

## GAME AND GAME PRESERVATION IN ZULULAND.

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It is proposed in this paper to deal with the above subject in concrete form, and in its relation solely to the game of Zululand rather than to view it in the abstract, and to endeavour to set forth the conditions obtaining at the present time in that portion of the Natal Province which is perhaps the only place in the world where actual large game may be encountered within fifty miles of a rail-head, distant only twelve hours' journey from a large and thriving coast port.

With this object in view, but few remarks will be introduced upon what is termed the sentimental aspect of the question; a brief summary of the laws which have been passed from time to time to regulate the destruction of game since the inception of the work of preservation will be presented, to be followed by a short description of the Zululand Game Reserves.

The tsetse-fly borne disease known as Nagana, will, of necessity, be touched upon, but entirely from the view-point of the ordinary lay observer.

It will be impossible to cover all the above ground without introducing contentious matter and perhaps treading upon someone's toes. But it will be my endeavour to deal with the former in a fair and non-controversial manner, while as regards the latter I will try to tread as lightly as possible.

As a keen student and lover of wild life, it is my earnest desire that a *modus vivendi* should be established between the supporters of game preservation and those *bona-fide* settlers whose position has been the cause of the principles upheld by the former having entered the realms of somewhat bitter controversy.

The subject of game preservation is one which, over and over again, has been dealt with by able and sympathetic writers, men whose earnestness of purpose and sincerity cannot be called into question, and who, in the face of continued and often unreasoning opposition, and not a little ignorant abuse, have loyally upheld their convictions.

They have contended that it is a duty which those of the present generation owe to their successors that they hand down to them for their pleasure and enjoyment some, at least, of the many beautiful forms of animal life, the contemplation and study of which has brightened the lives of thousands in the past and present, and has no greatly enriched the stores of scientific knowledge.

Arrayed in opposition are two classes of residents, having little or nothing in common otherwise, the one consisting of those whose honesty of purpose can no more be doubted than that of those whom they oppose, who have no real desire to see game exterminated, and who only hesitate to cease their

opposition because of their doubts as to what may be the economic results of preservation.

The other is very differently constituted, people whose motives are almost entirely personal and selfish, and those who speak and act through ignorance, an ignorance which frequently displays itself in loud self-assertiveness.

The former class have hitherto evinced a praiseworthy desire to arrive at a mutually satisfactory understanding with the powers that be on the basis of the preservation of game in such manner that it shall not constitute a menace to their domestic animals.

During the last fifteen years much useful work has been accomplished by the champions of protection, particularly in the Transvaal, and some check has been placed upon the wholesale and cruel slaughter of wild game.

Nevertheless, it has to be admitted that, as regards Natal at any rate, we stand, as it were, at a parting of the ways, and that the cause of protection never stood in more urgent need of thoughtful, unprejudiced, but withal strenuous support than at the present moment.

Few people, it may be asserted, realise how sure, though gradual, has been the disappearance of the wild fauna of the sub-continent during the past fifty years. Even those whose experience only carries them back a dozen years, and whose knowledge is concerned with but a limited portion of the country, cannot be blind to the existence of this process of extermination, while those who have wandered afar during the past twenty-five years, and who remember the amazing wealth of animal life of which the country boasted even in those days, stand aghast at the dismal tragedy which is daily being enacted.

The former can no more grasp the reality of the profusion of wild game as it existed twenty-five years ago than the latter, in their earlier days, could realise that its extermination would ever be as nearly complete, relatively, as it is now.

The humane man, and more particularly the true lover of nature, can but feel infinite regret for the purposeless waste of life which has been going on ceaselessly during the last two generations, and which has deprived the Continent as a whole, and the southern portion in particular, of one of its grandest assets, and of one of its most valuable educational media.

And if it is persisted in the writer can already see, in imagination, a country which once boasted the possession of an apparently inexhaustible wealth of faunal life become a void and lifeless waste.

There is no unprejudiced person but will admit that while this country possesses scenic beauties in its mountain regions, and in many of its tropical parts, the vastly greater portion of its land surface is dull and uninteresting, and that where it is otherwise, it is almost solely due to the presence of animal and bird life. Under that spell the most desert regions become charmed and quickened into beauty, and keen interest and

pleasure supplant dullness and monotony in the heart of the beholder.

The writer cannot but believe that if the attention of the thinking and observant public in this country could be seriously directed to this subject—if the certain results of inaction, indifference, neglect, and, worse still, of opposition to the principles of game protection could be brought home to them, a large majority would surely rouse themselves to find that *modus vivendi* by which the hateful conditions above suggested might be staved off at a minimum risk to themselves and their interests.

That the Government of Natal has not been backward in falling into line with other Administrations both within and without the Union a glance at the history of game preservation in this Province will make sufficiently clear; and I am enabled through the courtesy of the present Administration, and the personal assistance rendered by Mr. John M. Herschensohn, to present such a brief view.

Fifty years ago the first Game Law in Natal was enacted, and was known as No. 10 of 1866, which fixed a close season for game birds and crane (species not mentioned) from September 15th in one year to April 15th in the year following. Twelve species of game animals (including hares) were provided with a close season between the 15th August and the 30th November in each year. Eland, Hartebeeste, Ostrich, Secretary-bird, and "Turkey buzzard" (Ground Hornbill) were declared Royal Game. Provision was made for the protection of growing crops, and a penalty imposed for contravention of the Law.

Eighteen years later this Law was repealed and re-enacted by 23 of 1884, by which the close season for birds was fixed at from the 15th August to the 30th April, and for the game animals at from 30th June to the 31st December.

Wild duck were added to the Schedule of game birds, and "rabbits" and bluebuck (Blue bush-duiker *C. monticola*) to that of the game animals, while buffalo, "kwagga," zebra, and reedbuck were omitted therefrom.

Hippopotami, reedbuck, springbuck, and blesbuck were added to the Schedule of Royal Game.

Law 28 of 1890 introduced a provision prohibiting the killing of game at all times by means of traps, snares, pit-falls, etc., and the penalty for contravention of the Ordinance was increased.

Rooi Rhebuck, bushbuck females, and "red bushbuck" (Red bush-duiker, *C. natalensis*) were included amongst the Royal Game.

Law No. 16 of 1891 repealed all previous laws and re-enacted them with certain amendments, amongst others permitting the destruction of game birds by means of sticks, and requiring the permission of the Governor to enable owners and occupiers (to whom the concession was restricted) to shoot

Schedule C Game, presumably upon their own properties. Provision was made fixing the minimum penalty for contravention at a fine of £2, and the maximum £20 as before.

Pauw, crane, and korhaan were removed from Schedule A to Schedule C, Royal Game, and "rabbits" were omitted from the game animals.

It should be noted that the foregoing Law was based upon the report of a Committee "appointed for the purpose of considering the Game Laws in force in this Colony, and of advising the Government of the alterations, if any, which were desirable." Every effort would appear to have been made with a view to obtaining the fullest information possible, in order to assist the Committee in framing their recommendations.

The most important of these latter were that the close season for all game be from the 16th August to the 30th April, both days inclusive; that the taking of game by any manner of traps be declared illegal, and that heavy penalties be laid down.

The signatories to these recommendations were Colonel J. G. Dartnell, C.M.G., H. Binns, Esq., M.L.C., and T. K. Murray, Esq., M.L.C.

A subsequent Act passed in 1894, amended Law 16, 1891, by limiting the Governor's permission to destroy Royal Game to the open season only, and by adding wild duck and geese to Schedule A.

Further, Bushbuck females were removed to Schedule B, Steenbuck to Schedule C (Royal Game), and the Ground Hornbill was excluded altogether.

Game matters in Zululand appear to have first come under legislative control in 1890, when, under the provisions of Proclamation 3, the close season was fixed as from the 1st August to the 31st March for Schedule A game, *i.e.*, all the game birds with the exception of pauw and wild duck, these two latter birds being placed in Schedule B with a close season provided from the 1st October to the 31st March.

Schedule C game comprised "rabbits," hares, and all the smaller antelopes with the exception of the Klipspringer, which was placed in Schedule D (Royal Game), together with Reedbuck, Blesbuck, Springbuck, all the larger antelopes, Buffalo, Rhinoceri, Hippopotami, "Kwagga," Zebra, Ostrich, Secretary-bird, and the Ground Hornbill, which still appeared under the inexplicable name of "turkey buzzard."

The occurrence of the words "waterbuck and piva" and of "kwagga and zebra" in juxtaposition upon the list of game reads very quaintly.

The special permission of the Governor or of the Resident Commissioner was necessary before Royal Game could be shot.

The penalty for contraventions was fixed at a maximum of £10, except in the case of the elephant, for destroying which the penalty was from £50 to £100.

Proclamation 5 of 1893 repealed and re-enacted the above, the close season for Schedule A game being altered to the 1st



September to the 31st March, while provision was made for the forfeiture of game trophies illegally obtained.

The oribi was removed from Schedule C to D, and rhinoceros, water buck, wildebeest, "kwagga," zebra, kudu, and reedbuck were removed to Schedule C.

Zululand Proclamation No. 5 of 1895 amended the above by deleting rhinoceros and waterbuck from Schedule C, the former being included in a section of the Proclamation referring to the elephant, which practically gave absolute protection, while the latter was again placed in Schedule D.

Zululand Proclamation No. 2 of 1897 repealed and re-enacted the above, the Livingstone's Suni (Zululand sub-species) being added to Schedule C.

Hippopotamus and Black Rhinoceros were placed in a separate Schedule E, and a licence requiring the payment of £10 for each animal was demanded, not more than two of each species being allowed to any one applicant, and a maximum penalty of £25 for contravention in respect of either of these animals was fixed.

Section 14 of this Proclamation provided for the first establishment in Zululand of Game Reserves, although these did not then become Reserves in the true sense of the word, as shooting was permitted therein upon permit, the charge for which was fixed at £10 per month or any less period, while provision was made for the surrendering to the Government of a portion of the trophies.

For hunting in these Reserves without a permit a maximum penalty of £10, and a minimum of £5 was provided for.

Four such Reserves were established, under Zululand Government Notice 16, 1897, to which reference will be made later.

Section 18 of the above Proclamation provided for permission being granted to natives to kill certain game, out of season, when found damaging crops, and in times of scarcity.

Act No. 8, 1904, consolidated the Game Laws of Natal and Zululand, repealing the previous Natal enactments, and Zululand Proclamation No. 2, 1897.

The outstanding provisions incorporated therein were—

(1) The close season in Zululand was made uniform with that in Natal.

(2) The destruction of all but the smallest game with a shot-gun was prohibited.

(3) The employment of natives to hunt game, except in the capacity of beaters, was prohibited.

(4) The penalties were increased all round, and the minimum penalty of £2 was done away with, while Stamp Duties were imposed in respect of Schedule D game, and in the case of Schedule E game, even the Governor was deprived of the right to issue permits for these.

Act No. 8, 1904, was repealed and re-enacted by our present Ordinance.

Referring again to the establishment of Game Reserves in

Zululand, it would appear that insufficient consideration was given at the time to the effect which such Reserves might have upon the economic conditions of the country. This I think will be sufficiently evident if we glance for a moment at the areas in question.

One Reserve, "Umdhletshe, No. 1," included portions of the present Shooting Areas Nos. 6 and 10, together with a large portion of Native Reserve No. 12, now apportioned to the Mdhletshe and Mandhlagazi tribes. This Reserve was abolished in 1897, under Government Notice No. 192.

Another Reserve, known as the "Hluhluwe Valley, No. 2," included, in addition to the area now styled the Hluhluwe Reserve, that portion of Native Reserve No. 3 and of Crown Lands which now forms the southern portion of Special Shooting Area No. 7.

The "St. Lucia Reserve, No. 3," included the present Dukuduku Reserve, together with a tract of country about equal in area to the latter.

"Umfolozi Reserve, No. 4," had identically the same boundaries as the present Umfolozi Reserve.

Subsequently a fifth Reserve was added and notified under Government Notice No. 93 of 1905 in the *Natal Government Gazette*, and was known as "Reserve No. 5."

This included practically all that portion of the Hlabisa Division, which did not fall within the boundaries of the Mdhletshe and Hluhluwe Valley Reserves, with the exception of the extreme south-eastern area, thus including considerable portions of main transport roads.

This latter Reserve was abolished at the same time and under the same Government Notice as No. 1 Reserve.

Government Notice No. 322 of 1907 provided for the extension of Umfolozi Game Reserve No. 4, with its southern boundary along the line of the Inyamanzi Stream and the Sangoyana Range.

The areas thus included in Game Reserves as above described were at least four times as large as those now set apart for the purpose, in view of which it is not difficult to understand why provision was made for a limited amount of shooting therein, although this concession deprived them of one of the most essential characteristics of Game Reserves, namely, that their occupants shall be free from disturbance.

It may be assumed that these Reserves were originally set aside upon the suggestion of the Resident Commissioner, and the action was, at any rate as far as the Natal Parliament is concerned, fully endorsed, no complaint against these Reserves being made at the time.

Between the years 1907 and 1911, the southern boundary of the Hluhluwe Reserve (*i.e.*, the area originally styled "Hluhluwe Valley Reserve No. 2") was defined as starting from the highest point of the Zankomfi to that of the Mtolo, and thence to the Maxatshwa, thus necessitating a slight alteration of the

eastern boundary-line, which now ran from the last-named point to the original one on the Mzinene River.

During the same period the Dukuduku Reserve was limited to its present boundaries, as was also the Umfolozi Reserve.

It should be mentioned that at the time of the establishment of the first four Reserves above mentioned the shooting on permit to which reference has been made was allowed only in Nos. 1 and 2, none whatever being permitted in 3 and 4.

I am not certain of the reason for the abolition of Reserves Nos. 1 and 5, but have understood that this land was intended to be divided up for European occupation.

During the year 1911 a Game Conservator was appointed for Zululand, with a staff of native Game-guards to assist him; the headquarters of this official were established at Nongoma, this place having been selected for the purpose by reason of its being in telegraphic and telephonic communication with all the magistrates in Zululand.

In 1912 it was considered advisable to add another Game Reserve to the three already existing, and this was done under the Provisions of Section 8 of Act No. 8 of 1906, as amended by Section 81 of the South Africa Act, 1909, whereby the present Mkuzi Game Reserve was established. This is situated on the south bank of the Mkuzi River, in the Ubombo Division, with Native Reserve No. 2, as its south-western boundary and the Msunduzi River on the south-east.

The object sought to be obtained by the establishment of this Reserve was the inclusion of certain species of game not found in either of the others, *viz.*, Impala, Inyala, Red Bush-Duiker, and a local sub-species of Livingstone's Suni.

It may be mentioned that the area thus included was practically uninhabited, and that the game therein had for a considerable period been partially protected by the Magistrate at Ubombo, in whose Division it is situated, and whose "mufti" Reserve is the name by which it was known.

A brief reference to the leading characteristics of the present four Zululand Game Reserves may be of interest, as serving to show that they supply the needs of all the different classes of game which are to be found in the country.

The Mkuzi Reserve, in extent about 62,000 acres, consists for the most part of rolling country formed by the foot-hills on the northern slopes of the south-eastern extremity of the Ubombo Range; these fall away gradually towards the Mkuzi River, within a few miles of which the ground again rises slightly and forms an extensive plateau. On the eastern side the country slopes steadily towards the Mlambomudi River ("Soma" on the maps), along the banks of which it is very flat and unusually open for thorn-country.

Buffalo used to be fairly plentiful in this Reserve, in the neighbourhood of the Delakufa, where the bush is thick and dense reed-beds clothe the river banks. By 1911 their numbers were reduced to two, both large bulls, and these died, as far

as is known, natural deaths during 1912. The unusually massive head of one is, I believe, now in the Natal Museum.

There is a troop of about forty Impala in this Reserve; these, at one time, were in the habit of crossing the Mkuzi freely, and could be as often seen on the north bank as on the south, but the great amount of shooting that is done on the former side has taught these wary animals that safety lies to the south in the Game Reserve.

Kudu are more or less resident therein, though after the manner of their kind, are given to frequent wandering.

Wildebeesten (Brindled Gnu, *C. taurinus*) are fairly plentiful, as are all species of the smaller antelopes which are represented in Zululand, with the exception of the Blue bush-duiker.

Mountain Reedbuck are found on the foot-hills, and in the dense bush along the Mkuzi the beautiful Inyala (*T. angasi*) is plentiful. In certain places in this bush, principally about the Delakufa, a form of Bush-buck is found having straw-coloured tips to its horns, similar to its congener the Inyala. They are decidedly scarce, but a few are found on the opposite bank of the river, and again a few in the Mtshazi Bush on the Pongolo.

Lions are mainly visitors in the Reserve, coming across usually from the north bank, though recently I have had reason to think that a few are resident. Leopards occur but rarely, though they are very common on the other side of the river, outside the Reserve.

The Hlulhuwe Reserve is in many respects the "pick of the bunch," mainly on account of the very great diversity of land surface and climate of which it boasts. It may be described as a central valley containing but little flat ground, being broken up into ravines and kloofs throughout its greater area, and rising on all sides to considerable mountain ranges. The northern and north-western portions are very hilly and rough, and covered for the most part with dense bush, amounting in places to actual forest, of which the Pongwe is the largest and most dense.

This Reserve is the true home of the buffalo, where, in the safe retreat afforded by the above-mentioned bush, it breeds freely. In the more or less open thorn country outside the main bush, herds of from twenty to forty individuals may often be seen grazing in the early mornings and late evenings.

The Prehensile-lipped rhinoceros, or as it is familiarly styled, the "Black Rhino," is also thoroughly at home here, and along the margins of the two fine streams which water the central portions of the Reserve, the Amauzibomvu and Amauzimnyama, this uncouth, pre-historic-looking creature is very commonly met with.

The Impala, Inyala, and Suni are not represented here, nor until recently were either Wildebeesten or Zebra. The shooting outside, however, has resulted in a fair troop of each of the latter species taking up its abode in this safe retreat, where they are doing well.



A scheme of acclimatisation in connection with this Reserve was favourably considered by the Administration a short time back, the object of which was to introduce certain other game into the country. Eland, the Cape or Red Hartebeest, Sable and Roan Antelope, and Sassaby (*Alcelaphus lunatus*) were the species indicated, all of which would without doubt thrive here.

The idea has been temporarily abandoned, after it had actually gone so far as the selection of the site, the Amanzila Valley, in the western portion of the Reserve, having been chosen for the purpose.

Unfortunately there are several natives living within the boundaries of this fine Reserve, who—together with those living actually upon them, and others in very close proximity outside—give constant trouble.

The area of this Reserve is about 40,000 acres; it is the only one of the four into which wheeled transport can be taken, without encountering almost insuperable obstacles, there being a track, which with the expenditure of a little time and labour, might be made available for wagon transport, leading to the Amanzila Valley from the Inhlwati-Makowe main road.

One of the greatest advantages possessed by the Umfolozi Game Reserve is that it is of no use for any other purpose, the climate therein being very deadly.

It consists for the most part of low, flat thorn country, the only elevated portions being the Dengeza, Impila and Amantiyane Hills, and a slightly raised plateau in the eastern portion.

Except along its northern and southern boundaries, formed by the Black and White Umfolozi Rivers respectively, it is poorly watered, save during the summer months, when practically the whole of it becomes a quagmire.

Game is not exceedingly abundant therein if we except Wildebeesten and Zebra, though wart-hog are surprisingly numerous. Small game is generally scarce, though in the bush along the rivers, Bush-buck abound, and Duiker and Steenbuck are plentiful in the eastern section.

The fact that small game are thus generally scarce has been put forward by those who should know better, as proof of the overwhelming numbers of vermin; this is most misleading, the actual reason for their scarcity, as is the case in the Ubombo thorn veld, being that the physical conditions of the country are unsuitable.

Buffalo and Prehensile-lipped Rhinoceros are fairly numerous, but it is as the home of the Square-mouthed Rhinoceros, commonly known as the "White Rhino," that this Reserve may be considered as one of the most valuable in Africa. Nowhere else on the Continent, save in an area on the Blue Nile, can this weird creature be seen at the present day.

It is exceedingly difficult to compute their numbers even approximately, but I consider that there are between thirty and forty adult animals actually resident in the Reserve, as well as a useful number of calves. Some of them occasionally cross to

the south of the White Umfolozi, and it is true that at any time a number of these animals may be encountered there, outside the Reserve, some, at least, of which are probably resident outside. This fact led to the extension of the Game Reserve to the boundaries provided for under Government Notice No. 322 of 1907, previously referred to, but owing to complications which subsequently arose in connection with the occurrence of Nagana, last year it has reverted temporarily to its old boundaries between the Umfolozi Rivers.

The area of this reduced Game Reserve is approximately 75,000 acres.

The Dukuduku Reserve, lying between the lower reaches of the Umfolozi River and the sea, and to the north of Native Reserve No. 4, merits but little notice; it is a sandy waste of low bush country, and contains little game beyond Waterbuck, Bushbuck and Red Bush-Duiker.

Bush-pigs are very numerous, and until quite recently it was more or less the headquarters of *the* Zululand Elephant, a magnificent bull, which in February of this year was done to death by a native, for which scandalous deed he was mulcted in a fine of £50 or six months' imprisonment!

It was nearly a month after the event that the animal's death became known, by which time, of course, the hide was useless, and even the skeleton had been partially damaged. Steps were at once taken to recover as much of the latter as possible, and with the kind assistance of some of the neighbouring planters the Game Conservator was enabled to carry out this work.

Reference has already been made to trouble which has from time to time been caused by the proximity of natives' kraals to the Reserve borders, and the presence of others actually within the boundaries.

These constitute, in my opinion, a serious menace to the well-being of these Reserves, especially in view of the fact that practically all the natives possess dogs, some of which have actually been shot when in pursuit of game therein. Moreover, twice during the last two years one of the Reserves, the Hluhluwe, has been burnt out almost from one end to the other, with the result that much game has been driven outside, and on the first occasion a young rhinoceros was burned to death.

It may also be recorded that on one of these occasions the natives who fired the grass and who were charged with the offence in the local Court, were acquitted!

It cannot be too urgently insisted that a Game Reserve, if it is to fulfil its functions properly, must be an actual *sanctuary* within which the animals must be assured of absolute immunity, not alone from harm, *i.e.*, bodily harm, but also from all disturbing elements of whatever nature.

Of the latter, an advancing wall of fire, five miles in length, leaping along through four feet high grass, may certainly be considered a type.

The confidence which may be established in wild animals

is little short of surprising, but it requires time, and unbroken quiet. That such confidence was becoming acquired between the years 1911 and 1914, was evidenced by the fact that the writer has on several occasions seen from his guard-but on the Kwankwa both reedbuck and bushbuck grazing in the middle of the day within fifty yards of the hut, and entirely disregarding the native guards who were sitting round their fires eating and talking.

Only in a locality in which they considered their safety assured would the wary bushbuck so far forget his customary caution as to venture on a prolonged midday meal.

Deliberate poaching in the Game Reserves is almost a thing of the past as regards Europeans, although last year, when the Nagana panic was at its height, and the whole country south of the White Umfolozi was thrown open to indiscriminate slaughter, several parties entered the Reserve from that side and destroyed game. The natives, however, continue to poach whenever they get the opportunity, especially those living near the Reserve boundaries; and it is quite impossible, with the comparatively small force of guards at the disposal of the Game Conservator, to prevent this.

Zululand is a large tract of country to patrol with less than twenty men, and it is fairly certain that if *all* parts were patrolled (as they should be), each individual area would be visited about once every two years. The only plan, therefore, to adopt is to station guards at certain spots where the greatest danger threatens, making occasional changes as circumstances suggest.

The question of the occurrence of vermin in Zululand is one which has given rise to a great amount of inconsequent chatter, and the time-worn shibboleth, "vermin is bred in the Game Reserves," is raked up whenever the occasion seems to warrant it. It is an old tale, long ago worn to shreds in the Transvaal, where the Game Warden clearly showed its absurdity.

It still passes muster here amongst a certain class, mainly consisting of those who merely talk for talking's sake, and who the while, know nothing whatever about the subject.

Let us for a moment consider the matter dispassionately, and ask ourselves (1) what reason can be given why vermin should show a partiality for the Reserves as breeding grounds, and (2) is the statement that they do so borne out by facts?

(1) Two reasons are commonly advanced for their partiality to the Reserves, *viz.*, on account of the small risk of disturbance therein, and because they can there obtain plenty of food. As to the first of these, it is certain that outside the Reserves there are just as many quiet, undisturbed spots as inside, and moreover, those species of vermin which "lair down" in holes of the ground (and amongst these is to be reckoned the hunting dog, the greatest criminal of the lot) are by no means particular in this respect.

I know of a spot where, until last year, two litters of wild

dogs were brought forth regularly each year, and upon three occasions the litters were destroyed by the Game-guards; a constantly-used wagon-road passed within 80 yards of the place.

In recent years lions have occasionally bred in the Unifoloji Game Reserve, but their chosen breeding ground is the Ubombo thornveld, in which, with the exception of Hlabisa, more shooting is done than in all the other divisions put together.

Unfortunately for the food argument, those who make use of it are constantly telling us that the food supply is becoming exhausted in the Game Reserves, and that all the small game is killed off by the vermin; it is therefore difficult to understand why, if that is the case, vermin should continue to show any partiality for such places.

The fact of the matter is, and this also answers the second query propounded, that it is a case of any stick being good enough to beat a dog with. My records show that for each littering down place of wild dogs found in the Reserves, we have found seven outside. And in any case, even were these figures reversed, it would have very little signification, because these animals are the most pronounced wanderers of all the mammal fauna of Zululand, never remaining more than two or three days at a time in one locality. True, when the period of parturition arrives, the bitches are compelled to remain longer in one spot, but when it is over they quickly rejoin the pack.

The following figures may be of interest: During the year 1913, twenty-one wild dogs were killed by the Game Conservator and his staff; during 1914, the number killed amounted to fifty-two, and in 1915 to sixteen; giving a total of 89. Of this number, 17 were killed in Game Reserves, and the remainder outside.

During the past three years a further record has been kept at the office of the Game Conservator of the localities (confined to the Divisions of Mahlabatini, Hlabisa, Ndwandwe, Ubombo and Ingwavuma) in which wild dogs have been seen, local natives having given considerable assistance in the matter. The data are still insufficient to enable a definite statement to be made upon the subject, but already much has been learned of their movements, which have been recorded upon a large scale map. It would be trespassing too much upon the space allotted to me if I were to set forth the results obtained, even though they are of a most interesting nature.

The Nagana question and its relation to game preservation now claims attention, and it is indeed a thorny one.

I have no definite information as to the period when, and the manner in which the controversy upon this subject first arose, but I find that during the course of the discussion upon Act No. 18 of 1906, whereby the Laws relating to game in Zululand and Natal were consolidated, the Prime Minister (the Hon. C. J. Smythe) referred to the fact that Zebra and Wildebeesten were held to be largely responsible for the spread of the disease.

Since that time apparently the outcry against the game as being the responsible host of the trypanosoma, and against the



tsetse-fly as the principal causal agent, has been maintained with fluctuating intensity, according to whether any particular season has been favourable to the occurrence of the fly or otherwise.

It may be noted that this agitation has invariably been directed against "game," a word which is almost universally understood to signify the various species of the Family Bovidae, together with the single representative of each of the Families Equidae and Hippopotamidae, and two species of Rhinocerotidae.

For this reason I consider that the word "Game" was somewhat ill-chosen by the Veterinary Research Officer in his recent able report upon the occurrence of Nagana in Zululand.

The brief explanation given by him of his use of the word fully suffices for those who *wish* to understand it, but for those who wilfully or ignorantly fail to do this, the constant reiteration of the word "Game" may be, and I know has been, harmful and misleading. At least two species of animals in Zululand which are never looked upon as game, are proven hosts of *T. brucei*; these are the hyæna (presumably *H. crocuta*) and the Bush-pig (*P. charopotamus*), the latter a great wanderer, and existing in incredibly large numbers in this country.

Another class of vermin, the Hunting Dog (*L. pictus*) has not, as far as I am aware, been yet experimented upon in Zululand.

It must be quite evident, therefore, that to use the word "game" when referring to the responsibility of the mammal fauna generally of the country for the dissemination of Nagana is to play into the hands of those who only wish to hear the final doom pronounced upon those creatures, the sale of whose horns, hides, and meat, may put a few miserable shillings into their pockets.

This point is not brought forward for the purpose of endeavouring to cloak the real issue, indeed there is little doubt but that such an attempt would defeat its own ends. But seeing how strenuous is the opposition in some quarters to game preservation, it is as well that it be made perfectly clear to what extent that opposition is justified.

It will be conceded that unanimity of opinion is a very desirable asset for an opposition to possess, but it is one which we find deplorably lacking in those who are "up against" protection. The advocates of indiscriminate slaughter comprehensively blame all the game, and wish to see a clean sweep made thereof, but that is so manifestly absurd a proposition as to be unworthy of comment.

The moderates of the party are far less bloodthirsty; but there is much diversity of opinion amongst them as to where the blame should be apportioned. To take two instances by way of illustration: A recent Magistrate in Zululand, very keen upon shooting, used to practically stake his reputation upon the culpability of the Black Rhinoceros, which he stoutly maintained is the *fons et origo* of all the trouble.

Another, a very old resident, who is not lacking in self-

assertion, has made certain statements in letters addressed to Government officials. In one he has made it quite clear that he considers the kudu mainly responsible, while presumably exonerating the zebra, for he writes "zebra and donkeys quite take to each other. I have had zebra stay all day with my donkeys . . . I had two donkeys go off with zebra for miles." In another letter he writes: "The fly are harmless where there are no kudu for them to suck from." Further, after eulogising the zebra as a transport animal, he adds: "They are not affected by the fly," a remark which, by the way, has little bearing upon the point at issue! These are definite statements, almost amounting to dogmatism, yet their value may be assessed from the conclusions arrived at by the Veterinary Research Officer after his work in Zululand. He placed the kudu first upon his list of dangerous and suspected game, while the zebra came next, and the bush-pig (which is "vermin") is third. The above-mentioned resident has always asserted that the waterbuck is blameless, but we find it upon the black list of the Veterinary Research Officer, though whether justly so I am inclined to doubt.

All this goes to confirm the old saying, "*quot homines, tot sententia*," and at least it should satisfy one section of the opposition, seeing that amongst the diverse opinions expressed, scarcely any one of the game animals escapes condemnation.

The rinderpest plague of some years ago has furnished the opposition with a good deal of material for apparently plausible argument, if positive assertion may be so called.

The Veterinary Research Officer throws very little light upon its relation to the mysterious partial disappearance of the tsetse-fly, with which it certainly synchronised, not only in Natal but in the Transvaal also. It is commonly asserted that the fly died off because their food supply failed through the destruction of buffalo and kudu by the plague, but I do not think that argument will bear investigation.

To be of any value it would have to be shown that not *only* two sources of food supply failed, but that there was an appreciable diminution of *all* sources. But we know that this was not the case, and that on the contrary, it being well established that the fly feeds on all warm-blooded mammals, there could have been but a comparatively small percentage of the supply cut off.

Zebra, the second on the black list, were immune from the disease; and wildebeesten, fourth on the same list, suffered but very slightly, if at all; consequently these were still left in great numbers, as well as very many bushbuck.

The presence of these species alone would have furnished ample food supply for the fly, to say nothing of such bush-pig, buffalo, and kudu as certainly remained. Unfortunately for Zululand game, the after results of the plague were not so satisfactory as in the Transvaal, where the fly never occurred again, at least, not in the Game Reserves.

I lean to the opinion that possibly a certain proportion of the

existing fly was killed by absorbing the virus-laden juices from the dead carcasses of animals killed by the plague, and the diminution in their numbers thus caused may perhaps have been accentuated by existing climatic conditions, which were overlooked at the time, or not considered in relation to the bionomics of the tsetse-fly.

The Administration of Natal has for a long time past concerned itself with considering how best to minimise the risk to domestic animals resulting from the spread of Nagana, and in 1913 Mr. C. E. Gray, Principal Veterinary Surgeon (Union) visited Zululand in company with Veterinary Surgeons Power and Ewing, with the object of reporting upon the existing conditions.

A number of recommendations were appended to his report, the most important of which were (1) the destruction of all infected domestic animals; (2) the outlawing of all small game along the road-sides; (3) clearing the dense undergrowth for a distance of 400 yards from the roads at the suspected points; (4) that the natives should be compelled to exercise greater care in herding their stock, and be encouraged to keep the bush cleared in the vicinity of the places where their cattle water.

As a result, Nos. 2 and 3 were adopted early in the year 1914, and in addition to abolishing the close season in the suspected areas with respect to small game, a Proclamation was issued under which reedbuck and kudu of both sexes were also outlawed. No. 1 recommendation was discarded, but I consider it unfortunate that in place of the destruction of infected stock a policy of immediate segregation was not adopted.

I am unable to say whether anything was done with regard to (4), but it is certain that if any instructions were issued to that end they fell upon deaf ears.

In the same year, 1914, an expedition set out from Pretoria, styled the Bacteriological Research Expedition; but though much game was destroyed, our knowledge upon the subject of the relation between tsetse-fly and game was but little advanced thereby.

In June, 1915, a deputation from the sugar-planters in the Lower Umfolozi Division was sent to Pietermaritzburg, and was accorded an interview with His Honour the Administrator, the Game Conservator (Zululand) being requested to attend.

The result of the interview was that the whole of the country south of the White Umfolozi, including that portion which had recently been added to the Umfolozi Game Reserve, and lying between the White Umfolozi and the line Invamanzi-Sangoyana, was thrown open to shooting upon the ordinary Game Licences (£1), the only restriction imposed being that neither Klipspringers nor Rhinoceros might be shot.

Further, it was enacted that under the provisions of Proclamation No. 8, 1915, all Schedule A game (to which both sexes of Reedbuck, Waterbuck, Kudu, Wildebeest, Buffalo, and Zebra were now added) might be shot upon the £1 Ordinary Game

Licence within an area of three miles on either side of the Somkeli-Hlabisa-Nongoma, and the Somkeli-Umduna-Ubombo roads.

Proclamation No. 10, 1915, added to the above the main road Mahlabatini-Nongoma-Ubombo, and the branch road from the Mbhekamtetwa over the Msunduzi River to Banganomo.

Natives were given permission to destroy any of Schedule A game over their grazing areas.

The worst feature about it was that whilst this legislation was enacting, preparations were already nearly completed for the visit to Zululand of the Veterinary Research Officer, Mr. D. T. Mitchell, who was to work there in connection with the occurrence of Nagana. This officer therefore entered the country, and had to prosecute his researches under abnormal conditions, caused by the scattering of the game outside its usual haunts.

Of all or even an appreciable part of all that occurred when these areas were given over to practically free shooting, I prefer to say very little, as the details were too horrible. That people calling themselves human beings could ever have been so lacking in all humane feeling was indeed a revelation to me. There were but few, very few, brilliant exceptions—men who were sportsmen and not butchers, and who scorned to emulate the deeds of the rabble.

For the rest, well, they laid themselves out to slaughter, and for ever earned the contempt of all true sportsmen. It was indeed a "reign of terror" for the beautiful and defenceless creatures which have been placed upon this earth for man's use, not abuse; for his enjoyment, not for the exercise of his spirit of blood-lust.

And, after all, the game is not to blame, the blame lies at the door of the causal agent, the tsetse-fly.

The Proclamations above referred to were revoked with effect from the 1st May, 1916, under Proclamation 7, 1916, which authorised the destruction of the different species of game supposed to be responsible for the spread of Nagana in all areas of Zululand, with the exception of Game Reserves and certain Special Shooting Areas which were defined in Provincial Notices Nos. 74 and 103, 1916.

At the same time Proclamation No. 8, 1916, declared Mountain Reedbuck (*C. fulvorufula*) to be Royal Game, as also Klip-springers.

The definition of the Special Shooting Areas was based upon that portion of the Veterinary Research Officer's report which records his conclusions in respect of certain areas, mainly around the Game Reserves, where he considers that Nagana is endemic.

Within these Special Areas game could be shot upon payment of reduced fees, while outside, in the Open Areas, Permits costing £2 each for the open season, or £5 for the whole year, were alone required. The Open Areas, it may be remarked, embraced practically the whole of the Zululand Native Reserves, while most of the Crown Lands fell into the Special Areas.

The objects sought to be attained by the establishment of



the latter were, first, to include within their limits areas in which, owing to the presence of water and dense bush, and the proximity of the Game Reserves, Nagana might be considered to be, as the Veterinary Research Officer expressed it, endemic; and secondly, to provide buffer areas where possible, round the Game Reserves, which would tend to prevent persons who had only the £2 licences from trespassing in the Reserves, as was done by both Europeans and natives during the latter portion of 1915 and the opening months of 1916.

It was expected, and hitherto the results have justified that expectation, that many more Open Area Licences would be required than for Special Areas, with the result that in the former game would quickly be diminished in numbers, while those which escaped would be urged towards the Special Areas, and thence, by the holders of licences for those Areas, into the Game Reserves.

The success or failure of this scheme depends entirely upon whether the pressure is exerted from behind or in front, *i.e.*, from the Open or the Special Areas. If from the former, success is, I believe, assured; but if the pressure slackens in the Open Areas, and is exerted from the direction of the Game Reserves and Special Areas, failure will certainly result.

It might be contended that in the latter case there is as much chance of the game flying towards the Game Reserves as to the Open Areas, but I consider that most unlikely in consideration of the relatively vast size of the latter. And even if it were to go in the direction of the Reserves, these are no small that they would be quickly crossed and the game would again find itself under fire.

And, obviously, if the object be to keep the game in the Reserves, or as close thereto as possible, at no time should the pressure come from that direction.

The Native Affairs Department is, of course, fully justified in doing all it can in the interests of the natives, that is its *raison d'être*; but it seems that if the question be considered in a sane, common-sense manner, it will become apparent that to permit the natives to harry the game all the year round, *especially* upon the immediate borders of the Reserves, is not in consonance with their best interests.

In the first place, these localities, being near the Game Reserves, are considered by the Research Officer to be amongst those in which Nagana is endemic, and to permit natives, particularly such as own stock, to continue to live therein, merely because they wish to, does not seem to be a course of action conducing to their interests.

It is very similar to permitting a child to continue playing with a box of matches in the middle of a straw-yard, merely because he wishes to do so. Moreover, during the close season, owing to the rains and length of the grass and other cover, there will be a distinct diminution in the amount of shooting done in the Open Areas, that is to say, the pressure from behind will slacken. Continued harrying of the game on the Reserve borders.

and throughout the Special Areas, can therefore only result in driving a large number back into the Open Areas.

It must be borne in mind that in his heart the native does not believe in the harmfulness of the tsetse-fly.

I desire particularly to emphasise this statement, because a great deal of twaddle has been said and written to the contrary.

The inherent belief amongst them is that deaths amongst cattle, etc., in game country is that they are caused by the game grazing over the same ground as the cattle, these latter thus being compelled to swallow some of the game saliva ("amat'enyamazana" as they put it). It is true that nowadays many natives, if asked the cause of such fatalities, will say that it is the fly, because they hear Europeans say so, but *they do not believe it*, hence they fail to understand that there is any difference between a fly area and another, and would as soon live in the one as the other.

Another cogent reason for their choice of these out-of-the-way places is that they think they run less risk of detection when indulging in their poaching and trapping proclivities.

There is yet another very important point in connection with natives living in fly-areas. Mr. Mitchell has stated in his report that on the borders of the Game Reserves, "the native kraals which are found here, in practically every instance, lost their cattle from Nagana. In spite of the knowledge that the area is a deadly one for stock, the natives, however, usually prefer to remain."

Elsewhere, when considering the "spread of Nagana," he states: "Wandering game must be held as most responsible for the spread of the disease, but domestic animals suffering from Nagana also constitute a grave danger when in the vicinity of a tsetse-fly area."

Quite recently some correspondence passed between the Administration and the Native Affairs Department upon the subject of natives being permitted to destroy game elsewhere than upon their own grazing areas, and the latter urged, in support of the concession, that owing to Nagana having encroached so much on Native Reserves, the natives are forced to change their grazing grounds constantly in order to find land not infected with Nagana.

I ask any unprejudiced person to place this statement side by side with that of the Veterinary Research Officer above quoted, and then to say whether it is in the interests of the natives to permit them to live with stock in endemic centres of Nagana, and then to move their infected cattle about in their ward at their own sweet will.

If it is agreed that these Special Areas are "endemic centres," then it would be only an act of justice to the natives living therein, and owning stock there, to save them, as it were, against their will, and not to permit them to remain and constitute themselves a "grave danger" to the community at large

by indiscriminate moving about the country with infected animals.

And if it is against their interests to be permitted to remain hugging the Reserve boundaries, what can be said concerning those who are—and for several years past have actually been living *in* the Game Reserves?

I would like, with all deference, both in the interests of game protection and that of the natives, to urge that the matter be taken up in a frankly conciliatory spirit between the Departments, each being prepared to grant concessions where such are necessary, reasonable, and possible, because I believe that the action would be justified by results.

That infected stock in Nagana areas is a source of "grave danger" has been conclusively shown, and there should be a way of counteracting that danger, that way, it appears to me, being by the segregation of infected stock. The carelessness displayed in the natives' herding arrangements is another source of danger, and is due, I believe, to the peoples' inability to realise that the game, apart from a transmitting agent, is harmless.

I have repeatedly seen troops of cattle grazing on warm, windless summer mornings in the thick scrub and bush by the Mkuzi Drift, where they had been taken to water, while the herd-boys who were responsible for them were half-a-mile away up on the hill-side, playing games.

As there were certainly infected cattle amongst the herds, and all the conditions were favourable for the fly, it is not difficult to understand that the results of such carelessness would probably be disastrous.

It is generally admitted that the conditions which obtain in respect of the relationship between tsetse-fly and game vary greatly in widely-separated localities.

A remark made by Mr. Mitchell in his report tends to confirm this when considered in the light of the experiences of others.

He says: "The association between game and tsetse-fly is a very close one, and so far it has not been possible to procure fly, except in areas where game were numerous. In such cases the tsetse-fly has been found in practically all instances." It must be presumed that the word "game" is to be understood in the general sense as explained in that report.

In 1896-7, in company with my friend, Capt. (now Col.) Harrison, of the Indian Staff Corps, I was elephant-hunting in the Mozambique Province, and during one portion of our travels we marched from Chirimani across the Lualwa and Lukugu Rivers to Kuruwe, thence through Lukosi across the beautiful Liuli River to Marari, and back to Chirimani by a different route. The distance covered was approximately 534 miles, and on the slightly shorter outward journey we encountered great quantities of game of all sorts, with the exception of elephants, of which, however, we saw spoor on the Liuli.

On the return trip (268 miles), we had the utmost difficulty

in providing food for our carriers, as we did not see twenty head of game on the journey, and were constantly compelled to keep the shot-guns going to supply any sort of bird which offered a shot, in order to get meat.

Yet on the outward journey we saw no tsetse, notwithstanding the large amount of game encountered, though in the sand veld and low, scrubby thorn-bush passed though on our return there were thousands of tsetse, and a small terrier dog belonging to my friend was bitten and died on the 12th day of the return journey.

Major Stevenson Hamilton, late Warden, Transvaal Game Reserves, had an almost similar experience a few years later, when with Mr. C. F. Maugham, H.B.M. Consul at Delagoa Bay, he marched through the Mozambique Province along a route some distance to the north of the route taken by me.

Both in his work on the Game of Africa, and also in the Bulletin of Entomological Research, 1911, July, pp. 111-118, he has remarked upon the prevalence of the tsetse in the almost complete absence of game. Mr. Maugham has personally expressed himself to me upon the same subject in like terms, but in this instance I believe there was not, as in our case, any recorded proof of the infectivity of the fly.

I must dismiss very briefly the question of the supposed occurrence of another form of trypanosomal disease in Zululand, known as "Munca." I have always considered it to be a different form to that of Nagana, and most natives clearly distinguish between the two, while some say the word merely indicates the same disease.

It is pathogenic to domestic stock, though apparently in a less degree than Nagana.

Mr. Mitchell, who describes it as a "chronic form of Nagana," puts forward a very interesting suggestion, *viz.*, that possibly this milder form may be Nagana reduced in virulence by passage through the smaller antelopes.

Upon the subject of the possibility of Sleeping Sickness being introduced by the tsetse-fly into Zululand, I would merely point out that, as far as I am aware, *Glossina palpalis*, which transmits the human trypanosome, is not found in the country. Neither, I believe, is *morsitans*, although the bush in the Ubenbo Low Country, of a xerophilous nature, would seem to be suitable to their habits.

In conclusion, the report to which so many references have been made, carries us a step further on the way to complete knowledge of the association between game and the tsetse-fly in Zululand, and though to my mind, it is not altogether convincing, partly on account of the echo I catch here and there of time-worn Zululand platitudes, and also on account of its being inconclusive in respect of some important points, this latter is doubtless due to the insufficient time at the Officer's disposal, in which to have completed his work.

But it has at least cleared the air somewhat, and has given the Administration a basis upon which to work.



Possibly with regard to game protection, Mr. Mitchell's conclusions upon the subject of endemic centres of Nagana are of the utmost importance. They make it clear that we are brought face to face with two alternatives—that of *completely* "wiping out" all mammalian life, *including that of domestic stock*, within these centres, or of frankly recognising the impossibility of doing this, and thereupon setting to work to devise means whereby the spread of the disease from these centres may be prevented.

I venture to think the latter is the obvious and only reasonable alternative to adopt, but in order to succeed, there must be complete mutual understanding established between the Government Departments concerned.

I have endeavoured to show that it is contrary to the interests of the natives, just as it is to those of game protection, to permit them to live, with stock which is being constantly moved about, in these endemic centres of Nagana. And as there seems no lack of space for them elsewhere, I must believe that if the Native Affairs Department were willing to help in regard to these centres, there would be no insuperable difficulty in carrying out such measures.

We must not accustom ourselves to look at one side of the question only, while ignoring the other, to think solely of the present and leave the future for others. The dance is pleasant, but the piper expects his pay afterwards, and who will pay him?

What will be said when the gradual extermination of game brings the fly to the doors of kraals and other habitations, seeking from domestic stock some of the sustenance they are denied by the scarcity of game, and later still, when virtual extermination is accomplished, and nothing remains but domestic stock for their food supply? Domestic animals, in gradually increasing numbers, themselves constitute almost as serious a factor in the spread of Nagana as do the wild animals, and it would be a grave error to delude ourselves with the idea that when the game is destroyed the fly will vanish.

There is abundant evidence to the contrary, just as there is evidence that wild game can live unassociated with the tsetse-fly. The Transvaal Game Reserves furnish such proof.

I cannot think that the various interests concerned are necessarily antagonistic, but to prevent their becoming so, the party that stands solely for selfish and sordid material gain, the curse of the present age, must be silenced, or if that is impossible, it must be ignored.

Even if the theory of the sole culpability of the game were ever proved, which is about as likely as a final victory for the Huns in the great Continental struggle, still the difficulty would admit of some other solution than that of the wholesale destruction of Africa's wild game.

The voices of those who love Nature's handiwork, the students of her every mood, who are in genuine sympathy with her children of plain and forest, who contend that these are not ours

to do with just what we will, but that they constitute an inheritance to be handed down to *our* children and to theirs again—these voices have an equal right to be heard with those of others.

As Dr. G. D. Maynard, F.R.C.S.E., of the South African Institute for Medical Research, has so aptly put it, "It is easy to propose remedies entailing the adoption of measures of economic importance, but inhabitants who have to reap the aftermath will demand expert opinion and a reasonable probability of success before deciding to carry out such recommendations." I ask for whole-hearted support in the up-hill task which lies before those who seek to preserve to the sub-Continent the most striking and by far the most beautiful of its characteristics.

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**PHYSICAL CONDITIONS ON MARS.**—The British Astronomical Association has recently published, as volume 20, part 4, of its *Memoirs*, the tenth report of the section for the observation of Mars. It is assumed that the mean temperature of Mars must be above the melting point of ice, and almost comparable with that of the earth. The atmosphere of the planet is extremely transparent; its absorbing power for light is feeble, and it has no reflective power. Hence stars must be visible in the Martian firmament in broad daylight. On a small scale Mars has its trade and anti-trade winds; and white clouds, probably analogous to, but much less frequent or dense than our own, float in its skies: their height above the planet's surface is comparable with that of our own clouds. The presence of snow at the poles necessitates the existence of water on Mars, which would appear grey, greenish or black, according to the nature and depth of the bottom. The lawn-green areas are probably due to vegetation, and the vast ruddy expanses have the colour of sandy deserts, in which there are many dusky irregularities, apparently corresponding to our valleys. Change in outline of the greenish marks may be accounted for by growth and decay of vegetation, and the yellow clouds which veil, often for months together, extensive regions of the planet, are probably due to sand dust raised from the desert regions. Mars may therefore still be inhabited, but it has certainly reached the stage of decrepitude in planetary life.

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**PHOSPHATE SCARCITY.**—Consequent upon the difficulty of obtaining phosphatic fertilisers, the President of the Board of Agriculture and Fisheries of the United Kingdom has appealed to farmers to cease applying phosphates to meadows and pastures during the present season, and to reserve all available supplies for other crops, particularly root crops and potatoes. In view of the short supplies, it is advised that only three-fourths of the usual dressings of these phosphatic fertilisers should be applied in the case of lands of uniform quality, and where land in good condition can be given full dressings of farmyard manure the omission of artificial phosphatic manures is suggested.