. The Court has no jurisdiction to impose (1) a fine exceeding ten pounds, or (2) imprisonment for a period exceeding one month, (3) a sentence of whipping (except in the case of a male child under the age of sixteen years), (4) detention in a reformatory. All proceedings in which there has been a conviction, whatever the sentence, are subject to review by the Magistrate of the district (Section 4). Where if the case had been tried by a Magistrate's Court an appeal would have lain

to a Superior Court there is an appeal from a decision of a Special Justice to the Magistrate's Court of the district. The decision of the Magistrate's Court upon such appeal is subject to a further appeal to a Superior Court (Section 7).

There remain the following Courts, none of which need detailed attention for the purposes of this article: (i) Native Chiefs' and Headmen's Courts, (ii) Native Commissioners' Courts, (iii) Native Appeal Courts, (iv) Native Divorce Courts.

NOTICE.

Readers are requested to note that as from next year this Journal will be published quarterly. The first part of Vol. III will appear towards the end of March 1932, and the others will follow approximately in June, September, and December respectively.

Members of the Association receive a copy of each issue free.

Subscription is open to non-members at the following rates:—

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Communications on subjects of general and special veterinary interest, preferably type-written (double spacing), should be addressed to the Editor S.A.V.M.A., P.O. Box 593, Pretoria.

Contributors of original papers will receive 25 reprints free of charge except when these are published under classified headings. Additional ones may be obtained at cost price, provided a request for them accompanies the typescript.

JL S. Afr. VET. MED. ASSN.
VOL. II (2) 1931.

The Veterinary Profession in South Africa.
(3). Professional Veterinary Medical Societies.
(b) Cape of Good Hope Veterinary Medical Society (1)
(Inaugural Meeting 1/11/05).

Dr. H. H. CURSON, F.R.C.V.S., Onderstepoort.

INTRODUCTION.

Thanks not only to records of several annual general meetings preserved in the pages of the *Veterinary Record,* but also to the courtesy of the honorary secretary-treasurers of the defunct association (Messrs. J. W. Crowhurst and R. Paine), it has been possible to write a short account of the Cape Veterinary Medical Society. Among the chief of its objects was to have introduced "before Parliament a Bill with a view to protecting the general public against" unqualified practitioners. As this effort has been described (see Jl. S.A.V.M.A. October 1930, "The struggle for legal recognition"), no reference to the bill will be made here.

On 14/9/05 several veterinary surgeons in Capetown, Messrs. Crowhurst, Forrest, Paine, and Robertson, called on the Chief Veterinary Surgeon, Mr. D. Hutcheon, and suggested the formation of a veterinary association. As a result, a circular letter was addressed to all members of the Royal College of Veterinary Surgeons in the Colony, seeking their co-operation. Of the members so approached, 23 replied in the affirmative.

MEETINGS.

A meeting, the first, was then arranged for 1/11/05 when office-bearers were appointed, rules drafted, and steps taken regarding a veterinary bill. Later, general and council meetings were held at irregular intervals, and particulars concerning certain general meetings, referred to as *Annual,* were on four occasions sent to the *Veterinary Record.*

Details regarding these annual gatherings are tabulated hereunder:

Date.	Where held.	Reference.
21/3/07	Office C.V.S., Capetown	Vet. Rec. 20/4/07, p. 684
27/2/08	Central Hotel, Capetown	Vet. Rec. 2/5/08, p. 779
28/4/09	Central Hotel, Capetown	Vet. Rec. 2/10/09, p. 217
13/5/10	Central Hotel, Capetown	Vet. Rec. 2/7/10, p. 8
18/5/11	Capetown	Notes, R. Paine, 10/3/30
25/4/12	Capetown	do.
5/5/13	Capetown	do.

(1) The annual subscription including entrance fee was £5:5:0, the latter being £3:3:0. In 1909 officers of A.V.D. were entitled to election without payment of the entrance fee.

A report of council was generally presented at these meetings, and particulars regarding 1906, 1907, and 1908 are to be seen in the *Veterinary Record.* In addition, the usual subjects of veterinary interest were discussed, namely, meat and dairy inspection (2), private practice by members of the A.V.D., Civil Veterinary Division and by unqualified persons, registration of farriers, government facilities for annual meetings and reading of scientific papers.

With regard to government veterinarians performing duties which belonged to private practitioners, it is significant that from 1st January 1907, the following regulations (3) were enforced:—

"(1) Within the Municipal Areas of Capetown and suburbs, Port Elizabeth and Kimberley (where private veterinary surgeons are in practice) government veterinary surgeons will attend only to animals suffering or suspected to be suffering from the following contagious and infectious diseases, proclaimed under Section 8, Part II of Act 27 of 1893: Anthrax, African Coast Fever, Epizootic lymphangitis, Foot and Mouth Disease, Farcy, Glanders, Lung Sickness, Rabies, Redwater, Rinderpest, Scabies (in equines), Sponsziekte (Quarter Evil), Swine Fever and Tuberculosis."

"(2) Within the Municipal Areas of East London, Grahamstown, Kingwilliamstown and Uitenhage (where no private veterinary surgeons are in practice) the following uniform tariff of charges for the services of Government veterinary surgeons will be levied, except in the case of animals suffering or suspected to be suffering from any of the contagious and infectious diseases mentioned in Clause (1)":—

"For advice given at Veterinary Surgeons' Office, 2/6 per animal per visit. For operation and casting, 7/6 per animal per visit. For visit to animal in its own quarters, 5/- per animal per visit."

Refering in an editorial to an account of the first annual general meeting of the Cape V.M.S. the *Veterinary Record* (20/4/07 p. 677) adds significantly, "when a Colonial or foreign graduate possesses a diploma of sufficient value, he is legally entitled, upon payment of a registration fee, but without examination, to be registered by the R.C.V.S. and become "to all intents" one of its members. The value of his diploma and the status of the school at which it was obtained are points which may be settled, if need be, by an appeal to the Privy Council." This provision was made in the British Veterinary Surgeons Act of 1881 (4).

(2) See Public Health Amendment Act No. 23 of 1897. Under Section 9 regulations were published in the Cape Government Gazette of 6/2/06 referring to dairy and meat inspection.

(3) Vet. Rec. 23/2/07 p. 546.

(4) Mr. J. D. W. A. Coles, B.V.Sc., University of S. Africa, upon making application for registration, was informed by the Secretary R.C.V.S. (letter 13/1/30) that the application cannot be granted on the ground that the Diploma held by the applicant is not a veterinary diploma recognised for the time being by the Council, under the provisions of Section 13 (3) of the Veterinary Surgeons Act, 1881.

	1/1/05	21/3/07	27/2/08	28/4/09
President	D. Hutcheon	D. Hutcheon (6)	J. D. Borthwick	J. D. Borthwick
Vice-President	J. W. Crowhurst	J. D. Borthwick	W. Robertson	R. W. Dixon
Hon. Sec.-Treas.	W. Robertson (5)	J. W. Crowhurst	J. W. Crowhurst	J. W. Crowhurst
Committee	J. Forrest	J. Forrest	J. Forrest	J. Forrest
	R. Paine	R. Paine	R. Paine	R. Paine
	E. J. Wadley A.V.D.	E. J. Wadley	R. W. Dixon	A. Goodall
	G. W. Freer	J. Buck	G. W. Freer	G. W. Freer
	J. Buck	W. Robertson	A. Goodall (7)	J. Buck
		R. W. Dixon		W. Robertson

	13/5/10	18/5/11	25/4/12	5/5/13
President	J. D. Borthwick	Retiring	Retiring officers	J. D. Borthwick
Vice-President	R. W. Dixon	officers	re-elected except	R. W. Dixon
Hon. Sec.-Treas.	R. Paine	re-elected	that E. Fern	J. W. Crowhurst
Council	J. Buck		replaced	R. Paine
	J. Forrest		W. Robertson	E. Fern
	G. W. Freer			J. Buck
	J. W. Crowhurst			A. Goodall
	W. Robertson			

(5) In July 1906 Wm. Robertson was transferred to Grahamstown and J. W. Crowhurst took over his duties.

(6) The death of Duncan Hutcheon [illegible] troduce a veteri[illegible] bill in t[illegible] ly at a time when it was proposed to in-

Name.	Qualification.		Date of Membership.	Further remarks.
Borthwick, J. D.	M.R.C.V.S.	('88)	1906	
Buck, J.	M.R.C.V.S.	('95)	1905	
Crowhurst, J. W.	M.R.C.V.S.	('87) F. ('93)	1905	
Dixon, R. W.	M.R.C.V.S.	('86)	1905	
Elley, S.	M.R.C.V.S.	('03)	1905	
Fern, E.	M.R.C.V.S.	('91)	1905	
Forrest, J.	M.R.C.V.S.	('00)	1905	
Freer, G. W.	M.R.C.V.S.	('94)	1905	
Goodall, A.	M.R.C.V.S.	('02) F. ('21)	1906	Died Wolmaransstad 6/4/30.
Goundry, C.	M.R.C.V.S.	('97)	1905	Died Malmesbury 26/8/12.
Hutcheon, D.	M.R.C.V.S.	('71)	1905	Died Capetown 14/5/07.
Kearney, P. J. X.	M.R.C.V.S.	('04)	1905	
Lyons, J. H. L.	M.R.C.V.S.	('02)	1905	
Paine, R.	M.R.C.V.S.	('01) F. ('07)	1905	
Pakeman, W. O.	M.R.C.V.S.	('92)	1905	Died Aliwal North 20/1/16.
Robertson, W.	M.R.C.V.S.	('93)	1905	Died Grahamstown 22/12/18.
Robinson, J. A.	M.R.C.V.S.	('85)	1905	Died Grootfontein 3/9/15.
Soga, J. F.	M.R.C.V.S.	('86)	1905	Died Amalinda 6/12/06.
Spreull, J.	M.R.C.V.S.	('95) F. ('08)	1907	
Wadley, E. J.	M.R.C.V.S.	('01)	1905	
Worsley, J. A.	M.R.C.V.S.	('87)		Died Prieska 21/8/14.

Other veterinarians who were in the Cape Colony between 1/11/05 (inaugural meeting) and 31/5/10 (Union of South African Colonies) **and have since died,** but who were **not** members of the Cape of Good Hope V.M.S. are: T. Bowhill, M. A. Hutchence, J. Neill, and E. E. Stokes.

Since 19 veterinary surgeons had joined the Society by the end of 1906 and all had paid their dues, there was a credit balance of over £80 at the end of the first financial year, a praiseworthy start of a membership scattered throughout the Cape Colony. Only 4 annual subscriptions were collected in all, and notwithstanding this concession to members, it was decided at a meeting on 9/1/1918 that a sum of £150 be handed to the Transvaal Veterinary Medical Association "for the purpose of promoting a veterinary surgeons bill (S.A.)"[8]. The small balance remaining was divided in 1921 on a pro-rata share among those members who had paid up to the last subscription called for, namely, 1910. It was at this meeting that the affairs of the Society were finally concluded, the South African Veterinary Association having been launched the previous year.

(c) Natal Veterinary Medical Association [9]
Inaugural Meeting 19/11/09[10].

Introduction.

It is a remarkable fact that in Natal a law for the registration of veterinarians, and thus a protection for the public, was enacted, not as the result of efforts by a professional body, but owing to the representations of the Principal Veterinary Surgeon (H. Watkins-Pitchford) and the good sense of the Natal M.P.'s. It was, indeed, chiefly due to the formation of a Natal Veterinary Board in 1899 (but which did not operate until 1902) that it was felt that no special need existed for a Natal V.M.A., although the suggestion was "for some ten years past . . . a matter of discussion and of postponed intention"[11].

At the end of 1909, however, when amalgamation of the four South African colonies was soon to take place, it was considered advisable to draw "more closely together in order that we may both assist to mould the future destinies of our profession . . . and also by presenting a united resistance to those influences which threaten to react unfavourably upon our professional status or upon our material welfare"[11]. In this way, therefore, the N.V.M.A. made its belated appearance.

Meetings.

According to the *Veterinary Record* of 2/7/10, when an annual gathering of the Cape Veterinary Medical Society is reported, the N.V.M.A. was formed on 19/11/09 after which a copy of the rules and

[8] Letter dated 9/8/18 from the Hon. Sec.-Treasurer Cape V.M.S. (J. W. Crowhurst) to the Hon. Secretary T.V.M.A. (D. Kehoe).

[9] Not to be confused with the Natal Veterinary Board established under Act 21 of 1899.

[10] Vet Rec. 2/7/10, p. 8.

[11] Vet. Rec. 21/5/10, p. 757.

the proceedings of the inaugural and first meetings (incorporating the rules) were despatched to both the Cape and Transvaal Associations. Only one copy of these documents appears to be in existence (12), this being in the Library of the S.A.V.M.A.

Altogether six meetings are known to have taken place as indicated below:—

Date.	Where held.	Reference.
19/11/09 (two)	Room 24, Office of Chief Engineer	Vet. Rec. 2/7/10, p. 8.
5/3/10	Office of P.V.S., Maritzburg	Vet. Rec. 21/5/10, p. 757.
30/6/11	Office of P.V.S., Maritzburg	Vet. Rec. 2/9/11, p. 153.
24/10/13	Office of S.V.O., Maritzburg	Vet. Rec. 2/5/11, p. 709.
13/12/13		N.V. Board File, Union Buildings.

At the second, fourth and fifth meetings, office-bearers were elected as shown in the subjoined section.

Among the addresses to the Association that of the President on 5/3/10 deserves special mention, giving as it does a review of professional activities since he succeeded Mr. Samuel Wiltshire, the first state veterinarian. His demonstrations, too, on the pack saddle and field service chests must have been most interesting. On 30/6/11 he exhibited a haemoglobinometer of his own design and the Isometer devised by his brother, Dr. Watkins-Pitchford.

A matter which rightly received the attention of the Association was that of unfair competition by Government Veterinary Surgeons, and on two occasions at least the notice of the Minister of Agriculture was drawn to it(13). It was actually in connection with the reply from the Principal Veterinary Officer (Union) regarding this question that led to the meeting of 13/12/13, when also, as a result of Mr. Shilston's resignation as Honorary Secretary-Treasurer, Mr. A. Goulé was elected. The following year saw the outbreak of the Great War, and although subsequently the N.V.M.A. was represented at the Bloemfontein meeting in December, 1917, by the President (F. J. Carless), it would not appear that meetings, beyond those indicated above, took place.

In 1926, at the September meeting of the S.A.V.M.A., Mr. D. T. Mitchell, who was stationed at Allerton Laboratory, Maritzburg,

(12) Entrance fee was £1:1:0 and annual subscription 10/6. Apparently funds were in a most satisfactory state, for at the meeting of 24/10/13 the N.V.M.A. contributed £10:10:0 and £5:5:0 to the International Veterinary Congress and Victoria Benevolent Fund respectively. Early in 1924 a contribution, approximately £12, was made to the funds of the S.A.V.M.A. and in 1929 (Vet. Rec. 5/10/29) £17:10:4 was contributed by old members of the N.V.M.A. to the Royal Veterinary College, London, Building Fund.

(13) Another point brought up at the meeting of 24/10/13 was to approach the P.V.O. in regard to the issue of horse-sickness serum at a reduced rate so that private practitioners could participate in inoculation.

brought up the question of local branches of the Association. After some discussion it was agreed that such efforts should be encouraged, but, unfortunately, apart from the election of a Secretary for the Natal branch, nothing appears to have been done.

Now again (June 1931) the Natal veterinarians are manifesting renewed interest in the scheme and it is to be hoped that on this occasion a live body will result.

OFFICE-BEARERS.

	19/11/09	30/6/11	24/10/13
President	H. Watkins-Pitchford	H. Watkins-Pitchford	F. J. Carless
Vice-President		F. J. Carless	
Hon. Sec.-Treas.	J. B. Collyer	A. W. Shilston	A. W. Shilston

MEMBERS.

Name.	Qualification.	Date of membership.	Further remarks.
Amos, S. T. A.	M.R.C.V.S. ('97)	F ('09) With the exception of Messrs. Barnes and Johnston who joined in 1914, all seem to have been elected in 1909.	
Barnes, W. G.	,, ('88)		
Carless, F. J.	,, ('90)		
Collyer, J. B.	,, ('97)		
Cordy, C. H.	,, ('90)		
Goulé, A.	,, ('71)		
Harber, A. F.	,, ('97)		Died at sea 12/9/18.
Hutchinson, F.	,, ('89)		
Johnston, S. I.	,, ('95)		Died at Johannesburg 5/8/29.
Power, W. M.	,, ('96)		
Sharpe, O. M.	,, ('99)		
Shilston, A. W.	,, ('08)		Died India 6/7/19.
Tyler, C.	,, ('00)		
Watkins-Pitchford, H.	,, ('89)	F ('94)	
Woollatt, S. B.	,, ('97)	F ('05)	

It is understood that Messrs. S. H. Ewing, F. M. Hill, and J. L. Webb were also members, but no details are available.

CONCLUSION.

It is hoped that the history of the professional veterinary societies, especially the T.V.M.A., will be an inspiration to veterinarians of the future, the lessons to be learned being too obvious to stress. If only the dangers of apathy (our ever present foe) have been indicated, then the time spent on this compilation has been worth while. Of less importance is the fact that certain names have been preserved from oblivion.

(To be concluded).

RELATIVE SALARIES OF STATE VETERINARIANS IN THE SUB-CONTINENT.

Conditions of Service.	Northern Rhodesia.	Southern Rhodesia.	Bechuanaland Protectorate.	Union of South Africa.	South-West Africa
Basic Salary	600 x 30-840 x 30-920 (840-920 special recommendation).	450 x 25-750 x 30-840 (750-840 limited to four seniors).	500 x 20-700.	375 x 25-550 x 30-700 (5 yrs. B.V.Sc. commence at £400)	Same as Union.
Subsistence Allowance.	On railway 15/- p.d. or hotel expense. Off railway 5/- p.d. Heads of Depts. 5/- extra. Camp equipment provided.	Salary up to £600, town 15/- p.d. Country 9/- p.d. Salary over £600, town £1 p.d., country 12/- p.d.	Given outside the Protectorate as follows: Salary up to £750, 17/6 p.d. Over £750, £1 p.d.	Salary up to £500, 15/- p.d. Salary over £500, 17/6 p.d.	do.
Transport Allowance	Price of car advanced free of interest. 10d. p.m. near railway, and 1/- p.m. away from railway. These rates for privately owned cars.	Price of car advanced. 10d. p.m. up to 150 miles, 8d. 151-400, and 7d. above 400 miles. £75 allowed p.a. for own car.	Price of car advanced and repayable monthly (4 years American and 6 years English. 1/- p.m. up to 200 miles, and 8d. above this. Officers responsible for upkeep. Private car allowed.	Price of car required for subsidisation, advanced to maximum of £360 free of interest. 3d. p.m. running allowance plus depreciation allowance at the rate of depreciation value divided by official life of car, per mile, plus garaging allowance of £2:10/- p.m. plus Insurance and Licence. Petrol, oil, etc., obtainable at contract rates. Private cars used on duty receive 7d. per mile.	do.
Any other Allowance			Travelling allowance £100 p. annum.		Territorial allowance of £47—61.
Leave	Vacation leave is 6 months after 20 months service. Fare paid to Southampton. Rail fare for wife and children paid to Capetown and £50 towards wife's sea passage. 28 days local leave during each "tour." Sick leave full pay.	6 weeks p.a. is accumulative up to 5 months on full and 1 months on half pay. Sick leave up to 6 months on full pay and leave on half pay may be extended thereafter up to 6 months.	6 weeks p.a., plus 14 days occasional leave on full pay, accumulative to 6 mos. oversea. 34 days extra allowed for passage oversea. Rail fare to coast refunded to applicant and family.	Occasional 12 days p.a. Vacational 24 days p.a. Sick 120 days full pay and 120 days half pay in each cycle of 3 years.	Same as Union.
Quarters	Free and furnished.	Government quarters if available provided at rental.	Free. Reckoned as $\frac{1}{6}$ of salary for pension purposes.	Free quarters for research officers only.	do.
Medical	Free.	Reduced charge at hospital.	Free, and 1/6 p.d. at hospital. Specialists' fees usually refunded.		do.
Pension	Non-contributory. $\frac{1}{6}$ (i.e. value of quarters) is added to actual salary. 1/40th of this multiplied by years service gives retiring pension.	Contributory. 4% of salary self and 1% of salary for wife. Pension calculated at 1/60 for each year of service.	Non-contributory. 1/50th of salary yearly and retirement at 60 years. Option to commute 1/10th of salary for 10 years for gratuity plus 1/40th pension rights and retire at 55.	Contributory. 4% of salary self and 1% of salary for wife. Pension calculated at 1/60 for each year of service.	do.
Retire at	50	55	See above.	Normally 60, but may be 55.	do.

In compiling this table, I wish to thank the Heads of the Veterinary Departments of the countries concerned for their willing assistance. H. H. CURSON.

JL. S. AFR. VET. MED. ASSN.
II (2) 1931.

Gland Grafting in Merino Sheep.
Preliminary Observations on its Influence: (c) on Castrated Sheep.

By J. QUINLAN, F.R.C.V.S., Dr. Med. Vet., D.V.Sc., and
I. P. MARAIS, B.Sc. (Agric.), B.V.Sc., Onderstepoort.

INTRODUCTION.

In a previous paper Quinlan, Maré, and Roux (1930) published the results of their observations on the influence of gonad grafting: (A) on body-development, wool-production, and progeny, and (B) on senility. That publication was confined to observations made on young rams which had been grafted with sections of testicle taken from an active adult ram, young ewes which had been grafted with the ovaries taken from active mature ewes, and a ram showing advanced senility, which was grafted on three occasiosn with grafts taken from active mature rams.

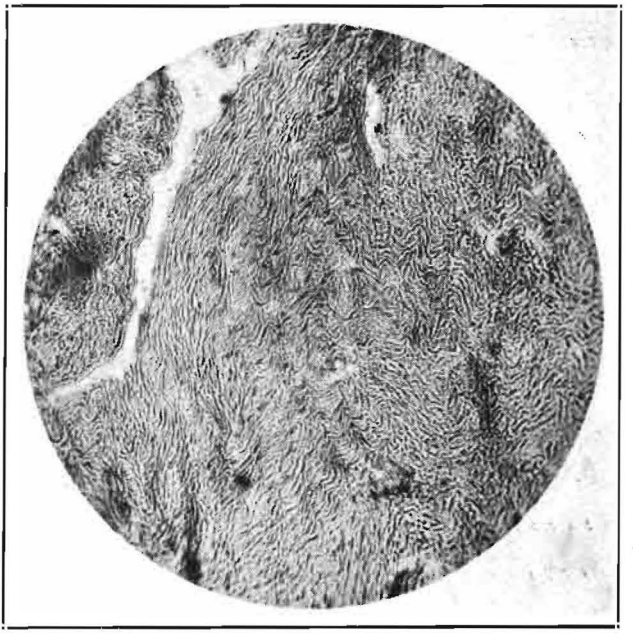


Fig. 1.—Section of a transplant removed twelve months after operation. X.80.

Since the abovementioned publication appeared, several workers have published their observations on gonad-grafting in sheep. [Gunn and Seddon (1930), Richter (1931), Miller (1931).]

Their experimental findings and those of previous workers, to which reference was made in the first article, strongly support those published by us in 1930. Young rams do not appear to be influenced

either in body-weight or wool-production by grafting, neither do the progeny of grafted rams show any beneficial influence transmitted by their sires. Most workers, however, agree with the observations made by us on the senile ram: that his general health improved considerably after grafting. Another suitable subject has since been submitted to the Voronoff operation with most encouraging results. The improvement, however, was again temporary. There seems to be little doubt that there is a temporary rejuvenation in senile rams after grafting. In the stage of onset of senility grafting appears to stimulate *libido sexualis*, but if the operation be postponed until the ram is already impotent the temporary improvement in general health does not appear to be accompanied by increased potency.

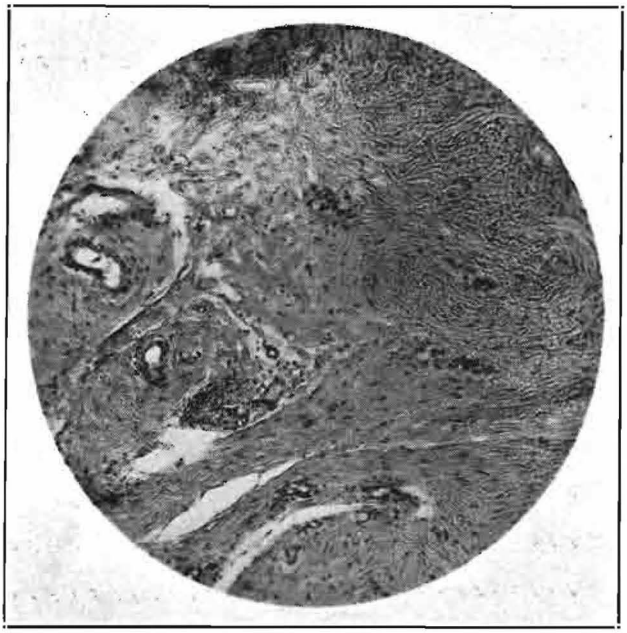


Fig. 2.—Section of a transplant removed twelve months after operation. X.80.

There is little doubt that much work has been done on rams to elucidate the problem of grafting so forcibly brought before sheep-raising countries by Voronoff. However, the literature does not seem very rich in references to work on sheep. The work done on other species of domestic animals appears to support our experimental evidence with senile rams [Hobday (1925), Schouppe (1928), Gratenko (1926), Krapiwner (1926), Nikiforov (1926), Artemiciv (1925).] The beneficial results of grafting even in senile rams is of short duration, not longer than 6 to 8 months. In this connection Richter (1931) also supports the results published in South Africa. Repeated grafting does not appear to stimulate the general health in the same way after

each operation. Successive graftings give less and less stimulus. (Quinlan, Maré, and Roux, 1930).

Gunn and Seddon (1930) and Richter (1931) have also studied the fate of the grafted tissue taken from the site of operation at intervals after grafting. Their histological findings agree with those published by ourselves and other workers, to whose publications reference was made in the previous paper; namely that the grafted tissue is rapidly absorbed; the surrounding tissue behaving as if the graft were a foreign body.

The temporary stimulus given to the general health by grafting does not seem to produce any permanent change in the testicles already showing senile atrophy, as indicated by Quinlan, Maré, and Roux (1930).

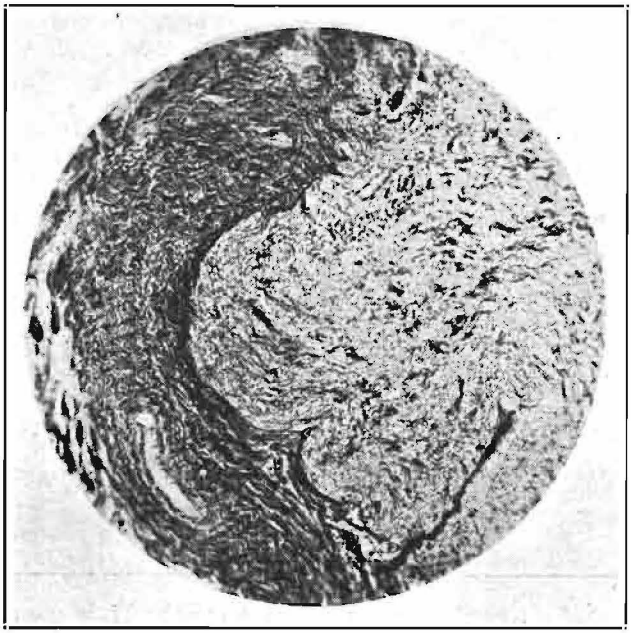


Fig. 3.—Section of a transplant removed twelve months after operation. X.80.

Observation having been carried out on young sheep of both sexes, and also on senile rams, it was decided to see what influence grafting sections of testicle might have on young castrated sheep. No reference can be found to this aspect of the problem in the literature available.

When the operation was considered it was realised that the only suitable situation for testicle grafts was the scrotal sac if the normal environmental temperature was to be maintained. Crew (1926) has indicated the detrimental effect of high temperatures on the germinal epithelium of the testes. The cells of Sertoli and the interstitial cells

are relatively much more resistant. Hammond and Asdell (1926), Hammond (1930), and Walton (1930) have shown that spermatozoa live longer at temperatures below that of the scrotum than at higher temperatures. It was considered, however, that if the interstitial cells and Sertoli's cells survived, as they do in the abdominal cryptorchid, the results of grafting, which appear to depend on other factors rather than on spermatogenesis, would be shown. In the case of abdominal cryptorchidism, although the function of spermatogenesis is in abeyance, that of producing the internal secretion necessary for the development of the secondary sexual characteristics of the male is, as a rule, active.

It appeared unlikely that grafting into the remains of the fat-laden scrotum of the castrates would be a surgical success if the operation were delayed for any time after castration by actual removal of the gonads. It was consequently decided to transplant the sections of testicle in the abdominal wall in the region of the flank.

The sheep selected for the experiment were twelve high grade Merino wethers; Nos. (Controls) 23432, 23959, 24404, 24510, 24670, 24718; (Grafted) 22401, 23400, 23698, 24436, 24494, 24717. The selection was made so as to get as close uniformity as possible with

Fig. 4.—Control wethers at the time of operation.

regard to type, age, condition, body-weight, and wool. The sheep were all purchased from the same flock so that there was a relationship. By this method of selection it was hoped to eliminate, as far as possible, any tendency to individual variation, either of body-development or wool-production, due to inherent differences in individuals.

At the time of operation all the sheep were about 18 to 21 months old. They had come from the Cape Colony to Onderstepoort during

the previous autumn and early winter. While at Onderstepoort they had all been used for the preparation of Bluetongue vaccine and had received the same food. Therefore, the selected sheep were as similar as it was possible to have them, and they had been in exactly the same environment and on the same daily ration for at least 8 months prior to being put into the experiment. Further, the sheep selected for operation and the control sheep were paired before the final choice was made.

THE OPERATION.

All twelve sheep were shorn prior to the commencement of the experiment. They were confined to the stable and put on to a ration of bran and succulent food (green lucerne) for a week. For 24 hours prior to the operation food was withheld, but water was allowed up to the 12th hour.

During the day previous to the operation the region of the right flank was shorn clean of wool and shaved. It was then painted over with tincture of iodine.

Two donors were used to supply the testicular tissue used for the grafts. They were prepared for operation in the same manner as the experimental sheep. The scrotum was shaved and painted with tincture of iodine the day previous to the operation. The donors were

Fig. 5.—Grafted wethers at the time of operation.

carefully selected, being vigorous, two year old, Merino flock rams which were clinically normal.

Deep anaesthesia was used during the operation. Chloral hydrate, in 10 per cent. solution with normal saline, was given intrajugularly. Each sheep, including the controls, received 45 cc. of the solution.

The average weight of the sheep to be grafted was 72.3 lb. and the weight of the controls was 73.5 lb. The donors which were heavier, average 115 lb., each received 50 cc. of the chloral hydrate solution.

The grafts were removed with the strictest aseptic precautions. The donors were not killed; the grafts being removed while the testicles remained attached but exposed. Each section was cut from the surface of the testicle leaving the *tunica vaginalis visceralis* attached. The sections measured 6 cm. x 1.5 cm. x 1 cm. After removal from the donor they were immediately attached to the receptor which was already prepared.

The receptors, after anaesthesia was completed, were placed on

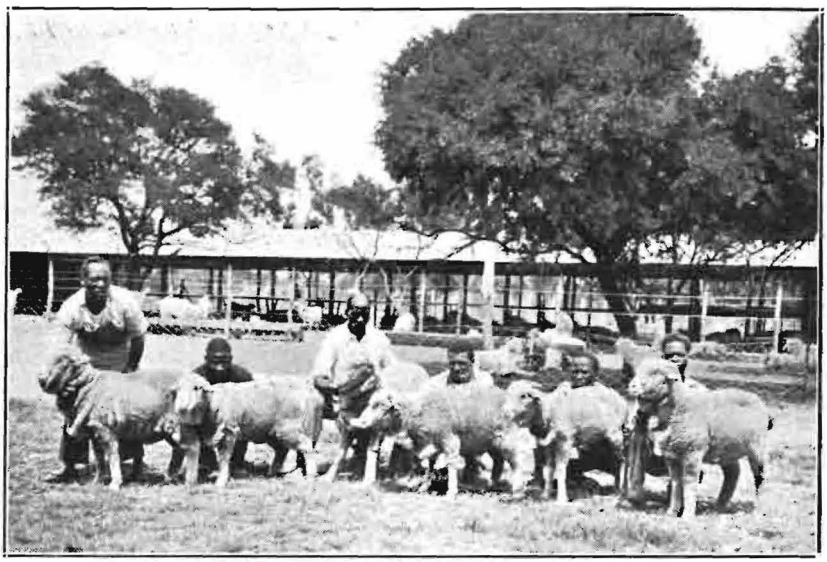


Fig. 6.—Control wethers, 26.11.'30. The sick sheep, 24670, is second from the right.

the left side on the table and the site of operation washed off with ether. Sterile cloths were then clamped in position. An incision about 10 cm. long was made through the skin and fascia immediately in front of the *m. tensor fasciae latae*. Sterile gauze was attached with forceps to the lips of the cutaneous incision. Proceeding by blunt dissection, two pockets were made; one between the *m. tensor fasciae latae* and the *m. obliquus externus*, and a second between the *m. transversus abdominis* and the *m. obliquus internus*. The surface of the muscles was prepared by scraping until it was oozing with blood. The grafts were attached by several sutures, using No. 00 catgut. The glandular surface of the section was placed in contact with prepared surface of the muscle. The graft was then covered over in the muscular pocket by suturing the two muscles together a.

that the whole graft was in close contact with a muscular wall. The muscle and fascia lying superficial to the graft were now sutured with a continuous catgut suture. The skin was closed with a series of interrupted silk sutures and the wound sealed with autosept.

The wounds healed by first intention, the stitches being removed on the 7th day.

The operations were performed on 18th and 20th December 1929. On February 2nd one of the grafts sloughed away from sheep No. 24717, otherwise all the sections remained attached.

LOCAL RESULTS OF THE OPERATION.

There was around the site of operation a fairly well marked inflammatory swelling, which gradually subsided. It was then quite

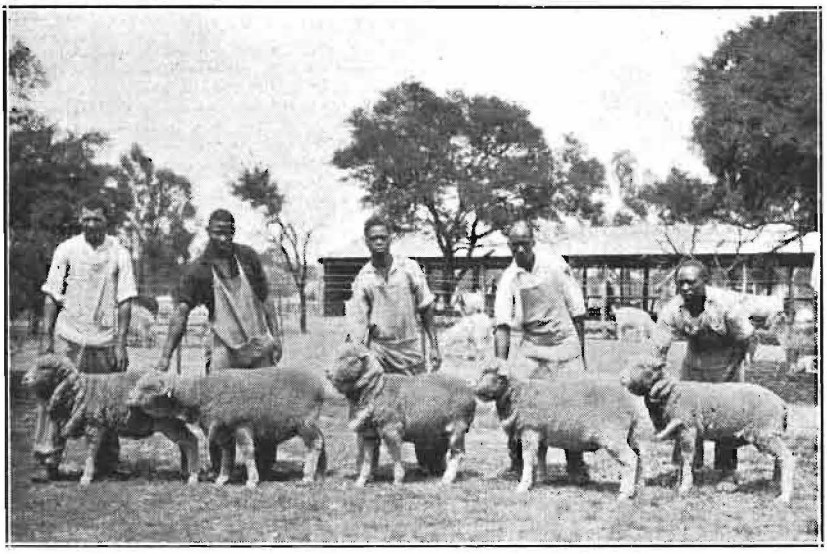


Fig. 7.—Grafted wethers, 26.11.'30. The sick sheep, 24494, is not with the group.

easy to feel the anterior graft by grasping the abdominal wall with the fingers and thumb. The posterior graft could also be felt by deep palpation. They remained unchanged in size for about two months, when a gradual diminution in size took place until, after a period of 5 to 8 months, they could no longer be palpated.

When the experiment was completed, at the end of twelve months, the site of the operation was carefully dissected out, but the only trace of foreign tissue which was found at the attachment of the sections of testicle was a small firm thickening, about the size of a pea in some of the sheep. On histological examination this was composed of connective tissue (Figs. 1 and 2). In other cases there was a capsule of fibrous tissue surrounding a centre of old granulation

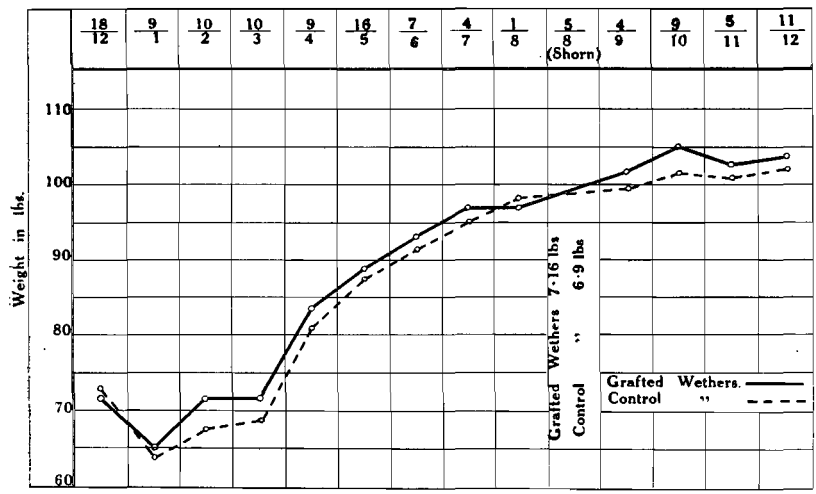
tissue, already well advanced in a process of differentiation (Fig. 3). There was no cellular formation which would indicate that this tissue was of testicular origin. The testicular tissue had been completely absorbed.

Treatment during observation and General Results following the Operation.

The experimental sheep were kept under observation for 12 months following the operation. All twelve, 6 grafted and 6 control sheep, were placed in a yard, 20 yards by 15 yards, where an open shelter was provided. They were under daily observation so as to see if there was any development of male tendencies. The ration given consisted of 1 lb. mealie meal, $\frac{1}{8}$ oz. of salt, succulent food (green lucerne, green barley, or green oats), lucerne hay, and veld hay ad lib., with a constant supply of fresh water. They were dosed at regular intervals with Government Wireworm Remedy so as to keep them as free as possible from intestinal parasites.

They were weighed at intervals of approximately a month, and were shorn on the 5th August following the operation (approximately $7\frac{1}{2}$ months growth of wool).

The weights of individual sheep are recorded below, as well as the average group weights from month to month. The weight of wool shorn is also given. The average weights are also compared in the graph. below.



Discussion.

It will be observed that the two groups of sheep were selected in such a way that they were as similar as possible with regard to breed, type, age, body-weight, and wool-production. The control sheep were anaesthetised at the same time as the sheep were grafted,

so that the operation was the only difference in treatment. After operation, they were kept under identical conditions.

Just previous to the operation, 18/12/29, the average difference of weights of the two groups was 0.8 lb., the control group being the heavier. During the 3 weeks following the operation until 9/1/30, both groups lost weight at the same rate. After this time there was an increase, the grafted sheep increasing more rapidly than the controls. There was an average increase of 4.1 lb. in favour of the grafted group on 10th February, 1930. This increase was reduced to 2.7 lb. a month later, on 10th March, 1930. The two curves, as shown in the graph, slowly approached the same average weight until August 1st, 1930, when they were almost identical. Following this date, except at one weighing, on the 9th October, 1930, the curve of the grafted group was always just above that of the controls until the termination of the experiment on the 11th December, 1930.

It would appear that the grafted sheep, after an interval of 3 weeks following the operation, had received some stimulus from the grafts. This stimulus was greatest during the first 3 months. During the following 5 months it gradually became less until at the end of eight months it was no longer apparent.

The stimulus would appear to be developed during the life of the graft. It is greatest for a time after transplantation when the graft is largest, but decreases with the absorption of the testicular tissue.

The growth of wool did not appear to be noticeably stimulated, the average difference in fleece-weight after seven-and-a-half months growth being 0.26 lb. in favour of the grafted group.

Since the average difference in weight between the two groups after the 4th July, 1930, that is approximately 6½ months after grafting, was just a fraction above or a fraction below 1 lb., it would appear that the skeletal development was not influenced by grafting. It appears rather to be a stimulus to the general health with a consequent tendency to put on mutton.

The temperament did not appear to be influenced in any way. The grafted sheep behaved throughout the experiment as the control wethers.

CONCLUSIONS.

(1) Grafting sections of testicle into wethers has been successfully performed under general anaesthesia.

(2) Grafting does not appear to influence the temperament of wethers. They do not become masculine in their behaviour.

(3) Grafting appears to stimulate wethers so that they put on mutton somewhat more rapidly than control wethers.

(4) The grafted sheep and the controls again reached the same weight level after a period of seven-and-a-half months, so that it appears the increase is due to mutton-production rather than to skeletal weight.

(5) The stimulus given to castrates by grafting is very transitory. It is greatest up to the end of the third month and afterwards gradually disappears until it is no longer evident after seven-and-a-half months.

(6) The increase in weight is not very marked, the greatest average difference being 4.1 lb. This was maintained only for a very short period.

(7) Grafts removed twelve months after operation showed no structural elements by which the tissue of their origin could be recognised.

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APPENDIX 1.

CONTROL WETHERS.

D.O.B. Weight in lb. Nos.	18/12/29	9/1/30	10/2/30	10/3/30	9/4/30	16/5/30	7/6/30	4/7/30	1/8/30	Wgt. of fleece 5/8/30	4/9/30	9/10/30	5/11/30	11/12/30
23432	84	80.5	86	90	101	103	108	111.5	113.5	9.5	115	115.5	118	118
23959	56	47	43	46.5	56.5	63.5	67	68.5	71.5	5.5	73	74.5	74	70.5
24404	90	85	91.5	90	100	108	110	111	115.5	6.5	119	119	116.5	117
24510	69	63.5	68	66	76	82	85.5	89	92	7.5	88	93	92	96
24670	70	63.5	70.5	73	86.5	97.5	96	100	x	6.0				
24718	67	50	44	48	65	71.5	81	90	95.5	6.5	104.5	105.5	106.5	112
Total	436	389.5	403.0	413.5	485	525.5	547.5	570.0	488.0	41.5	499.5	507.5	507.0	513.5
Average	72.3	64.9	67.2	68.9	80.8	87.6	91.3	95.0	97.6	6.9	99.9	101.5	101.4	102.7

x Sheep sick; monthly weighing stopped.

APPENDIX II.

GRAFTED WETHERS.

D.O.B. Weight in lb. Nos.	18/12/29	9/1/30	10/2/30	10/3/30	9/4/30	16/5/30	7/6/30	4/7/30	1/8/30	Wgt. of fleece 8/8/30	4/9/30	9/10/30	5/11/30	11/12/30
22401	71	63	69	60.5	77	81	86.5	91.5	95	9.5	92	97	92.5	96
23400	88	82.5	90.5	89.5	103.5	111	117	121	122.5	7.25	127	131	128	127
23698	69	65	74	77	89	96	100	106	106	8.25	105	114	115.5	115
24436	77	70.5	75.5	78	88.5	90	93	94.5	95	6.5	96	98	93	98
24494	63	55.5	60	64	70.5	79	77	81	81	6.75	x			
24717	61	53.5	59	60.5	72	77	82	87.5	84	4.5	85	85	81	82
Total	429	390.0	428.0	429.5	500.5	534	555.5	581.5	583.5	42.75	505	525	510	518
Average ...	71.5	65.0	71.3	71.6	83.6	89	92.6	96.7	97.3	7.16	101	105	102	103.6

x Sheep sick; monthly weighing stopped.

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VOL. II (2) 1931.

Recent Investigations into the Toxicity of Plants.

By D. G. STEYN, B.Sc., Dr. Med. Vet., Onderstepoort.

The following is a summary of investigations into the toxicity of plants, which are known or suspected to be poisonous. These plants will be fully reported on in the next Report of the Director of Veterinary Services.

COMPOSITÆ.

(1) *Aster filifolius* Auct. non Vent.

Vernacular name: Draai-bos.

This plant was suspected to have caused mortality in sheep in the Grahamstown and Rouxville districts. Experiments were conducted with the dried plant in the flowering stage.

Symptoms: Sheep: tympanitis; abdominal pain; weak and accelerated pulse; diarrhoea; salivation and dyspnoea. This animal received 500 grams of the plant within five days and died on the sixth day of the experiment.

Post-mortem Appearances: General cyanosis, hydrothorax, hydroperitoneum, oedema and hyperaemia of the lungs, subendocardial haemorrhages, tumor splenis, hyperaemia of the spleen and liver, and pronounced acute catarrhal gastro-enteritis with numerous haemorrhages in the mucosa.

No previous record of the toxicity of this plant could be found in the available literature.

(2) *Chrysocoma tenuifolia* Berg.

Vernacular names: Bitterkaroo, beeskaroo, beesbossie, brandbossie.

This plant was used in the flowering stage in both the fresh and dried state. In the course of the experiments conducted in the Willowmore District this plant was found to be the cause of alopecia in kids and lambs, the poison apparently being contained in the milk ingested. Loss of the hairy coat is the most outstanding symptom. This may be accompanied by sunburn, pneumonia, licking and swallowing of loose hair leading to obstruction of the gastro-intestinal tract by hair-balls, and diarrhoea. The plant, when fed without any supplement, is poisonous. Angora goats when drenched for a time with sub-lethal amounts of the plant develop a marked tolerance.

EQUISETACEÆ.

Equisetum ramossissimum Desf.

Common name: Drilgras, Dronk-gras.

Farmers and natives unanimously report this plant as toxic. Feeding and drenching experiments were conducted with the dried plant obtained from the Orange Free State. The two sheep used in the experiment showed a much greater tendency to exhaustion than the controls, but no fits or spasms were seen. Unfortunately only a limited amount of the plant was available for tests.

LILIACEÆ.

Dipcadi glaucum Bkr.

Vernacular name: Malkop uie; wild onion.

This plant has caused enormous losses amongst stock in certain parts of Griqualand West. The fresh plant in the late seeding stage was utilised in the experiments.

Symptoms in Sheep: Diarrhoea; pregnant animals abort; dyspnoea; weak and accelerated pulse; fever; and pushing against stationary objects for prolonged periods.

Post-mortem Appearances: General cyanosis; congestion of the lungs; degenerative changes in the liver, heart, and kidneys; subepicardial and subendocardial haemorrhages; hyperaemia and swelling of the lymph glands, acute catarrhal enteritis.

SOLANACEÆ.

Nicotiana glauca R. Grah.

Common name: Wild tobacco, wildetabak.

This plant is known to be poisonous to ostriches, but no definite experimental proof of its toxicity to other stock has as yet been produced. 25 grams and 300 grams of the fresh leaves proved to be lethal to rabbits and sheep respectively. The symptoms produced were typical of nicotine poisoning.

Solanum incanum.

Common name: Bitter apple.

Sheep, goats and rabbits have been repeatedly dosed with the ripe fruit of this plant with negative results. It was, however, found that the unripe fruit was toxic to rabbits.

Solanum nigrum L,

Common name: Black nightshade, naster-gal, galbessie.

The ripe berries of this plant are often eaten by children and are used without any deleterious effects by Europeans and natives as a

substitute for raisins and currants in puddings. A few cases of poisoning by these berries have been reported. Recently a small amount of the plant with unripe berries was forwarded by the Government Veterinary Officer, Butterworth, with the remark that it was suspected of having caused death in sheep. Experiments with the unripe berries on rabbits confirmed this suspicion.

Solanum pandurœforme E. Mey.

Common name: Bitter apple.

Both the unripe and ripe fruit of this plant growing at Onderstepoort proved to be poisonous to rabbits.

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An attempt to find Antidotes for Tulp and *Urginea capitata* Poisoning.

By D. G. STEYN, B.Sc., Dr. Med. Vet., Onderstepoort.

Stockowners should be advised to devote their attention to the eradication of poisonous plants, rather than to occupy themselves with treatment of poisoned animals while the plants responsible are allowed to propagate. It is nevertheless felt that, where possible, antidotes (whether chemical, physiological, or pharmacological) should be found for our commonest poisonous plants.

The present series of experiments had as its object the study of the effects of potassium permanganate and tannic acid as possible antidotes in tulp and *Urginea capitata* poisoning.

The first step was to establish the safe dose both per os and intravenously of the drugs in question. The results of these tests appear in Table I, from which the following conclusions were drawn: 10 gm. of potassium permanganate in 1% solution per os or 0.5 gm. in 1% solution intravenously had no untoward effect on sheep, and 1.5 gm. of the same drug in 1.5% solution per os or .002 gm. in 2% solution intravenously, produced no symptoms in rabbits. In the case of tannic acid, 5 gm. in 10% solution per os and 0.05 gm. in 1% solution intravenously were safe doses for rabbits while 0.15 gm. in 3% solution intravenously proved fatal to these animals.

As only a limited supply of the bulbs of tulp and *Urginea capitata* was available, the preliminary tests had to be limited accordingly It was not possible to determine the species of tulp used, since no flowers were present. Tests on rabbits proved both the tulp and the Urginea bulbs to be toxic. A suspension was prepared as follows: Tapwater was added to the minced bulbs, the mixture allowed to stand for 18 hours, and the resulting thick paste pressed through muslin to remove the coarser particles. The M.L.D. of the tulp suspension so prepared was found to be 40 cc. per 2 Kg. rabbit and 400 cc. for a fully grown sheep weighing approximately 40 Kg. Of the *Urginea capitata* suspension, 10 cc. was established as the M.L.D. for a 2 Kg. rabbit.

These suspensions were used in the experiments listed in Tables II and III. The procedure was firstly to mix the suspension with the antidote before dosing, secondly to administer the antidote on the appearance of symptoms of poisoning, resulting from the administration of the bulb suspensions. As will be seen from the table, the following conclusions could be drawn:—

(1) Potassium permanganate added to a tulp suspension before dosing is capable of preventing poisoning in rabbits and sheep. In

the case of the rabbit, it neutralised the toxin(s) of as much as two-and-a-half times the lethal dose.

(2) Potassium permanganate administered on the development of symptoms of poisoning from tulp suspension has no value as an antidote, no matter by what route it is given. Indeed it appeared that a synergistic rather than an antagonistic action was manifested.

(3) Tannic acid appeared to exert no effect on the toxicity of tulp suspensions when added to these before dosing to rabbits. Further, it appeared to possess no value as an antidote to the poisoning, whether given per os or intravenously.

(4) Potassium permanganate, when added to a suspension of *Urginea capitata,* inactivates the toxin(s), as in the case of tulp, while again it is of no value in the curative treatment, either per os or intravenously.

(5) Tannic acid failed to exert any action on the toxicity of *Urginea capitata* when added to the suspension before dosing or when used curatively either per os or intravenously.

SUMMARY.

Potassium permanganate is capable of inactivating the toxic principles of tulp and *Urginea capitata,* when added to suspensions of these plants before dosing, whereas tannic acid does not possess this action. Both drugs appear to be without therapeutic value in the antidotal treatment of poisoning by these plants.

TABLE I.

Species.	No.	Drug.	Dose.	Method.	Result.
Sheep	24800	Potassium perminganate	10 gm. in 1% solution	Drenched	No symptoms
Sheep	24799	,,	0.5 gm. in 1% solution	Intravenously	do.
Rabbit	—	,,	1.5 gm. in 1.5% solution	Per os	do.
Rabbit	—	,,	5 gm. in 5% solution	do.	Death in 36 hours with paralysis
Rabbit	—	,,	0.002 gm. in .2% solution	Intravenously	No symptoms
Rabbit	—	,,	0.025 gm. in .5% solution	do.	Death in 2 hours. Convulsion, accelerated pulse and respiration followed by coma and absence of corneal reflex*
Rabbit	—	,,	0.1 gm. in 2% solution	do.	Death, within a few seconds.
Rabbit	—	Tannic acid	1 gm. in 2% solution	Per os	Convulsions followed by coma**
Rabbit	—	,,	2 gm. in 4% solution	do.	No symptoms
Rabbit	—	,,	1 gm. in 10% solution	do.	do.
Rabbit	—	,,	0.05 gm. in 1% solution	Intravenously	do.
Rabbit	—	,,	0.15 gm. in 3% solution	do.	Death in spasms immediately following injection. Symptoms of asphyxia when 3cc had been injected
Rabbit	—	,,	0.25 gm. in 5% solution	do.	Death in spasms before completion of injection. Symptoms of asphyxia when 2cc had been injected

* Postmortem lesions included hydroperitoneum, pulmonary haemorrhage, and dilatation of both venticles of the heart.

** At postmortem, no lesions were noticed.

TABLE II.

Species of Animal.	Quan. of tulp suspension given	Minimum lethal dose.	Antidote.	Safe dose of Antidote.	Quantity of antidote given and method of application.	Result.
Rabbit	50 c.c.	40 c.c. per 2 Kg. rabbit.	$KMNO_4$	1.5 gm. per os. 1.0cc. of a 0.2% solution intravenously.	10 c.c. of a 1% KMNO4 sol. added to tulp susp. before dosing.	Died within 3 hours.
Rabbit	50 c.c.				20 c.c. of a 1% ditto.	Developed symptoms but recovered.
Rabbit	50 c.c.				30 c.c. of a 1% ditto.	No symptoms.
Rabbit	100 c.c.				50 c.c. of a 1% ditto.	No symptoms.
Rabbit	50 c.c.				Control (no antidote given).	Died within 2 hours.
Rabbit	100 c.c.				As soon as symptoms appeared, 2 c.c. of a 2% KMNO4 intravenously.	Died within 10 seconds.
Rabbit	100 c.c.				As soon as symptoms appeared, 50 c.c. of a 1% KMNO4 per os.	Died within 5 hours after treatment.
Sheep	500 c.c.	400 c.c per 40 Kg. sheep.		10 gm. in a 1% sol. per os. 50.0cc. of a 1% sol. intravenously.	100 c.c. of a 3% KMNO4 sol. added to tulp suspension before dosing.	No symptoms.
Sheep	500 c.c.				As soon as symptoms appeared, 50 c.c. of a 1% KMNO4 intravenously.	Died within 5 minutes after treatment.
Sheep	1000 c.c.				ditto.	Died during course of injection.
Sheep	1000 c.c.				ditto 40 c.c. of a 1% KMNO4 subcut.	Died during course of injection.
Sheep	500 c.c.				ditto 100 c.c. of a 3% KMNO4 per os.	Died within ½ hour after treatment.
Sheep	1000 c.c.				ditto 30 c.c. of a 1% KMNO4 intraven.	Died within ¼ hour after treatment.
Sheep	500 c.c.				ditto 40 c.c. of a 1% KMNO4 subcut.	Died within 3 hours after treatment.
Sheep	500 c.c.				ditto 20 c.c. of a 1% KMNO4 intrav.	Died within ½ hour after treatment.
Rabbit	50 c.c.	40 c.c. per 2 Kg. rabbit.	Tannic Acid.	5.0 gm. in a 10% sol per os. 5.0cc. of a 1% sol. intraven.	5 gms. of tannic acid added to tulp suspen. before dosing.	Died within 2 hours.
Rabbit	100 c.c.				5 gms. ditto	Died within 1 hour.
Rabbit	50 c.c.				As soon as symptoms appeared, 5 gms. of tannic acid in a 10% sol. per os.	Died within 1 hour.
Rabbit	100 c.c.				ditto 5 c.c. of a 1% tannic acid intravenously.	Died within ¾ hour.
Rabbit	50 c.c.				Control (no antidote given).	Died within 2 hours.

TABLE III.

Species of Animal.	Quantity of Urginea preparation.	M.L.D.	Antidote.	Quantity of antidote given and Method of Application.	Result.
Rabbit	30 c.c.	10 c.c.	$KMNO_4$	20 c.c. 5% KMNO4 sol. added to Urginea suspension before dosing.	No symptoms.
Rabbit	60 c.c.			40 c.c. ditto.	ditto.
Rabbit	100 c.c.			40 c.c. ditto.	Died within 40 hours.
Rabbit	30 c.c.			100 c.c. of a 1% KMNO4 sol. per os as soon as symptoms appeared	Died within 2½ hours.
Rabbit	30 c.c.			100 c.c. ditto. ditto.	ditto.
Rabbit	30 c.c.		Tannic Acid.	5 gm. of tannic acid added to Urginea susp. before dosing.	Died within ¾ hour.
Rabbit	100 c.c.			6 gm. ditto.	Died within ½ hour.
Rabbit	30 c.c.			5 gm. of 10% tannic acid sol. per os as soon as symptoms appeared.	Died within ¾ hour.
Rabbit	30 c.c.			5 c.c. of a 1% tannic acid sol. per os as soon as symptoms appeared.	ditto.
Rabbit	30 c.c.			Controls (no antidote).	Died within 2 hours.
Rabbit	30 c.c.				Died within ¾ hour.

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On a New Hookworm, *Ancylostoma martinagliai*, from a Jackal.

By H. O. MÖNNIG, B.A., Dr. Phil., B.V.Sc., Onderstepoort.

Through the kindness of Dr. G. Martinaglia, Veterinarian to the Johannesburg Municipality, the writer obtained the worms here described, which had been collected from a black-backed jackal on the 7th February, 1931. There are ten males and fifteen females.

The worms are relatively short and thick, anteriorly bent towards the dorsal side. The cuticle is strong and transversely striated. The mouth opening is directed antero-dorsally. In its ventral border are two chitinous plates, each bearing three teeth exactly as in *A. caninum*, the medial teeth being the smallest and the lateral the largest. The dorso-lateral border bears on either side a small tooth and the dorsal plates, which are usually small in other species of *Ancylostoma*, are in this species also tooth-like (Figs. 1 and 2). At the base of the buccal capsule there are two subventral thickenings of the wall, each bearing a lancet. The greatest depth of the buccal capsule measures in the males 0.17-0.19 mm. and in the females 0.2 mm. The oeso-

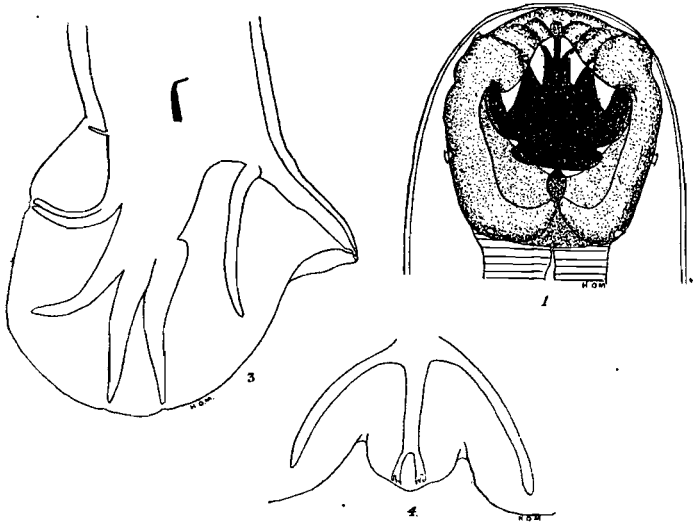

Fig. 1. *Ancylostoma martinagliai* head, dorsal view.
Fig. 3. *Ancylostoma martinagliai* male bursa, lateral view showing gubernaculum.
Fig. 4. *Ancylostoma martinagiai* male bursa, dorsal ray.

phagus, measuring in the male 0.95-1 mm. and in the female 0.97-1.15 mm. in length, is club-shaped, widened anteriorly to hold the posterior end of the buccal capsule and the small oesophageal funnel. The cervical papillae, which are rather inconspicuous, the excretory pore

and the nerve ring are all situated at approximately the same level, 0.47-0.55 mm. from the anterior extremity.

The *males* are 5.49-6.96 mm. long and 0.4-0.48 mm. thick. The bursa is well developed and the rays are of the usual *Ancylostoma* type. The common stem of the ventral rays is short; the antero-lateral one is bent to the ventral side; the postero-lateral one has a dorsal prominence at its proximal end (Fig. 3); the dorsal ray divides distally into two tridigitate branches (Fig. 4). The spicules are filamentous and equal, 1.8-2.07 mm. long. The gubernaculum is hooked anteriorly, 0.094 mm. long.

The *females* are 6.96-8.23 mm. long and 0.47-0.51 mm. thick. The body narrows very suddenly behind the anus and ends in a short, acute tail which bears a terminal spike (Fig. 5) and is 0.165-0.183 mm. long. The vulva is situated at about the beginning of the posterior third of the body, 2.379-3.02 mm. from the posterior extremity, in a well marked depression of the body-wall (Fig. 6). The body

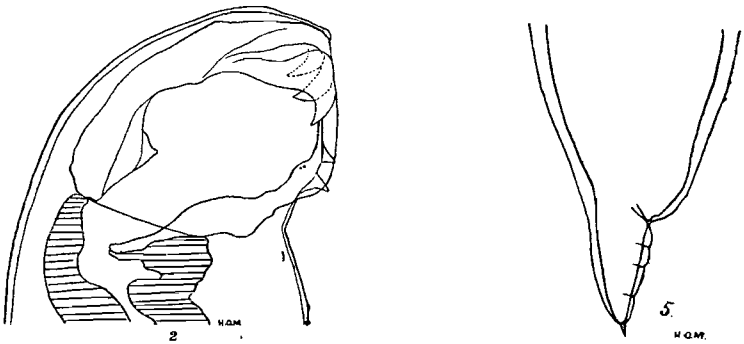

Fig. 2. *Ancylostoma martinagliai* head, lateral view.
Fig. 5. *Ancylostoma martinagliai* caudal end of female.

cavity is filled with numerous transverse coils of the ovaries and uteri, reaching forward to a point about as far behind the end of the oesophagus as the length of the latter. From here a loop of the ovary projects forward, in almost all of the females, in the ventral part of the body cavity but it does not reach the end of the oesophagus.

I have much pleasure in dedicating this species to Dr. Martinaglia and in expressing my appreciation of his constant interest and frequent assistance in parasitological work.

HOST—*Thos mesomelas.*
LOCATION—Small intestine.
LOCALITY—Johannesburg Zoological Gardens.
Type species in Onderstepoort Helminthological Collection No. 2345.

Schwartz (1927) gives a key for the species of *Ancylostoma*

known at the time of publication of his paper, in which he presents a description of *A. pluridentatum*. The latter species falls in the group with two pairs of teeth in the anterior ventral portion of the buccal capsule. Here must also be included *A. mephitis* Micheletti 1929, of which it is stated in a review in the Tropical Diseases Bulletin Vol. 27, No. 5, p. 428, that there are two subventral pairs of teeth only. The species having three pairs of teeth in the anterior ventral portion of the buccal capsule are *A. duodenale, A. caninum, A. mucronatum* and *A. conepati*. The first two can be excluded; *A. mucromatum* is inadequately described and was collected from *Dasypus gilvipes; A. conepati* is stated in the key to have spicules 1.8-22 mm. long, which should probably be 1.8-2.2 mm. and corresponds to those of *A. martinagliai*. The writer could not obtain Solanet's description of this

Fig. 6. *Ancylostoma martinagliai* female.

worm, but since the hosts are different and Schwartz would probably have mentioned the fact if this worm had an unusual number of teeth like *A. pluridentatum*, it is very probably that this is not the case and that *A. martinagliai* can be regarded as a new species.

LITERATURE CITED:

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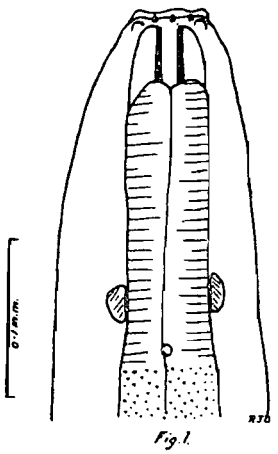
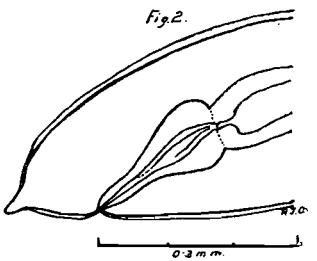
Thubunaea fitzsimonsi sp. n., A Fourth Species of the Genus *Thubunaea*, Seurat, 1914.

By R. J. ORTLEPP, M.A., Ph.D., Onderstepoort.*

The genus *Thubunaea* was created by Seurat for the reception of a nematode parasite—*T. pudica*—which he obtained from lizards and snakes in North Africa. Since this, Baylis has described two further species, *T. parkeri* from lizards from Peru, and *T. asymmetrica* from a lizard from Uganda. The material which forms the subject of this communication was collected by Mr. V. Fitzsimons of the Transvaal Museum from the stomach of a lizard— *Ichnotropis squamulosa*— caught in the Damara Pan by the Verney-Lang Kalahari Expedition in 1930. The parasites were kindly handed over to this Institute for





Thubunaea fitzsimonsi n. sp.

Fig. 1. Cephalic extremity.

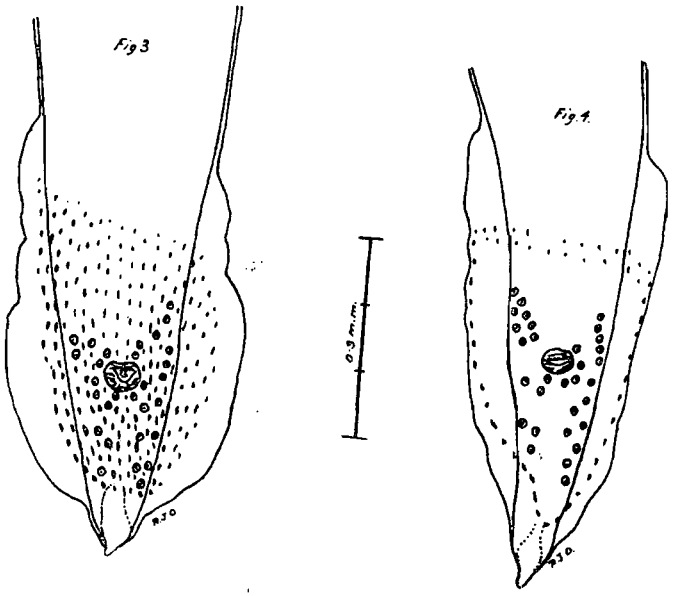
Fig. 2. Posterior extremity of female.

determination. The material consists of 2 males and 15 females, all mature and in an excellent state of preservation.

The two males are 8.5 mm. and 9 mm. long, with a maximum thickness of 0.33 mm. and 0.29 mm. respectively. The females attain a maximum length of 18.5 mm. with a maximum thickness of 0.44 mm. In both sexes the body tapers gradually towards the anterior end from about the middle of the body. Posteriorly the body is only slightly thinner than in the middle. The tail of the male carries conspicuous lateral alae which give it a somewhat lanceolate appearance

* This investigation was carried out under a grant from the Empire Marketing Board.

(Figs. 3 and 4): it is 0.24 mm. and 0.33 mm. long respectively in the two specimens. In the female the tail is short and rounded, and is terminated by a short mucronate point (Fig. 2); in the largest female it is 0.165 mm. long. There appears to be a tendency for the cuticula to become inflated in the tail region, but this is not a constant feature. There are two lateral lips, somewhat rectangular in outline, and each carries three conical teeth on its inner margin (Fig. 1). On the outer corner each lip carries a conspicuous papilla. The lips are followed by a laterally compressed pharynx, 0.036 mm. long in the male and 0.038 mm. long in the female. The lumen of the pharynx is lined with thickened cuticula. The oesophagus is slender in both sexes, and increases very slightly in diameter posteriorly; at its junction with the intestine it is 0.11 mm. in diameter in the male and 0.14 mm. in diameter in the largest female. It is composed of a short muscular portion and a much longer and slightly thicker posterior glandular portion. The muscular portion forms slightly more than 1/7th of the total oesophagus in the male and slightly less than 1/9th in the female. The whole organ is 1 mm. long in the male and 1.7



Thubunaea Fitzimonsi n. sp.
Fig. 3 & 4. Posterior extremities of the 2 males, showing irregular arrangement of papillae.

mm. long in the largest female. The nerve ring is found just anterior to the junction of the muscular and glandular oesophageal parts, and just behind it are the laterally placed and thorn-like cervical papillae. There are no cervical alae. The excretory pore is found slightly posterior to the nerve ring. A large and conspicuous club-shaped excretory gland lies along the ventral side of the glandular oesophageal

part and it opens to the exterior through a large and well defined excretory canal.

The vulva is situated in the anterior portion of the body, being found about 0.75 mm. behind the oesophagus. It is a transverse slit bounded anteriorly and posteriorly by a swollen lip. The ovejector is long, and passes obliquely backwards for about 1 mm. when it recurves and passes forward slightly anterior to the vulva and then passes backwards again to join the two uteri; these pass down the length of the body more or less parallel to each other. The eggs are numerous, oval, thick-shelled and smooth, and contain an embryo *in utero*. They measure 0.045 mm. by 0.038 mm.

The ventral surface of the tail of the male is thickly studded with conspicuous tubercles, from which the caudal papillae can be distinguished by their larger size and defined shape. The papillae are very slightly pedunculate and are irregularly arranged towards the lateral margins. There are 12 papillae on the right and 17 on the left side in the one male, and 14 on the right and 17 on the left side of the other male. It was not possible to determine which of the precloacal papillae are homologous to the 4 pairs of pedunculated papillae found in *T. pudica*. There are no spicules, or if present, they are so feebly chitinized as to be invisible.

HOST: *Ichnotropis squamulosa.*
SITUATION: Stomach.
LOCALITY: Kalahari.

Types to be deposited in the Helminthological Collection of the Veterinary Research Laboratory, Onderstepoort.

AFFINITIES. Of the 4 species now known, *T. asymmetrica*, Baylis 1930, is easily distinguished from the new species here described by

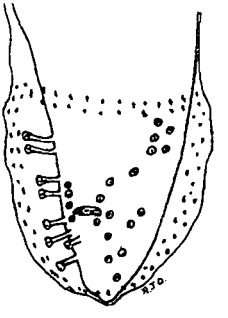


Fig. 5. Posterior extremity of *T. parkeri*.
For comparison Figs. 2, 3, 4 and 5 are all drawn to the same scale.

its asymmetrical lips and by the presence of unequal and well defined spicules *T. parkeri*, Baylis 1926, differs from it in having a shorter and more rounded tail in the male; in that the caudal papillae have

relatively long stalks; in that the rugosities on the ventral surface of the male tail are larger and thus more prominent; and in that the cuticule over the body is inflated. It is allied to the new species, however, in that it apparently possesses no spicules. *T. pudica,* Seurat 1914, differs from it in that it is much smaller (female 9-10 mm.) and in that it possesses equal spicules.

Through the kindness of Dr. H. A. Baylis of the British Museum, 1 male and 3 females of his *T. parkeri* were placed at the writer's disposal for comparison. I wish to express my indebtedness to him for this kindly action. A comparison of this species with the species described above definitely showed that they were not co-specific. Fig. 5 shows the tail of the male drawn to the same scale as Figs.3 and 4, and brings out the differences in the size and shape of the tail in the two species.

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The Distribution of Strychnine in Carcasses used as Bait in the Poisoning of Vermin.

By D. G. STEYN, B.Sc., Dr. Med. Vet., Onderstepoort.

In connection with the extermination of jackals, a query was received at Onderstepoort as to the distribution of strychnine in the body when (a) a lethal dose is injected into a live sheep, and (b) when the poison is introduced into a sheep's carcass. The experience has been that vermin frequently will not feed on carcasses that have been touched or handled by human beings. The question was put by some farmers whether better results would not be obtainable by killing a sheep with strychnine, conveying the carcase on a vehicle to the desired spot, and dropping it in the veld—a method by which foot-prints round about the carcase are avoided.

The Director of Veterinary Services, while very sceptical about the successful practical application of the above method, decided to have the matter investigated in order to supply stock owners with definite information on this point.

Fröhner states the lethal dose of strychnine per os for the dog to be 0.005 to 0.02 grams. We will assume that the deadly dose of strychnine for the jackal is equal to that for the dog, namely 0.02 grams for a full-grown animal.

Assuming a sheep to weigh approximately 30 kilograms (= 66 lbs.), and that after the intravenous injection of 1.5 grams of strychnine the whole body is permeated by this poison, then 450 grams (= 1 lb.) of the meat will contain 0.022 grams of strychnine, which quantity should suffice to kill a full grown dog of large breed.

With this assumption (which *a priori* is an improbability) as a basis the following experiments were conducted:—

LIVE ANIMAL.

Sheep 18771 was injected with 1.5 grams of strychnine sulphate dissolved in 40 c.c. of physiological saline solution into the left jugular vein. The animal died in convulsions before the injection had been completed. The carcase was left for six hours to allow the blood to coagulate, in order to prevent loss of blood during division. Loss of blood naturally means loss of strychnine.

Dogs were starved for twenty-four hours and then fed with different parts of the skinned carcase, as shown in the accompanying table. It will be noticed that each of three dogs was fed with one kilogram (= 2 1/5 lb.) of the meat, while 450 grams were supposed already to contain a deadly quantity of strychnine.

Dog 618 (weight, 16 Kg.). 1 Kilogram of meat cut from the neck. Result: negative.

Dog 619 (weight, 18 Kg.). 1 Kilogram of meat cut from left hind leg. Result: negative.

Dog 620 (weight, 18 Kg.). 1 Kilogram of meat cut from left front leg. Result: died from typical strychnine poisoning within twelve hours.

Dog 621 (weight, 15 Kg.). Both kidneys (weight=300 grams). Result: died within twelve hours.

Dog 624 (weight, 15 Kg.). Whole liver (weight=500 grams). Results: negative.

Dog 625 (weight, 25 Kg.). Lungs and heart (weight=1.2 Kg.). Result: died within twelve hours.

All of the above animals ate their ration within five minutes after it had been offered to them.

CARCASE.

Sheep 18756 (weight 30 Kg.) was killed by pithing in order to prevent loss of blood.

The carcase was left for twenty-four hours and then 1.5 grams of strychnine sulphate was introduced into a three inch deep slit made in the muscles on the caudal aspect of the right hind leg. The carcase was then left for eighteen hours in order to allow the poison to permeate the tissues and organs as far as possible.

Different parts of the carcase were then fed to dogs as follows:—

Dog 618 (weight, 16 Kg.). 1½ Kilograms of meat cut from the left front leg. Result: negative.

Dog 619 (weight, 15 Kg.). 1½ Kilograms of meat from back about one foot from the point of introduction of the strychnine. Result: negative.

Dog 624 (weight, 16 Kg.). 1½ Kilograms of meat cut from right hind leg including that part into which the strychnine had been introduced. Result: died within one hour.

If strychnine had permeated the carcase uniformly then 1½ Kilograms of the meat would have contained three times the lethal dose for a dog.

DISCUSSION.

The following parts of a sheep, which had been killed by injection into the left jugular vein of a lethal quantity of strychnine, caused death in dogs: (a) the left front leg, (b) the kidneys (the main excretory organs), and (c) the lungs and heart.

On the other hand the liver, and the meat of the left hindleg and of the neck of the same sheep failed to produce any symptoms of poisoning in dogs.

Strychnine when introduced into a carcase does not penetrate but remains localised at the point of introduction.

CONCLUSION.

It is not a practical proposition to use carcasses of sheep killed by poisoning with strychnine as bait for vermin, since the drug will not permeate the body uniformly when introduced either before or after death. The most reliable method of exterminating vermin is the one which has been practised up to the present, namely placing the poison in small pieces of bait or in different parts of a carcase.

Furthermore it is useless to place the poison at one or two points only in a carcase, as no permeation of the carcase occurs. It has also been established that strychnine does not undergo rapid decomposition in a carcase.

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The Toxic Doses of some commonly used Farm Remedies.

By D. G. STEYN, B.Sc., Dr. Med. Vet., Onderstepoort.

KEROL.

This proprietary remedy is being extensively used by many farmers as a general preventive and remedy for many stock diseases. The result is that many queries as to its toxicity have been received from time to time. As no definite information was available on this point, it was decided to conduct a few simple experiments to establish the toxic dose of this substance.

One full grown sheep (26092) received 8 c.c. of Kerol per os—the following day the animal was apathetic and not feeding, but recovered completely on the third day.

Another full-grown sheep (26118) received 32 c.c. at the same time. Within ten minutes the animal was staggering about, and fell down in a semi-comatose condition. On the following day the animal was standing head down and groaning. The next day its condition was somewhat worse, lying down, weak pulse and shallow respiration, and remained so till the seventh day when improvement set in and resulted in complete recovery on the twelfth.

The above symptoms were most probably caused by the cresol which forms part of this preparation, the registered composition of which is 36% phenoloids, 45% neutral coal tar, hydrocarbons and bases. The maximum doses prescribed by the makers are: Horses one ounce (28 cc.), cattle one ounce (28 cc.), sheep and goats 1-2 drams (3-7 cc.), lambs 6-9 months old 1 dram (3.5 cc.), lambs under 6 months ½ dram (1.5 cc.).

From the foregoing results it would appear that the maximum doses prescribed by the manufacturers are safe, but that any quantities above these may lead to death or at any rate serious symptoms in sheep.

PENNANT PARAFFIN.

Ordinary paraffin oils or kerosenes are also used extensively as general remedies for all kinds of stock diseases. The following experiments show to what extent these substances may be used without causing serious harm.

One full grown sheep (24692) received per os 64 cc. The only noticeable effect was that the animal went off its feed for two days. Another full grown sheep (21778) received 128 cc. The animal made retching movements and ceased feeding for three days when it returned to normal.

Laurel Paraffin Oil (150° Fire Test).

Sheep (26067) received 64 cc. Within ten minutes there was restlessness, swaying gait, violent retching movements, accelerated costal respiration and grinding of teeth. Death followed in 1½ hours with symptoms of asphyxia. At post-mortem there was general cyanosis, marked hyperaemia and oedema of lungs, haemorrhages in the lungs, strong smell of paraffin in lungs, liver, kidneys, urine and gastro-intestinal tract. It was not clear whether the smell of paraffin in the lungs was due to excretion by that organ or whether the paraffin was aspirated following vomition during the violent attacks of retching. The latter explanation seems the more likely, since double the quantity of the same paraffin did not kill sheep 26072 (see below). The vomition of paraffin unmixed with ruminal contents may be explained by the fact that, owing to its oily nature, paraffin forms a layer on the surface of the ruminal contents and may thus be returned in its free state.

Sheep 26072 received 128 cc. It showed soon afterwards laboured breathing, retching, a weak accelerated pulse and anorexia. On the 4th day there was still anorexia, the animal appeared worse (arched back, body trembling, head hanging, temperature 107°F). On the sixth day torticollis and ataxia developed. From this day the condition gradually improved, but after two months the animal, although in apparently perfect health, still showed torticollis and ataxia.

Tower Paraffin.

Sheep 25638 received 64 cc. On the following day the animal was off its feed and developed an oedematous swelling under the jaw. The condition improved from the third day onward.

Sheep 26056 received 128 cc. Soon afterwards, the animal held its head backwards and to the left, grinding its teeth and groaning. Its condition improved slowly until recovery 12 days later.

Atlantic Paraffin No. 1 (150° Fire Test).

Sheep 26060 received 64 cc. Apart from anorexia on the following two days, no ill effects were observed. Sheep 26057 received 128 cc. There was pronounced retching, grinding of teeth, groaning and accelerated pulse and respiration. In the course of the next five days the animal had completely recovered.

Conclusions.

Of the four brands of paraffin tested, doses of 64 cc. (4 tablespoonsful) caused transitory inappetance, while double that dose produced serious symptoms of poisoning.

Where paraffin has to be prescribed, it would appear that the

following doses may be considered safe for a sheep:—

Pennant, Tower and Atlantic paraffin oil: 32 cc. (two tablespoonsful).

Laurel paraffin: 16 cc. (one tablespoonful).

It is advisable to mix the paraffin with linseed oil or milk before administration.

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Studies in Native Animal Husbandry.
2.—Proposed Plan of Investigation.

By H. H. CURSON, A. D. THOMAS, and W. O. NEITZ, Onderstepoort

In a previous article (1) the writers attempted to focus attention upon and stimulate research into the vast field afforded by the native and his customs. The researches of several bodies and individuals from the artistic, ethnographic, and other aspects have already yielded valuable information and material, the accumulation of which is becoming daily more difficult on account of the rapid encroachment of civilisation.

Very little, however, has as yet been done in collecting data relating to Native Animal Husbandry, and it is for this reason that no time should be lost in making a start—no mater how unpretentious—before it is too late. Most of this will of necessity be incomplete at first; but, through assiduous and enthusiastic work by all concerned, material and knowledge which will be of invaluable service to the country will soon accumulate.

These studies will serve at least two very useful purposes, namely:—

a. The recording and preserving for cultural and educational purposes of everything pertaining to the primitive native and his domesticated animals.

b. A better understanding of native psychology, customs, beliefs, etc. This will lead not only to more sympathetic and effective legislation but also to better administration of the Stock Diseases Act in so far as the native is concerned.

The importance of this cannot be overestimated, bearing in mind the trouble which has arisen over the administration of stock regulations in the past. Much of this would be avoided if the native point of view and mentality were taken into consideration.

It is gratifying to see that the authorities in the Department of Agriculture are beginning to realise this, as is evidenced by Departmental circular V.40/72A of 11.6.31. This knowledge and sympathy is at present possessed by only the few who have been in close contact with the native and have taken the trouble to master his language. It is therefore hoped that everyone interested will lose no opportunity of communicating useful observations and collecting material of museum interest. With regard to the latter a beginning has already

(1) Studies in Native Animal Husbandry. 1. Notes on the Wankonde. Jnl. S.A.V.M.A. 1. 4, p. 79.

been made by the South African Veterinary Medical Association, and in the next number of this series a description of native milking pails will be given.

With a view to avoiding chaos (which would undoubtedly result were this vast field tackled in too haphazard a manner), the following suggestions are made as to the treatment of the various subjects:—

(a) Short articles, each dealing with one or more particular aspects of a subject, custom or object, are preferable to long essays, in which several subjects are treated.

(b) It is imperative that the tribe concerned be mentioned in every case, in order to avoid the confusion that is noticeable in some treatises on native lore and custom.

The following headings and subheadings appear roughly to cover the intended scope of these studies.

A. CATTLE.

I. *Significance of cattle to natives* and their relation to tribal life, as personal wealth, means of barter and lobola; as draft animals and beasts of burden; as source of food, milk and covering. Effects on tribal customs, attire, and industry in general.

II. *Breeds and breeding:*
Breeds and their origin. Types and colouring—significance of royal preferences, etc. Bulls and service. Cows—gestation, parturition. Calves—rearing, etc. Rudiments of anatomy and physiology.

III. *Cattle management:*
Means of control—training, inspanning, riding, milking, castration and other operations, slaughtering and skinning, with various attendant customs and beliefs.

IV. *Housing:*
Various types of kraals—stone, poles, thorns, etc. Manure and its disposal—smearing and medicinal properties. Other uses of kraal, e.g. site for mealie pits, social centre, etc.

V. *Feeding:* Herding, watering, pastures—relative value recognised by native, other foods.

VI. *Diseases:* Common diseases, their causes, interpretations, treatment, remedies, etc.

VII. *Accessories to Animal Husbandry:* Implements—ploughs, vehicles—sleigh, utensils—milk pails, horns, etc., harness—yokes, strops, riems, etc., miscellaneous—bells, "mohala,"

perforated stones, preparation and use of skins, horns, tail hair, sinews, etc.

B. OTHER ANIMALS. These studies would of course not be complete without comparative reference, e.g. to the goat, sheep, pig, dog, fowl, and other animals, according to the plan outlined above.

In conclusion, an appeal is made to all who have an intimate knowledge of native life (2) to assist in the compilation of these notes and in the collection of appropriate articles of native origin.

(2) e.g. Missionaries, Civil Servants, especially officials of Native Affairs Department, Storekeepers, etc.

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Studies in Native Animal Husbandry.
4.—Bantu and Cattle in the Northern Transvaal.*

By B. H. DICKE, Pietersburg.

MILK AND MILKING.

When watching natives milk what strikes one at once as strange is that natives, where they have not come into close contact with white population, perform the operation on what appears to us the wrong side of the cow; they milk squatting down on the near side of the cow. The reason is probably to be looked for in their using the cow's tail for wiping purposes, and that, therefore, they wish to have the tail nearest to their right hand.

The milking receptacles used formerly, that is before the natives were able to buy vessels of European manufacture, were made of wood, and had usually the shape of a long, narrow beaker, which was slightly funnel-shaped, narrowing towards the bottom where it terminated in a flat foot. The whole vessel with its foot and a proper beaker handle running down the full length of the vessel was made of one piece of wood, usually from the Marula tree or a tree so similar that the layman who looked only at the tree's shape, its bark and leaves would pass it for a Marula tree. This tree, however, bears no Marula fruit and I am sorry that I cannot recall its name. This is another instance of our not paying sufficient attention to details, particularly with regard to things appertaining to native life, a fact which is much to be regretted. These beakers were about 14 inches high, inclusive of their feet, and the inside and outside diameters of the brim were respectively 6 inches and 7 inches. There were smaller and larger sizes. These vessels were usually made by the Shangaans and were a subject of barter between them and the natives living on the Highveld.

The milk was stored in calabashes and earthenware pots. I have not encountered skin containers in the Northern Transvaal, such as are used by the natives in the Eastern parts of the Cape Province for making and storing sour milk (Amasi). In the Northern Transvaal sour milk is usually made and stored in special calabashes.

The Shangaans or natives belonging to the Thonga tribes milk, or used to milk, their cows only once a day, and that rather late in the day (about 11 a.m. or even later) while the Basuto tribes used to milk morning and evening. These Amathonga or Shangaans used to allow the calves to sleep with their mothers, and also to graze with them as soon as they were able to keep up with the herd. Only when the

* No. 3 of this series, a description of native milking pails, will appear in the annals of the Bloemfontein Museum, and with the permission of the Director will be reproduced in these pages.

herd was let out to graze in the early morning were the calves separated so that the milk obtained was only that which had accumulated during the few hours of the morning's grazing, before the cows were driven back to the kraals at about 11 a.m. To this practice may be ascribed the good condition, strength, and sleekness of the Shaangaan's cattle. Many of the Basuto tribes or clans living near the Shangaans have adopted the same practice, but are not to be regarded as its originators.

The reason for this peculiar husbandry is probably to be looked for in the fact that cattle, and consequently milk, did not play the same part in the household economics of the Thonga as in that of the Basuto tribes. Most of the northern Thonga tribes, or parts of these tribes, did not possess any cattle before they came to the Transvaal. Most of these tribes, or parts of them, lived in or had traversed Tsetse-fly infected country. Most of Portuguese Africa, especially the parts surrounding or abutting on the Northern Transvaal were fly infested. It was only near the coast, particularly in the Bilene district (about the mouth and the lower course of the Limpopo river) that the Thonga could keep cattle. Hence milk was excluded from the diet of these people—a deprivation they could well afford since their climate, warmer than the Transvaal Highveld, allowed them to grow a greater variety of foodstuffs, many of which more than equalized the "by-kost" or "Sheshebe" of milk which was enjoyed by the Basuto. As an example of these I may mention the delicious monkey-nut gravy commonly used by the Thonga. The natives who were originally without cattle possess better cooks in their women folk than do those who were favoured by the possession of cattle, the easily obtainable milk evidently tending towards degeneracy in the culinary abilities and diatetic ambitions of the naturally indolent native. Once the Thonga tribes migrating into the Northern Transvaal (which migration only started about 1835) obtained possession of cattle, their ambition appeared to have been directed more towards increasing their herds than towards filling their bellies with milk.

Influence of Cattle on Tribal Customs, etc.

The original possession, or non-possession, of cattle not only played a great part in the larder, the economic household of the natives, but created differences in their customs, their general economic sociology, and their lives. Discussion of this aspect would lead one into unnecessary details here. One may just mention, however, that the maintenance of the originally generally accepted views on the necessity of exogamous marriages was longer upheld by the Thonga tribes on account of their non-possession of cattle, and their having, in consequence, to go out and earn by work or trade the means for buying their wives, i.e. for "lobola." We may look upon tribes that had always possessed cattle as holding capitalistic views, whereas those that had to go out to earn may be regarded as the proletariat amongst

the Bantu. The capitalist could sit and wait for his cattle to increase, the other had to go and work. It was this necessity that made the Shangaan the better mine worker.

It is peculiar, and quite opposite to the general view held by us, that with the Bantu it is the women who are most conservative with regard to fashions and alterations in dress. The men are easily induced to alter their apparel, even before they come into contact with civilisation. The Amandebele who trekked into the Northern Transvaal from Zululand, afford an excellent example of this. They adopted the "Sesibe" (Stertriem) of the surrounding Basuto tribes almost at once, whereas in Natal they used to wear the "Mucha." The women are not so readily influenced apparently and differences in their dress fashions allow us therefore to draw certain conclusions regarding the routes taken by the tribes in their migrations.

Let us take the Bavenda tribe for instance. Originally their girls, until they were about to give birth to their first child, did not wear the skin skirt at all. They wore until then small aprons of beaten bark or fringes of grass (this latter already being an adoption). Only when the girl had her first child did she get a skirt made from a goat skin, but no cattle skin appeared in her apparel. This shows that originally these people did not possess any cattle at all. They were forest dwellers and paid lobola with goats. If they had any cattle, a very long time ago, they lost them entirely in their wanderings from the great lakes via the Tuburi lakes and the Logone or Shari river, the lower Congo, and Mashonaland. They must have lost what cattle they had not only whilst passing the fly-belt surrounding the Northern Transvaal, but already previously to this.

The Thonga, except those who passed down the coast, lost what cattle they had, if any, whilst passing through, or sojourning in the fly-belts. Their women wear cotton cloths bartered from the traders of the East-coast.

The Bapedi, coming down from the North through Bechuanaland, circumvented the fly-belt before trekking up North again into the Northern Transvaal. They lost no cattle, and of all Northern Tribes they have degenerated furthest from the original Bantu ethics with regard to marriage customs. Their women, including even the girls, wear cattle hides as skirts, and, if possible, a calf-skin apron, or, in default, a goat skin, goats being also plentiful.

It is not my intention, and it does not fall within the scope of this article, to enumerate all the Northern Transvaal tribes with regard to their women's wearing apparel. I only wished to show what influence the possession or non-possession of cattle has on the tribal fashions, and the deductions that can be made therefrom.

A Review of Recent Investigations on the Viability of Beef Measles.

By H. O. MONNIG, B.A., Ph.D., B.V.Sc., Onderstepoort.

In most countries it is usual to condemn carcases of pigs infected with *Cysticercus cellulosae*, but to allow the sale, after prescribed treatment, of beef carcases lightly infected with *C. bovis*. Such treatment consists of cold storage at 1° to 4°C. for 21 days, or freezing for different periods in different countries. The classical experiments of Von Ostertag made in 1896 are well known. A total of 221 cysticerci from beef carcases, slaughtered 16 to 21 days previously and kept in cold storage, were swallowed by a total of 35 people and no tapeworms developed. It was then accepted by most authorities that *C. bovis* is no longer infective 21 days after slaughtering if the carcase be kept at about 1°C. Later several other workers showed that *C. bovis* is very quickly killed by freezing.

The great difficulty in these investigations always was to find a sure method, apart from infection tests on human beings, of determining whether the cysticerci were alive. Besides, there is a possibility that they may still be alive but no longer infective. Bugge (1930), working at the Berlin abattoir, found that cysticerci possess the excretory "flame cells" common in flatworms and, together with Schmey, the director of the abattoir, he set out to study the problem, using these flame cells as a criterion of viability.

In connection with *C. bovis* they found that cysticerci from large pieces of beef kept at 1° to 4°C. showed active flame cells up to 39 days after slaughtering. (As later pointed out by Von Ostertag, another worker, Van Santen, had also found in 1928 that *C. bovis* under such conditions showed signs of life up to 40 days). They also found that *C. bovis*, bare or in small pieces of beef, died in 3½ hours when kept at -8° to -10°C, that -6°C, was sufficient to kill the cysticerci in the same time, and that this temperature was reached in the depth of beef quarters kept at -8° to -10°C. after 3 days.

Kallert (1931), as a result of careful tests made by him, states that cysticerci when once frozen are dead, unlike many other organisms (which can survive freezing). This seems now to be generally accepted by all competent authorities. Kallert further investigated the rate of cooling of beef quarters and found that a superficial layer of fat greatly retarded cooling, the heat conductivity of fat being 35% less than that of muscle. He reaches the conclusion that *C. bovis* will safely be killed in hindquarters kept at -8° to -10°C. for 10 days and in forequarters kept for 9 days.

To return to Bugge and Schmey—it was realised that viability did not necessarily mean infectivity. Accordingly Bugge and a few

others swallowed 100 *C. bovis* taken from beef carcases, which had been kept in cold storage for 21 days according to the regulations, and they developed a total of *6 Taenia saginata,* thus proving that 21 days are not sufficient to make measly beef carcases safe for human consumption.

It is therefore not known at the present moment what is the shortest period of cold storage that will suffice. Accordingly cold storage is considered to be unsafe and freezing at about −10°C. for 6 days is recommended. In view of the work of Kallert reviewed above, 10 days would seem to be indicated in order to be quite safe.

Bugge and Schmey point out that *C. cellulosae* is found in Berlin in only about 0.004% of pigs and that *Taenia solium* is a rare human parasite, while *C. bovis* is still found in about 1% of cattle and *T. saginata* is relatively frequent. They ascribe this to the persistent destruction of measly pork and, on the other hand, the insufficiency of 21 days cold storage of measly beef. This would, however, seem not to be the only reason, or even the chief reason according to Von Ostertag. Formerly it was customary to make one longitudinal cut through the masticatory muscles on either side of each ramus of the mandible in cattle; but since the recent introduction of two cuts in each place, the percentage of measly carcases rose to double the number previously obtained. It would, therefore, appear advisable to direct attention also to this aspect of the problem, in order to make meat inspection more effective in the actual diagnosis of bovine cysticercosis.

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CORRIGENDA.

Vol. I No. 4 page 29. In Discussion after "To Dr. Curson" delete sentence in brackets.

Vol. II No. 1 p. 55. In title "Anatomical Studies etc." for No. 27 read No. 26, do. p. 57 for No. 28 read No. 27.

CLINICAL NOTES.

(1) Removal of a Foreign Body from the lactiferous sinus.

By S. VAN RENSBURG, B.A., M.R.C.V.S., Ermelo.

The subject was a Cape cow belonging to Mr. A. Luckhoff, Zuurplaats, Graaff Reinet. A feather about five inches in length had been used to draw the milk from one of the quarters, and in doing this the milker had carelessly pulled the teat over the feather thereby allowing the latter to pass up the teat canal into the sinus.

Palpation with a milking tube located the feather high up in the canal, and it was apparent that it could only be removed by incising the teat or the sinus. The cow was accordingly cast on her side, and the whole udder washed with a weak solution of lysol. It was decided to make an incision into the sinus just above the base of the teat.

The site of operation having been thoroughly cleansed with ether, an incision 1½ inches in length was made. In order not to injure the interior of the teat and sinus by undue manipulation of the feather during removal, the latter was cut in half, the two halves being then withdrawn through the opening.

Before the wound was sutured all milk was evacuated from the sinus, which was also syringed out with a sterile lukewarm solution of boracic acid. Interrupted sutures were applied close to one another, and the wound was finally painted with collodion.

A properly sterilised self-retaining milking tube was inserted into the teat in order to allow milk to flow out continuously as it was being secreted, thereby relieving tension on the wound and preventing a milk fistula. The tube was left in for 24 hours and the owner was instructed to draw off all milk every four hours for the next two days.

Complete recovery resulted.

(2) Resection of the Bowel in a Cow.

In this case the subject, a Friesland cow belonging to Rev. L. P. Vorster, Vaalbank, Ermelo, had been gored by another cow three weeks previously. At first there was no evidence of a wound, but within the next few days a swelling developed low down on the right side. This eventually ruptured, discharging intestinal contents.

After examination, the owner was informed that nothing could be done for the cow, but he insisted on an operation.

One ounce of chloral hydrate in a 10% lukewarm solution was injected intravenously, after which the cow was cast, secured on her left side, and chloroformed. (It may be noted here that the above injection of chloral hydrate is often sufficient to produce complete

anaesthesia, and in cases where chloroform is used in addition only a very small dose is required).

Exploration of the wound revealed no breach in the musculature at the site of discharge, but a subcutaneous channel leading upwards therefrom for about 15 inches, at the end of which an opening was found between the last two ribs. This was enlarged, passage of the hand into the abdominal cavity then showing that a portion of the small intestine was adherent to the abdominal wall as a result of localised peritonitis.

After some considerable difficulty all adhesions were broken down and the affected portion of intestine withdrawn. A length of about eight inches of this was found to be badly lacerated and inflamed. This was resected and the ends were united by Lembert's sutures, sterilised silk being used. On account of laceration it was not possible to suture peritoneum or muscles, but a liberal supply of ether was poured into the wound and cavity. Only a portion of the skin was sutured, two openings being left for syringing and drainage. The owner was instructed to syringe the wound twice daily and to withhold all food for two days.

When seen again three weeks later the wound had healed completely, the bowels were functioning normally, and the cow showed a remarkable improvement in condition.

(3) Morphine as an Antidote to Strychnine Poisoning in Dogs.

About nine years ago I first tried the effect of a large dose of morphine as an antidote to strychnine poisoning in dogs. In this instance a bull terrier found in extremis was injected subcutaneously with a solution of 4 grains of morphine sulphate. Twenty-four hours later the dog had recovered completely.

Since then a large number of cases of both malicious and accidental poisoning of dogs by strychnine have been treated in this manner by me, the dose varying from 1½ grains in the case of a two-month-old fox terrier pup to 5 grains for a large Alsatian, and in not a single instance has the drug failed to bring about recovery.

Two Uncommon Skin Parasites.

By F. J. DUNNING, F.R.C.V.S., Stellenbosch.

The following observations may prove useful in drawing attention to two rather rare external parasites:—

a. *Linognathus setosus* syn. *Haematopinus piliferus* (dog louse) has been recovered from an Airdale bitch in Stellenbosch. [It has been previously recorded by Waterston (1914) from Cape Town and by Bedford (1927) from the Transvaal].

b. *Trombicula autumnalis* (Shaw) syn. *Leptus autumnalis* ("harvest mite").

Trombidian acariasis caused by the larvae of the above species has been seen by me in cattle and horses at Elsenburg and Warwick Farm near Stellenbosch, and is probably widespread on many farms in this area and also other parts of South Africa. It may be of some importance when determining the cause of certain skin eruptions. The "mite" causes an eczema or dermatitis which in calves may be fairly severe.

Parts affected. Lesions are found on the skin of the head, upper surface of ears, sides and under surfaces of neck, abdomen, and chest, and inner surface of legs—in fact on all the parts usually affected with sarcoptic mange, for which it may be mistaken.

Symptoms in Horses. Small, round, bare patches, sometimes with a small scabby pimple in the middle. The animals bite and rub occasionally, but do not (as in the case of true mange) evince pleasure when scratched. In my experience the "mite" is infrequent on the horse and not easy to find.

Symptoms in cattle. Small bare spots on the upper surfaces of the ears and head. On the under surface of body, round patches, which may become confluent where parasites are abundant. These spots are rather typical, being covered with a yellow, crusty exudate, which, if removed by scraping, leaves a moist surface. A noteworthy feature is that little irritation accompanies the condition. The parasites do not appear easy to find on the skin, even when untreated scrapings are examined under a low power lens. In scrapings macerated in caustic potash solution, however, they become very evident and up to twenty-five have been counted in one preparation. It appears to me that they take refuge in the dry, yellow exudate.

Seasonal influence. The characteristic lesions occur only during the summer months and disappear entirely with the advent of cooler weather. The condition is known locally as "summer eczema" or "heat spots."

I am told that skin eruptions occur regularly every summer on some farms. Although I have not had the opportunity of confirming my suspicions, these outbreaks in all probability are due to "harvest mites" and are neither true mange nor heat eruptions.

Treatment. Ordinary mange dressings are effective, as is also any cheap oily dressing. Washing with a watery soap and paraffin emulsion would probably effect a cure, but as reinfection is liable continually to recur during the summer months, an application having an

oily base would have a more lasting effect and would in addition act as a deterrent.

REFERENCES.

NEUMANN, L. G., 1892. Parasites and Parasitic Diseases of Domesticated Animals. Balliere, Tindall & Cox, London.

BEKKER, J. G., 1928. Undescribed Skin Diseases of Sheep in South Africa. Jour. S.A.V.M.A., Vol. I, No. 2.

Atypical Cases of Epizootic Lymphangitis.

R. PAINE, F.R.C.V.S., Grahamstown.

According to most authorities the lesions of epizootic lymphangitis are noted upon the inner parts of the limbs, the withers, the back, breast, sides, metacarpal and metatarsal regions of the limbs. Furthermore all authorities consider that the infection originates through wounds, frequently associated with direct injuries caused by harness, whips, spurs, etc., or through the agency of flies.

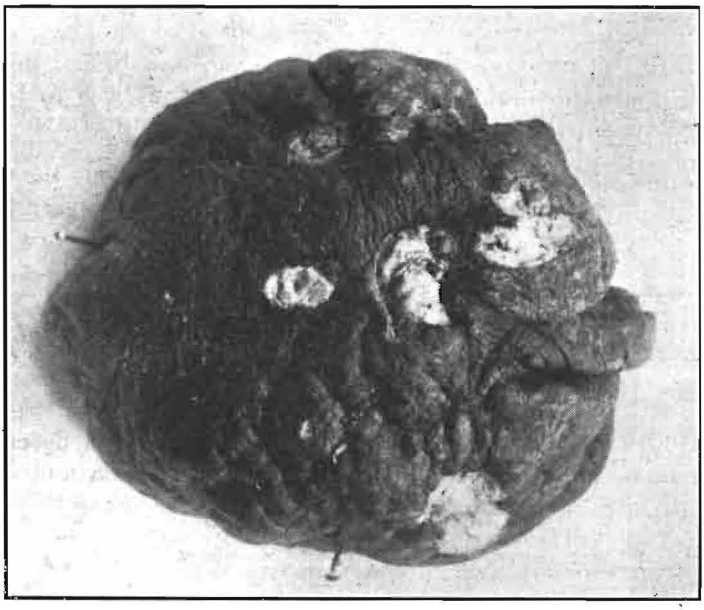

Fig. 8.—Epizootic lymphangitis.
Typical isolated skin lesions on the sheath of a horse.

According to Edmonds, ticks as a cause of the initial lesions were first incriminated by Henning, this view being supported by Jarvis.

Most observers regard the presence of a distinct cording of the adjoining lymphatics as typical of the disease. No one appears to have noted the presence of one or more isolated sores of long standing

without any appreciable cording of the lymphatics in the neighbourhood.

In February 1929 a farmer reported that his horse had been suffering for a long time from a sore on the point of the sheath which did not respond to treatment. Microscopic examination disclosed epizootic lymphangitis. The animal was 7 years old, in splendid condition, and apart from the one sore, apparently in perfect health. As the owner suggested that many similar cases existed in the neighbourhood, Stock Inspectors were instructed to examine all equines in their respective areas, and to submit for examination scrapings from all sores discovered.

During the subsequent 18 months 57 definite cases were detected in the four adjoining districts. Of these 27 showed isolated lesions on the udder, sheath, or penis without any apparent cording of the lymphatics, 29 had numerous lesions with more or less cording between the fore and hind limbs and in one case, lesions on the sheath were present and also a closed centre of infection on the point of the shoulder.

A considerable number of these cases would have been overlooked or attributed to mere injuries caused by ticks, had special instructions not been issued that material from all such lesions was to be secured for examination purposes.

It is suggested, therefore, that in tick-infested areas the disease is much more prevalent than is generally realised, and further that ticks do take an active part in its transmission.

ABSTRACTS.

Black Diseases (Infectious Necrotic Hepatitis) of Sheep in Australia.

A. W. TURNER (1930). *Bull. 46, Council of Science and Ind. Res. Australia.*

In this long and detailed paper the author gives a description of a condition occurring in sheep and cattle in Australia and New Zealand, caused by *B. oedematiens,* a toxin producing anaerobe of the gas gangrene type. The disease is characterized by the presence of small necrotic centres in the liver in which this particular bacterium is found. The most interesting feature of the disease is the occurrence of the organism in the livers of normal sheep and it is only as a result of the invasion of the liver by young flukes that the necrotic centres develop. This observation shows the possibility of pathogenic sporulating anaerobes lying dormant in the tissues until disturbed, a similar observation having been made in connection with *B. tetani* Attempts at immunization against the disease have been carried out on a large scale, apparently with success. A formalized culture was used as a vaccine. E.M.R.

The Use of B.C.G. Vaccine in the Immunization of Calves against Tuberculosis. BUXTON & GRIFFITHS (1931). *Lancet 21/2/31.*

In view of the world wide interest taken in the possibility of immunization of human beings and cattle against tuberculosis by means of BCG vaccine, an attenuated bovine strain of the tubercle bacillus, the above article is of considerable interest. It is the first of a series dealing with the subject in which all the immunity tests were made by the feeding or inoculation of virulent cultures. The authors came to the conclusion that the vaccine was harmless and conferred an increased resistance against the disease. Intravenous inoculation of the vaccine was found to give the most resistance, feeding the least. The resistance appeared to depend to a large extent on the size of the dose. The value of the vaccine was judged by the time the animals survived the virulent injection, as they all developed tuberculosis in varying degrees.

Further experiments are in progress to test the value of the vaccine in animals exposed to natural infection. E.M.R.

The Serological Diagnosis of Trypanosomiasis. E. M. ROBINSON (1930). *Thesis for Fellowship of Royal College of Veterinary Surgeons.*

The author reviews the various methods which have been used in the serological diagnosis of trypanosomiasis in the domesticated animals. The following tests are discussed: (a) precipitin, (b) agglutination, (c) complement fixation, (d) conglutination, (e) Wasserman reaction, (f) the adhesion reaction, (g) formol and other gel tests. It was shown that the complement fixation test was the most valuable. As with other tests, it was, generally speaking, non-specific with regard to particular species, but it was shown that by means of its use one could differentiate between the *T. brucei, T. equiperdum* and *T. evansi* types and the *T. congolense* and *T. vivax* types. The possibility of the use of the complement fixation test for the diagnosis of Nagana is discussed. E.M.R.

Anaerobic Infection in Sheep from Attacks of Crows.

GRAHAME EDGAR (1931). *Australian Veterinary Journal,* June 1931.

The author describes a type of gas gangrene in sheep in Australia, chiefly affecting the head and seen most often in ewes. It is caused by crows attacking the eyes of the sheep with subsequent anaerobic infection supervening. In the infected tissues both *Vibrion septique* and *B. oedematiens* have been found as the cause of the gas gangrene. The disease is of particular interest as in South Africa a similar disease exists, caused in the same manner. It is at present the subject of investigation, and is due to organisms of the same group.

E.M.R.

BOOK REVIEWS.

The International Institute of Agriculture in Rome has set itself the task of compiling international agricultural statistics. As part of this work the Institute is publishing an International Zootechnical Atlas, the first three volumes of which, dealing with the Cattle Industries of Germany, the Netherlands, Hungary, and Switzerland, have recently appeared in print. Of volume No. 1, the part dealing with Germany*, has just been received.

This volume gives a complete survey of the climate, soil, cattle farms, cattle breeding, breeding conditions, promotion work and organisation, dairy factories, cattle production, and foreign trade of Germany. It is richly illustrated with exceptionally good photographs of representative specimens of the various cattle breeds found in the country.

Perhaps the most valuable parts of the volume are the extensive tables of statistics concerning all phases of the cattle industry—large maps showing the distribution of the breeds and the density of the cattle population, and last, but certainly not least, a very complete bibliography relating to the cattle industry. Some particularly interesting facts are found in this volume:—

It is certainly not generally known that 17.6% of the farms in Germany are less than 5 Hectares (1 Hectare approx. equal to 1 morgen) in size, 35.8% between 5 and 20 Hectares, 26.4% from 20 to 100 Hectares, and only 20.2% or 1/5th of the farms over 100 Hectares in extent.

Industry and commerce give livelihood to 57.9% of the population, agriculture in general to only 30.5%. Agriculture in general covers 62.5% of the area of the country—27.5% of its area is occupied by forests and only 10% is unproductive. Permanent meadows and pastures constitute 27.2% of the area devoted to agriculture. The existing grassland is, of course, not sufficient to meet stock feed requirements and, although 11.62% of the arable land is devoted to growing forage crops (6.73% being under red clover) and national industries supply large amounts of residue such as beet pulp, potato pulp, etc., considerable quantities of forage have to be imported from abroad.

The average density of cattle population is 100.4 per square mile with a maximum in Northern Bavaria of 161.0. Here there are 27.7% more cattle than humans.

The black and white cattle (Holstein Friesian cattle) which are the true dairy cattle of Germany, do not differ essentially from the Fries cattle of Holland. Their absolute mean of production for 1927

* Atlas International Zootechnique, 1st Volume; International Cattle Atlas (Germany). Bestetti and Tumminelli, Rome, 1930, pp. 63, with one map and numerous photographic reproductions.

was 7,980 lbs. of milk per lactation period with 3.25% butterfat. Dairy Shorthorn cattle have been introduced into Germany for some years, with satisfactory results. Live weight of cows varies from 1250-1800 lb. and the milk-production average for 1924-25 was 5730 lbs. with a 3.41 fat percentage.

With regard to promotion work, the following extract is of great interest:—

> "In almost all parts of the country only such bulls are allowed to be used for breeding purposes as have been recognised as fit by official commissions. Bulls subject to judging by these commissions are either inspected individually or on occasions of cattle shows, in groups."

It is the duty of the Municipalities to ensure that there is the requisite number of bulls in their respective zones for breeding purposes. Bulls may be kept by municipalities, breeding associations, or by private persons, and the Government allows grants for the purchase and maintenance of breeding bulls.

In 1927 the number of breeding Associations in Germany totalled 1,402, and these had on their registers 38,069 pedigree bulls and 688,450 females. Testing has made immense strides in Germany during recent years. In 1928 there was 2,612 testing Associations, with an activity extending over 924,482 cows. In 1929 the milk produced in Germany was valued at £160,000,000. Next to the U.S.A. Germany is the greatest butter producing and next to Soviet Russia the largest cheese producing country in the world.

> "In spite of all these facts, Germany **is importing** all cattle products. This is due to the great density of population and to the high consumption of such products per inhabitant. German cattle breeding is for this reason of almost no importance to the world's market. On the contrary, Germany provides an important market for these products. Utility cattle are imported from Austria and Switzerland, slaughter cattle from Denmark, Sweden and Austria—meat from the Netherlands, Belgium and Denmark, frozen meat from Argentine, Uruguay and Australia, milk from Switzerland, butter from Denmark, the Netherlands, Sweden, Finland and Russia, and cheese from the Netherlands and Switzerland."

The Atlas is tri-lingual, the text appearing in French, English and German. The appearance of this International Zootechnical Atlas is indeed very welcome, supplying as it does international zootechnical statistics, the compilation of which in such a compact form, is already long overdue.

J. H. B.

2

NEWS LETTER SERVICE TO GOVERNMENT VETERINARIANS.

No. 6.—Known Carriers of Rabies in South Africa.

Although suspected cases of Rabies in man have been recorded in the Union during the last 10 years, the disease was only definitely diagnosed in two European boys bitten by a "red meercat" in October, 1928. Since then, the following wild carnivores have been found to harbour the disease.

FAMILY VIVERRIDAE.

1. *Cynictis penicillata,* commonly known as the Cape yellow mongoose, Bushy-tailed meercat, Yellow meercat, or in Afrikaans as the "Geel of Rooi meerkat," "Witkwas meerkat," or "Witpuntstert meerkat." No less than eight different varieties of this species are known and most of our positive cases of rabies have been demonstrated in this animal.

2. *Genetta felina,* the Cape small-spotted genet, small black-spotted genet, or in Afrikaans "Muskejaatkat, Misseljatkat, Klein swartgevlekte mosiliaat kat of Muskkat." Three different varieties are known.

3. *Myonax pulverulentus,* the Cape grey mongoose or pepper and salt cat; Afrikaans: "Klein grys kommetjiegatkat, Klein vaal kommetjiegatkat, Neethaar of Garkie." Three different varieties are known.

4. *Suricata suricatta,* the Cape suricat or meercat, slender-tailed meercat, true or common meercat; Afrikaans: "Stokstertmeerkat, Graatjiemeerkat of gewone meerkat."

Information regarding the prevalence and spread of the disease in wild carnivores is very scanty indeed, and it is imperative that veterinary and other public officers co-operate to remedy this state of affairs without delay. As a preliminary step for the purpose of obtaining further accurate and definite data of all the possible carriers of rabies in this country, it is highly desirable that all suspicious cases in wild carnivores and other animals be forwarded for diagnosis and identification. For the purpose of identification of small wild carnivores the skin, including tail and digits, and, if possible, the skull (for dentition) should be sent. These specimens should be preserved in 10% formalin and suitably labelled according to instruction below.

Of our domestic animals the dog and the ox (4 cases) are known to have been affected with rabies.

REMOVAL OF THE BRAIN.

Accurate and speedy diagnosis is an all important factor in combating rabies. The central nervous system affords the surest means of diagnosis, so that the various steps and precautions necessary in the collection of material will be briefly described.

In dogs, cats, and meercats the skin from the anterior dorsal aspect of the neck and the head should be removed, likewise the muscles over the frontal and parietal bones. A sagittal cut with the saw is then made along the external parietal crest from the level of the orbits backwards to the foramen magnum. Care should be taken not to penetrate too deeply and so injure the brain. Two further cuts in the form of a "V" are made. These extend from the base of the external ear and converge to a point midway between the internal canthi of the eyes. Segments of the skull can then be lifted off bit by bit with the bone forceps until the whole brain including the medulla is exposed. It then is an easy matter after having removed the dura mater to lift out the brain by cutting through the olfactory and optic tracts, etc. The whole brain is then placed in a small sterile dish so as to be able to remove the necessary portions for diagnosis.

In the absence of a vice for holding the head of large domestic or wild animals, the process of removing the brain can be simplified by adopting the following procedure: The skull, cleaned of skin and muscle, is sawn through (brain and all) into halves by a cut near the median plane. In this way the brain can be scooped out of the halved skull with little difficulty. This method can not be recommended for small animals where the brain is so small that too much damage would be done to the essential tracts.

Selection of Material.

Having taken out the brain the next step is to cut the brain stem transversely immediately in front of the anterior corpora quadrigemina. The posterior part so isolated i.e. the medulla, cerebellum and midbrain*, is dropped into 10% formalin for *histological purposes.* The two hemispheres are then separated and the one is placed in 50% glycerine for *biological tests.* From the other hemisphere the hippocampus or Ammon's horn is removed. This is the long, curved body forming the floor of the lateral ventricle. Half of the hippocampus should be dropped into the formalin bottle and with the remaining half impression preparations can be made.

Impression Preparation.

A thin transverse slice (2-3 mm.) of the hippocampus is cut off, lifted carefully, and placed flat on a dry surface of a small wooden block and made to adhere by gentle pressure round edges. By touching with slight pressure this slice with a clean, dry glass slide, several consecutive impressions are made on the same slide. These are dried quickly wrapped in paper and sent plainly marked "Suspicious rabies," together with other material. Such impressions are comparable to smears, and are a great saving in time and labour for rapid diagnosis

* See article "The Value of Midbrain in the diagnosis of Rabies," Jnl. S.A.V.M.A., Vol. I (4), 1920.

in straightforward cases. It is, however, essential to have good histological as well as biological material for doubtful or negative suspects.

Precautions to be taken.

The need for effective precautions in handling suspected animals or material in all possible stages, should need no emphasis.

The veterinarian by reason of his calling must assume full responsibility, and it is his duty adequately to protect himself, his assistants and other persons who may be called upon to handle material in transit or at the destination, especially as they are usually ignorant of the danger to which they are exposed and of means of guarding themselves against infection. In this latter respect particular stress must be laid on the manner in which material is preserved, packed, labelled, and dispatched. Experience in the past has shown that extreme laxity in this respect is the rule rather than the exception, a fact which amounts to courting serious accidents. All instruments should be sterilized after use by boiling or disinfected by a solution of formalin, lysol, or other carbolic preparations.

Collected material should be placed in bottles without soiling the exterior of the bottle and stopper.

Preservatives recommended are ordinary 10% commercial formalin *histological specimens* and 50 % aqueous solution of glycerin for material intended for *biological work.* Such material should be well closed and securely packed since it is still infective.

Furthermore, each package should be clearly and prominently labelled so that there need be no opening and unnecessary handling until its destination is reached.

On account of rapid decomposition and consequent uselessness for diagnostic purposes, the despatch of the unopened head in ice is only permissible when such a specimen can reach its destination **within** 12 hours from the time of death of the animal.

All the remains of suspected animals should be suitably destroyed by burning or deep burial, and the locality and objects which have come in contact therewith adequately disinfected. Under certain circumstances it may be essential securely to isolate suspected animals, but this procedure will be fully discussed in a subsequent newsletter.

Labelling and Information required.

In all cases packages must be clearly labelled. Furthermore, full particulars must be furnished either in a covering letter or in the parcel itself. These should include inter alia:—

1. The name and address of sender.

2. A detailed description of the suspected animal i.e. species, breed, age, size, etc.

3. Name and address of the owner of the suspected animal, and in case of a wild animal the locality from which it originated.

4. Whether the examination of the suspected animal took place prior to or after death, and detailed symptomatology.

5 Manner of disposal of animal after examination.

6. Whether animal had been bitten by another animal or whether it was known to have come in contact at any time with suspected animals. If bitten, dates should be mentioned.

7. Whether animal has shown any signs of changing its behaviour since the date on which it was bitten and whether it was in contact with other animals to which it may have transmitted the disease.

8. Whether any human beings have been bitten and when.

9. What precautions were taken in connection with the animals that had been bitten and had been in contact with affected or suspected animals.

N.B.—Lastly, in case a person is accidentally infected or bitten by suspected animals, no risks should be taken and immediate steps should be taken to communicate with the District Surgeon or nearest medical practitioner for preventive treatment.

An ordinary hack saw with metal, pistol grip is particularly useful for sawing bone. It has furthermore the following advantages: low initial cost, hard sharp steel blades, which are easily replaced and are obtainable anywhere at a very low cost.

No. 7.—Vaccine for Paratyphoid in Calves.

During the past three or four years Paratyphoid vaccine has been widely used by farmers in the areas where the disease occurs. From the reports received, which have unfortunately not been as many as could have been hoped for, it would seem that the vaccine has been found fairly effective as a preventative. Up to the present the vaccine has been issued purely on an experimental basis and no charge has been levied. It consists of formolized cultures of several strains of the Paratyphoid organism, mainly from the Marico district of the Transvaal.

This year we received a report as to the occurrence of the disease in inoculated calves, some of which had even been reinoculated. A special vaccine was made from the strain recovered from these calves, and was used with good results on the farm in question. This strain has now been incorporated in the stock vaccine. This occurrence shows the necessity for reporting failures of the vaccine to immunize, and

the desirability of constantly incorporating new strains and discarding the older ones, some of which are by now seven years old.

The vaccine is not issued until a positive diagnosis has been made, and in practice it has been found that the histo-pathological examination of the organs, especially the liver, is the most reliable diagnostic method. The serum test often fails in early acute cases, but is more reliable as a diagnostic method for "carriers."

No. 8.—Vaccination against Bloedpens (Lamb Dysentery).

A vaccine made on the lines of that now used with great success in Great Britain for lamb dysentery, was issued last year on an experimental basis. The vaccine was made from strains of *B. welchii* obtained from bloedpens cases from Barkly East District in 1929. Owing to the exceedingly mild incidence of the disease in 1930 it was not possible to judge of the value of the vaccine.

The vaccine has since been much improved by the incorporation of fresh strains of the causal organism, and is being issued again this year on an experimental basis.

It is used for the inoculation of pregnant ewes. The dose is 2 cc. and it is given subcutaneously about 3 weeks before the lambing period commences. A second inoculation of 2 cc. is given a week before lambing time. The ewe develops an immunity which is transmitted to the lamb by the colostral milk.

As stated above the vaccine is still in the experimental stage and it is recommended that only half the number of ewes be inoculated, the other half to act as controls.

No. 9.—General Anaesthesia of the Lower Animals.

(A) Pernocton Anaesthesia in the Dog.

Within recent years a considerable amount of progress has been made in the problem of anaesthesia in the lower animals. General anaesthesia of the dog for instance is greatly simplified by the intravenous injection of Pernocton.

This drug is obtainable in ampoules containing 2.2 cc. The dose is 0.03 grams per Kilo body-weight, or approximately 1 cc. of the solution per 10 pounds body-weight of dog.

It is warmed up to body temperature before injecting. The injection is most conveniently done into the recurrent tarsal vein, which will be found crossing the lateral aspect of the leg just above the hock. Either leg can be used, but a right-handed operator will find the right leg most convenient and vice versa. A very small sharp pointed hypodermic needle must be used, otherwise the vein, which is loosely at-

tached, is difficult to penetrate. The injection is done slowly, at the rate of 1 cc. per minute. The correct technique must be carefully observed as Pernocton acts as an irritant if it is injected subcutaneously. Where possible, the dog should be prepared by keeping it on liquid food for 24 hours prior to the injection, but in urgent cases no special treatment is necessary.

By the time the injection is finished the animal is usually under deep anaesthesia without any excitement stage. During the injection there is occasionally cessation of respiration, but this is as a rule momentary. Rarely there is an alarming cessation of respiration, while the pulse remains strong but rapid. The condition is easily overcome by the use of artificial respiration and no bad sequelae result.

In some excitable dogs, such as the Alsatian and especially the Dobbermann, there is marked excitement as anaesthesia is being induced. To overcome this a small dose of morphia and atropine is given 1 hour prior to the injection of Pernocton. This prevents excitement, and further reduces the quantity of Pernocton necessary by one quarter. The inhibition of respiration, however, occurs more frequently when morphia is used.

Advantages of Pernocton anaesthesia:—

(1) Rapid anaesthesia without excitement during induction.

(2) Very deep and prolonged anaesthesia which is of enormous value in most major operations.

(3) None of the usual undesirable sequelae.

(4) Perfect safety in use provided correct technique is adopted.

Disadvantages:—

(1) There is sometimes an alarming inhibition of respiration, therefore respiration must be carefully watched while injecting.

(2) There is sometimes marked excitement in the more nervous breeds, such as the Dobbermann.

(3) Towards the end point of drowsiness, there is muscular incoordination, therefore a suitable bed or an attendant is necessary to prevent injury.

No. 10.—Control of Nagana.(1)

1. Short Interval Administration of Antimosan is suggested as being suitable for the sterilisation of acute and chronic cases when the saving of time must be taken into consideration; also as a preliminary treatment in acute cases before the institution of the long interval administration.

(1) For full details refer to original article: A study of Bovine trypanosomiasis by B. S. Parkin in the 16th Report of D.V.S. and A. I, 1930.

2. Long Interval Administration is the method of choice to produce sterilisation when time is no object; also to treat bovines which are constantly exposed to re-infection.

3. The administration of smaller doses than the 3 gram dose may, under special circumstances, be considered for the purpose of producing premunition, i.e. the production of animals whose resistance is dependent on a latent infection. It must be recognised, however, that this method results in production of reservoirs and should thus only be utilised in areas where the bovines are constantly exposed to re-infection.

No. 11.—Specimens for Toxicological Examination.

Specimens collected for toxicological examination are still far too freduently received in a state which precludes the possibility of utilising the material to the best advantage in the ensuing chemical analyses. Attention to the following points would greatly enhance the value of results.

A. A sufficient amount of material should, whenever possible, be forwarded, e.g. *ruminal or stomach contents* ½-1 lb., *liver* ½-1 lb., or in place of the latter one *kidney* (or in case of small animals both kidneys). Other tissues such as blood, spleen, heart, lungs, etc., are not of great value, except in suspected phenol poisoning, where a fairly large piece of *lung* in addition, should be sent in. Place the specimens in separate containers, which in all cases should bear a label stating owner, species of animal, nature of specimen, and poison suspected. Separate containers are especially essential, where other material, suspected of being the actual poison, is also forwarded at the same time. Obviously the contamination of specimens during transit by poisons packed in the same containers makes a subsequent analysis of such material valueless.

N.B.—To specimens for toxicological examinations no preservative, e.g. formalin, should be added. It may, however, be advisable to submit, besides the above material for analytical work, specimens in formalin for microscopical examination.

B. In order to enable a definite diagnosis to be made in all cases, as full details as possible in respect of history, symptoms, and post-mortem findings should be given. This information should be forwarded under separate cover. If any *particular poison* is suspected, this should be stated, as in all other cases a search for *arsenic* only is undertaken.

C. Quite frequently litigation arises out of investigations into cases of suspected poisoning. In all cases, where such a possibility exists, even if only a remote possibility, the specimens must be taken in accordance with the requirements of the law, i.e. the actual sam-

pling must be witnessed, containers must be clean and carefully sealed before despatch, etc. Full details thereanent can be obtained from your nearest Police post, Magistrate, or Prosecutor.

D. Although quite a number of toxicological examinations are undertaken annually for the purpose of prosecution in courts, it is only very rarely that the result of any such cases is reported, and it is felt that much valuable data from a veterinary-legal aspect is thereby lost. Government Veterinary Officers should therefore in all cases where they are called as witnesses, or in which they have in their official capacity taken any part, submit to the Director of Veterinary Services, Onderstepoort, a report which contains the salient points and the result of the case.

No. 12.—New Castle Disease or Pseudo-Fowl Plague.

Introduction.—This acute infectious disease of fowls, caused by an ultravisible virus, was probably recognised for the first time by Doyle in England. There the mortality was very high and cross-immunity tests showed there was no relation to fowl plague. During the past few years the disease has been diagnosed in other countries and at the last World's Poultry Congress it received a good deal of attention. In South Africa, it has so far not made its appearance. The disease is sometimes spoken of as Manila or Philipine Disease.

Fowls and pigeons arriving on board ship constitute the potential danger to this country, and the short description of the disease now to be given will, it is hoped, be of value especially to Veterinarians stationed at the various ports.

Symptoms.—After an incubation period of four to eleven days, and rarely up to twenty-five days, the fowl suddenly stops eating, sits hunched up, and appears to be in a state verging on coma. There is dyspnoea and most birds then breathe through the open beak. A watery, yellowish-white diarrhoea is common. There is often cyanosis of the comb and wattles. In the nostrils, beak, and infraorbital sinus there is usually a good deal of mucus. Death supervenes generally in two to four days after the onset of symptoms, but should life be prolonged paresis of the wings usually precedes the end. The mortality may be as high as 100%.

Autopsy.—There is nothing characteristic. Sometimes there is slight tracheitis, haemorrhagic spots may be seen under the epi- and endocardium and under the peritoneum covering the intestines. The mucous membrane of the proventriculus may reveal similar spots. There is usually some degree of catarrhal enteritis.

Pathogenicity.—Pigeons and ducks are susceptible as well as fowls, but outbreaks amongst ducks are not characterised by the tendency for every individual to become affected.

Aetiology, mode of infection, etc.—The disease is due to an ultra-visible virus present in the blood, body, organs, saliva, mucus, and faeces. Experimentally it is easy to infect birds by (1) keeping them in contact with sick ones, (2) feeding the virus, (3) instillation of the virus into the conjunctival sac, (4) cutaneous, subcutaneous, intravenous, intramuscular, and intraperitoneal inoculation. The virus is said to be most concentrated in the saliva and brain.

In nature infection is probably by direct contact. Food, water, etc., are a source of great danger when contaminated by infected saliva and faeces.

Treatment.—There is no specific remedy known.

Prophylaxis.—Destroy all sick and in in-contact birds, including pigeons and ducks, and burn the carcases, together with litter, crates, etc. The usual strong disinfectants will suffice for anything that cannot be destroyed by fire, etc.

No. 13.—Natural Horsesickness following Horsesickness Inoculation in a Horsesickness-free Area (Wellington, Cape).

On the 3rd of March 1931, the owner of the farm "Rooshoek" in the Wellington district had two horses and three mules inoculated against Horsesickness by the serum-virus method. These animals were stabled together with other susceptible horses and mules. A few days later the inoculated animals reacted and recovered. One of the horses, however, had a relapse of Horsesickness 40 days later. On the 29th March 1931, one of the in-contact susceptible horses died and a diagnosis of horsesickness was made. Subsequently three more of the in-contact horses died of Horsesickness. Blood from one of the horses was sent to Onderstepoort in order to confirm the diagnosis. Sub-inoculation experiments were carried out in two horses. Both horses reacted to Horsesickness, one died of the pulmonary form (Dunkop) and the other one recovered.

Investigations subsequently instituted to trace the possible transmitter could not be completed on account of heavy rains and strong winds prevalent in the Western Province at that time and also because of the fact that the stables were smoked out during the night.

The conclusion to be drawn from the above is that the inoculated horses acted as reservoirs either for the usual intermediary vector or for an insect or other agency that can transmit the disease mechanically.

Veterinarians are therefore warned not to encourage owners to immunise horses against Horsesickness in those areas free of Horsesickness. If horses are to be sent from such areas to infected areas they should rather be inoculated at their destination, but it should be impressed on such owners that horses sent to the horsesickness area

be so treated that they are kept from possible natural infection until immunised.

No. 14.—The Warthog (Vlakvark) *Phacochaerus aethiopicus* as a carrier of the Virus of African Virus Disease of Pigs.

Outbreaks of the African Virus Disease in pigs have recently occurred near Messina and Louis Trichardt and it was decided to determine whether the warthog and bushpig played any part in the spread of the disease.

For this purpose Government Veterinarians were requested to collect blood from warthogs and bushpigs for inoculation experiments at Onderstepoort.

The blood of three apparently healthy warthogs shot on the farms Welgemoed, Gruispan, and Berg-en-Dal, in the Potgietersrust District, was used for this purpose. All the domestic pigs injected subcutaneously with these blood specimens developed the typical African Virus Disease. The diagnosis was confirmed by subinoculations. These results prove that warthogs, although exhibiting no evidence of disease, act as carriers of this disease. Warthogs are known to frequent farm yards and even pigsties at night and probably through their excreta transmit the disease to domestic pigs.

It will be of great value to receive blood of warthogs and bushpigs from areas where the African Virus Disease is not known to occur in order to establish whether all warthogs or only those in infected areas are carriers of this virus, also to ascertain whether the bushpig can act as a carrier.

Invaluable assistance in the investigation of the above points can be rendered by submitting to Onderstepoort blood samples from warthogs and bushpigs in other parts of the country. Officers are, however, asked to communicate with the Director of Veterinary Services, Onderstepoort, and indicate to what extent these wild pigs occur in their area before taking any steps as regards shooting of these animals for the collection of blood. Full particulars about the collection of blood of such pigs and the necessary containers will then be forwarded to the officer concerned. Officers should be particularly guarded not to cause undue anxiety amongst farmers.

(Dr. D. G. Steyn has carried the experimental work in the above disease a step further since the above letter was issued. He now reports having found that domestic pigs still harbour the virus in their blood two months after having recovered from an attack of the disease).

(The full text and details of experimental work on this disease will appear at a later date in the Reports of the D.V.S. and A.I.)

NOTES AND NEWS.

Editorial.

For the first time since 20.10.17 it has been found necessary to abandon the Annual Spring Meeting of the Association. This step was rendered necessary by the fact that the Department of Agriculture, in whose service most of the veterinarians in this country are, could not see its way to accord the usual facilities of transport and leave to those who could have been spared from duty.

While appreciating the difficulties, financial and otherwise, in which the Department finds itself, one cannot but wonder whether such a step will prove a far-sighted economy. The Spring Meeting is essentially the scientific meeting of the Association, and therefore the one likely to prove of most benefit from the educational point of view. If it is granted that the duties and responsibilities of the State Veterinarian are important, and that by reason of the great distances in this country he is isolated in his district and precluded from frequent contact and scientific intercourse with his fellow workers and even from ready access to current literature closely affecting his everyday work, then it will be realised how well spent such money would have been. One meeting a year is indeed a bare minimum if those lofty professional ideals so recently alluded to by our Minister of Justice are to be upheld.

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The article entitled THE VETERINARIAN AND THE LAW oppearing in this issue is the first of a series which Advocate Bresler has consented to write for the Journal. It is scarcely necessary to stress the extent to which the need for reliable information on points of law has from time to time been felt by members of the profession. and we feel confident that the importance and value of these documents will become even more fully recognised as the series progresses.

It is relevant to point out that the local Faculty, in spite of its thoroughness in many other directions, has failed to include in its five year curriculum instruction in forensic veterinary medicine, while courses covering this ground are considered essential in most veterinary schools, including even those whose curriculum extends over four years only. It is obvious, therefore, that the value of these articles will be appreciated not only by members of the profession, but also by students of veterinary science in this country.

Further, it is to be remarked that some of the points made in the opening chapter, coming as they do from an authoritative but disinterested source, are especially significant and pertinent at a time when we are struggling so hard to obtain that recognition which enlightened professions the world over have come to regard as a right. And we are led to hope that we shall find in Advocate Bresler and his colleagues

the sympathetic and helpful advice of which in the past we have stood so much in need.

We are fortunate in having obtained the services of such an esteemed member of the learned profession as Advocate Bresler, and we owe him a debt of gratitude for the painstaking manner with which he is accomplishing the huge task that has been set. He himself has aptly pointed out that "the law is either precise or valueless" and following this maxim is sparing no labour in the research which is essential if the facts are to be collected in readable form. From the introduction to the subject there is no doubt that Mr. Bresler will be unanimously adjudged as acquitting himself of this task with such credit that the perusal of his further contribution will be eagerly anticipated.

Departmental.

Mr. R. S. Garraway retired from the Government Service in September of this year. He came to South Africa during the Anglo-Boer War with the Imperial Yeomanry and from July 1901 to early in 1903, was a member of the S.A.C. He entered the Transvaal Civil Veterinary Department in April 1903, and at Union continued under the new administration, being stationed most of the time in Pretoria. In 1924 he succeeded the late Mr. Goodall as Director of Veterinary Services in the South West Africa Protectorate. Later he became Senior Veterinary Officer for the Orange Free State, being stationed at Bloemfontein, where he remained until his retirement.

Mr. Garraway has set up a private practice in Johannesburg and we wish him every success in his new sphere of action.

Staff Movements.

Major J. J. G. Keppell has succeeded Mr. Garraway as Senior Veterinary Officer for the Orange Free State and is stationed at Bloemfontein.

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Dr. Otto Nieschulz arrived at Onderstepoort in July of this year to put in a year's research work on problems connected with the transmission of disease in animals by insects. Dr. Nieschulz obtained a fellowship from the Rockefeller Foundation, and is on the staff of the Institute for Parasitic and Infectious Diseases of the Royal University of Utrecht in Holland, and has spent some years doing research work in the Dutch East Indies.

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Mr. J. H. Mason, F.R.C.V.S., who obtained one of the Empire Marketing Board Fellowships, arrived at Onderstepoort in June. He is engaged on a systematic study of the bacterial flora of the digestive tract of the sheep. Mr. Mason spent some years at the Welcome

Research Laboratories at Beckenham, near London, and was chiefly occupied with the study of lamb dysentery.

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During the months of August and September two colleagues from the Veterinary Department of the Mozambique Administration, Drs. Moraes and Dias, each spent a few weeks at Onderstepoort before taking up positions in Portuguese Nyassaland.

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The following transfers have been effected:—

Mr. A. M. Howie—Cape Town to East London, 2/7/31.
Mr. S. W. de Villiers—Pietersburg to Bloemfontein, 5/5/31.
Mr. R. B. Osrin—Port St. Johns to Allerton, 12/6/31.
Mr. L. C. Blomefield—Umtata to Port St. Johns, 8/6/31.
Dr. P. R. B. Smith—Aliwal North to Umtata, 2/10/31.
Mr. R. Clark—Nongoma to Allerton, 12/10/31.
Mr. W. P. Hamlyn—Komgha to Johannesburg, 16/7/31.
Mr. J. J. G. Keppel—Worcester to Bloemfontein, 8/10/31.

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Mr. W. P. Hamlyn has been transferred to Johannesburg to succeed Mr. J. Chalmers as Government Veterinary Officer for the Witwatersrand area. Mr. Hamlyn was for many years Government Veterinary Officer at Komgha in the Transkei.

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Mr. P. J. Fourie, Sub-director of the Division of Veterinary Services, who left in February for a year's study leave in Europe, was successful in obtaining the doctorate of the Veterinary Faculty of the University of Utrecht for a thesis entitled "The Haematology of Haemonchosis." We congratulate Dr. Fourie on his success. He is the first South African to take this degree in Holland.

General.

A conference convened by the Hon. the Administrator of the Transvaal was held at the Medical School, Johannesburg, on September 21st-22nd, 1931, for the purpose of considering ways and means of starting an anti-cancer movement in the Union, similar to those in existence in most of the leading civilised countries of the world.

Among the delegates present may be mentioned representatives of the Medical Association, the various larger hospitals, all the Provincial Administrations, the Universities, the Nursing Association, and various other public bodies. The veterinary profession was represented by Drs. P. J. du Toit, G. de Kock, E. M. Robinson, and A. D. Thomas. It is pleasing to note also that provision was made for Veterinary representation on one of the permanent committees of

the Cancer Association which it is hoped will be established soon.

The deliberations of this Conference were conveniently summarised by its Resolutions Committee as follows:—

"This Conference, recognizing the loss of life and the great suffering caused by cancer; recognizing further that while cancer is curable in many cases if diagnosed early, it is incurable in its later stages, is convinced of the urgent need for co-ordinated effort in the fight against this scourge, **resolves:**—

I. (a) To establish a National Association for combatting cancer, on the general plan of the Memorandum and Articles of Association submitted to the Conference.

(b) To call upon the State and all public bodies and public-minded citizens to give active support to this Association.

(c) That the immediate activities of the Association shall be directed principally towards—

(i) Collating and distributing to Medical Practitioners information on advances in the causation, pathology, diagnosis and treatment of cancer.

(ii) Public propaganda by every practical means on the prevention, and importance of early treatment of cancer.

(iii) Acting as a clearing house and co-ordinating body between the various research workers and treatment centres in South Africa.

The Conference further **resolves:**—

II. That a Committee of 17 persons, with power to co-opt, be now appointed to carry into effect resolution I., and to proceed, particularly with the incorporation and establishment of the Association. This Committee is empowered to sign the Memorandum and Articles of Association and proceed to registration.

The need for such a central body to organise propaganda and generally educate the public in cancer matters is, of course, obvious to every thinking person. Funds will be raised at the beginning at any rate by subscriptions, donations, collections, etc., to be supplemented later perhaps by grants from the Government. Membership will be open to everybody (annual subscription 10/6) and Veterinarians everywhere, it is hoped, will give the movement all possible support.

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Some rather pertinent remarks appear in the R.D.M. 5/10/31, regarding the possibility of aircraft acting as vectors for some of our

worst epizootic diseases. Arrangements are rapidly being completed for a regular Imperial Transafrican Service and French and other enterprises will possibly soon add further to the air traffic over the length of the continent. The Medical Authorities are evidently alive to these possibilities and have apparently already taken steps to safeguard our public health.

To mention only one of the dangers threatening, it is pointed out that if Yellow Fever were transported from the West African Coast to the East, a possibility which is very real in these days of rapid, long distance air travel, there would be nothing to prevent this dread disease (from which the mortality is 75%) from spreading down the East Coast of Africa, worse still to India, etc.

That diseases of considerable Veterinary importance could likewise be transported from Central Africa, is natural enough. Even the motor car—a relatively slow vehicle—has already been incriminated in transporting tsetse fly. The question immediately arises therefore, what steps are being taken to safeguard our Stock Industry against the introduction by air of such diseases as Rinderpest, Foot and Mouth disease, Trypanosomiasis, etc. The matter, we feel confident, has not escaped the attention of our Veterinary Authorities, whose duty it is to take adequate precautions against this menace from a new and unusual source.

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Among the several items arranged for the Spring Meeting of the S.A.V.M.A., which has just been cancelled, was a collection of old and historic documents of veterinary interest, which Mr. Gubbins of Ottoshoop kindly consented to exhibit.

We appreciate Mr. Gubbins' offer, and hope that at some future occasion we may have the privilege of seeing some of this archival matter.

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