

The vegetation here seems very dry and sparse. Only with irrigation is anything produced. It is only after rains that the native vegetation becomes active. There is little or no alkali in the river. In fact, the whole country seems remarkably free from alkali. The two shrubs which occur here are Rhigozum tricotomum (branching spine), and a smilax-like tree (ziziphus).

September 17. Went out early, toward the river and a native village. The area about the city is very poor, due probably to constant pasturage by goats. The surface consists of a clean pave of black desert varnished rocks. A few small plants push up between the rocks. The principal pasture grass is Aristida rangei. The goats gather together the leaves in the mouth and give a quick jerk upward, a process which must remove many of the plants from the soil.

9.3.1920
Sand Dunes
with acacia
horrida & large
bush striped
and ziziphus
at edge of
orange River





9-4-1919 *Acacia Hornida*
a small tree 2 ft high.
Spines very white.



Q5---The framework of a Hottentot house. At the present time these are finished off in every possible way, sticks plastered in with clay, or petrol cans cut up and the tin used to cover the framework.



Q6---Natural vegetation. Shows the small angular-branched shrub so prominent in this section. Has the habit of Graeya.

There is also a plant with the habit and color of Kunzia. A mimosa is quite abundant here, Herb. 188. A mesembryanthemum is shown at the left in the preceding picture. Rock-covered surface. The vegetation is now in a winter-rest condition.



Q7---Similar to Q6, but photographed toward the sun.



Q8---A Hottentot woman and child in a temporary habitation. These natives are more or less nomadic, traveling about with a wagon. They build a little shelter of brush like a small corral, and in this do their cooking. The wagon is probably of the Boer type. The Hottentots are supposed by some to be related to the Bushmen, since they have certain morphological resemblance. They are large and black while the Bushmen are small and yellow. The side view brings out the peculiarities of build characteristic of this race.

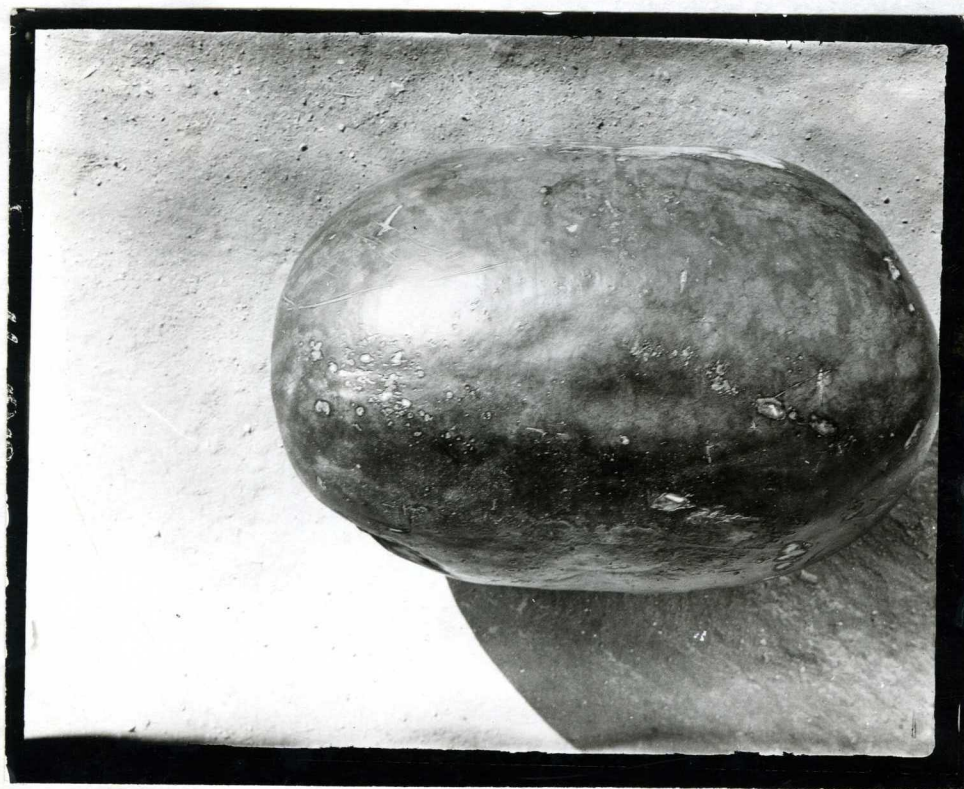


Q9 ---Acacia, Herb. 188; an angular black brush, Herb. 175; also Agave in background. This is typical of much of the country.

Mr. M. W. White, a merchant in Prieska, gave me a Kafir melon which had been lying in his shop for five months and was still in good condition. This melon is used entirely for stock, is known as a stock melon, and to some extent is used in the manufacture of conserve (similar to our citron). It is known as Kafir melon, S.P.I. 48760. It has a particularly solid flesh and very resistant rind. It is about 14" long and about 8" in diameter, and because of its wonderful keeping qualities is especially prized as a stock melon.



Q10---Kafir melon, S.P.I. 48760.



Q11---As above. Another view.

Q12---Cross section of Kafir melon, about 8" in diameter. Seeds dark, flesh almost white. Slightly lemon or watery in places. (This negative has not been seen since development and probably lost during the trip in Africa). S.80, S.P.I. 48760.

Seeds were sent in of the Kafir melon, Citrullus vulgaris, one of the principal melons on irrigated or the better types of dry land. By the natives it is grown usually among the "meles", used largely for conserve and pickles. By some it is said to be soaked in lime prior to being candied.

S. 81, S.P.I. 48761, mtsama or tsama melon, the famous wild watermelon of the Kalahari. Seeds of this melon were collected of G. W. Lawrence of Prieska at Gibeon, German Southwest Africa. This is the greatest source of water for travelers in the Kalahari, said to remain fresh for months, when buried in the soil. Following the rainy season these

melons grow rapidly and are gathered by the natives and buried. Explorers passing through the Kalahari when the melons are out of season often die of thirst. The natives, on the other hand, who have the knowledge of where these melons are buried, are able to continue in the Kalahari during much of the year. This melon should be tested out on the Great Plains, also in Texas, New Mexico, California, Arizona and Nevada. It should run wild in portions of our desert as it has done in Africa, and if it would do so would prove of great interest. It should be tested at Yuma, Sacaton, Indio, Chico, Hazen and San Antonio, on both dry and irrigated land. It is one of the most noteworthy plants of the Kalahari.

Prieska is the center of the hide and wool trade of this section and has several mineral resources. Potassium nitrate is found in considerable quantity at the edge of the shale cliffs and a large company, the South African Nitrate & Potash Company, limited, of which Mr. W.L. Calder is manager, has charge of this deposit. It is almost pure, but seems likely that it is concentrated at the surface and not abundant in the deeper shales. There are also large deposits of asbestos of unusually long and good fiber. There is some chrysolite. I have no doubt that mineral wealth is here more important than agriculture. No attempt has been made at agriculture except with irrigation.

Prieska to Uppington. Thierry and I left Prieska on a "goods train", the local term for a freight, at eleven a.m., one of the most disagreeable trips I have ever made. Two flat

wheels and immense amount of dust, and a seat for only one of us at a time, all combined to make this ten-hour ride one of the most disagreeable experiences on the whole continent.

Out of Prieska the angular black bush, Herb. 174, is more abundant, and there are also more trees. A white-stemmed tree, Herb. 171, mimosa, Herb. 188, and a Ziziphus, Herb. 180, are prominent. There is also along the track a large yellow-flowered plant, Herb. 163, and the Gutierrezia-like plant, Herb. 152, which is as important a semi-ruderal as the American plant. In many places the whole landscape is yellow with it.

Groveput. On sandy soil the grasses become more important.



R1---A grass vegetation (Aristida), and Herb. 152 are the prominent plants here.

In using the name of an American plant in the absence of a knowledge of the name of the African plant, it is under-

stood that it refers not to similarity in systematic position but to similarity in habit and in the vegetation itself.



R2---A view of the grasses, a tall Bushman's grass and a small *Aristida*, with a hill in the background. The sub soil is lime while the soil is red and 1 to several feet deep. No profile. Just west of this point the following picture,

R3--shows *Pent-*
zia and black
brush in the
back. A typi-
cal view.





18--Was taken just above Prieska and shows the acacia--the white-barked acacia, and black brush. There are other and smaller grasses and no doubt many annuals, but black brush is a most important element.

It was very hot, 85° F. during this trip.

There are large herds of goats pastured in this desert land.

Where the soil is but 1-4 inches deep the vegetation is usually a pure karroo bush. As we proceed to a lower elevation the vegetation is more advanced. In other words the country seems to be warmer.

Fransenhof. The yellow composite with the habit of *Gutierrezia* forms pure areas in this place. A short karroo bush occasionally forms pure areas on especially shallow soils, while black brush occurs over large areas of deep red soil. All of the soil seemed to be red. Occasionally there was a flat-topped tree, Herb. 188, or even an Acacia

horrida. These seem to prefer the sandy ridges. Karroo bush occurs occasionally on heavy deep soil. A change from sand to loam is generally accompanied by a change from black brush to Artemisia.

Uitvlugt.



R4-- Is a detail of the black brush on a deep red sandy soil.

horrida. These seem to prefer the sandy ridges



R5--Similar to R4.

Draghoender. A trading station. Apparently a place in which one could secure accommodation.

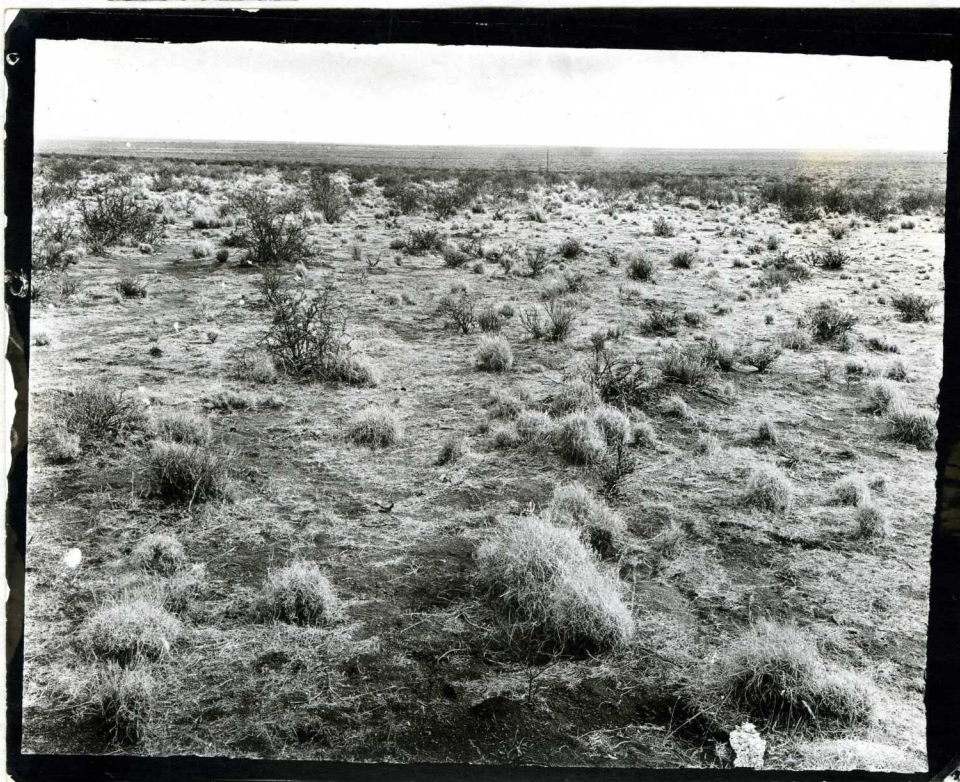
Water determines the location of all settlements on the karroid plateau.

Beyond this point an occasional tree is seen.

Brulhalt. Here karroo and black brush alternate, and there are grasses on the hills just beyond. There is no true desert grassland in this country. It should be mapped desert shrub-desert grass. The plants root deeply in deep red soil. Huge bulbs occur along the track, 6-10 inches in diameter and seem to have a relatively small spiked flower. There are no large succulents here. Only on the rocky hills do Agaves occur. Once or twice I have seen low Euphorbias. The nearest approach to a succulent is the semi-ruderal bush,

Mesembryanthemum.

Brakbosch.



R6--Desert shrub-desert grass. This is Aristida and black brush.

Purzonderwater. Elevation 3440 feet. Just beyond, at mile post 192, scatterree acacias enter, the light-stemmed type being most common. The soil is red, about three feet deep, lime rock below. There are large red ant hills here. All of this country is desert shrub and desert grass. At mile post 197 a small area of true grassland with Agave in the rocky soil above.

The soils everywhere are remarkable in that they present no profile. They are red all the way down to the rock with practically no change in tint.

Koegrabie. A great stand of coarse perennial grass with a peculiar habit of growing through at the joints. Beyond this is a large area of the Gutierrezia-like shrub. This area looks exactly like areas of Chrysothamnus marianus in Utah. There is little change on up into Upington, as this part of the route was seen the following day on the return.*

Upington. September 18, 1919. Upington is situated on the north bank of the Orange river at the edge of the Kalahari. It has a population of about 2,500, and along the river bottom there are considerable areas of irrigated land. Reminds one somewhat of our southern ^{Desert areas where} trees lining ^{the} a river on the opposite side. ^{channels}

*Animals are not especially abundant. Birds seem to be numerous, especially a dark bird which sings somewhat like our robin. A white-tailed squirrel sits up exactly like our prairie dog.

~~California desert areas.~~

The town has wide streets, planted with pepper trees. The houses are brick or adobe, which are usually low and often have a tendency to form a court. Like all other South African cities, both Dutch and English are spoken. Signs are printed in both languages. Burros are the chief beast of burden. I see no oxen on this line. There are many nice horses in Uppington.

The chief plant found in the streets in vacant lots is Argemoni mexicana.



R8--Shows the basin method of irrigation employed on the banks of the Orange river. Potatoes in the foreground with garden peas, Washington navel orange, also seeding orange and defoliated fig tree in the back.



R9--A field of alfalfa with basin type of irrigation. This looks very much like a portion of Utah.



R10--Shows citrus, broad bean vines, figs, peaches, also some sorghum plants.

The most of this land is irrigated by the basin method.



R11--The home of George St. Letger Lenox, known locally as Scotty Smith, a rather famous South African outlaw, descended from an unusually good English family. His Hottentot wife and one of the many children shown in the photograph



R12--Mr. N. G. Holmes of Upington in a typical two-wheeled Cape or Boer buggy. This seems to be the very best type of buggy for riding.



S1--S.P.I. 48764, Cucurbita maxima (pumpkin). A large light-colored pumpkin used chiefly for stock, but regarded as one of the better types for table use, boiled and served without mashing. 18 inches in diameter. This type has been grown by Mr. Holmes on his ranch for several years.



S2--Another view of the same pumpkin.



S3--The pumpkin cut open.



S4--Shows a city street in Uppington with burro team in back.



S5--Another view of the scene in S4, with detail of burro team.



S6--Typical Boer wagon and team of 18 burros. The store in the background is owned by Mr. N. G. Holmes. The city reminds one somewhat of our western towns.

S.P.I. 48775, Medicago sativa, alfalfa seed grown on the Orange river. In the field it looks somewhat like our Peruvian -----.



S7--A general view of the Orange river showing the irrigated garden, many defoliated figs, also oranges, grapes, peaches, alfalfa, with acacia.

Acacia brush marks the more rocky soils, which *Aristida* marks the sandy or deep soil. The soil is often three or more feet deep, pure red and no change until the rock is reached.



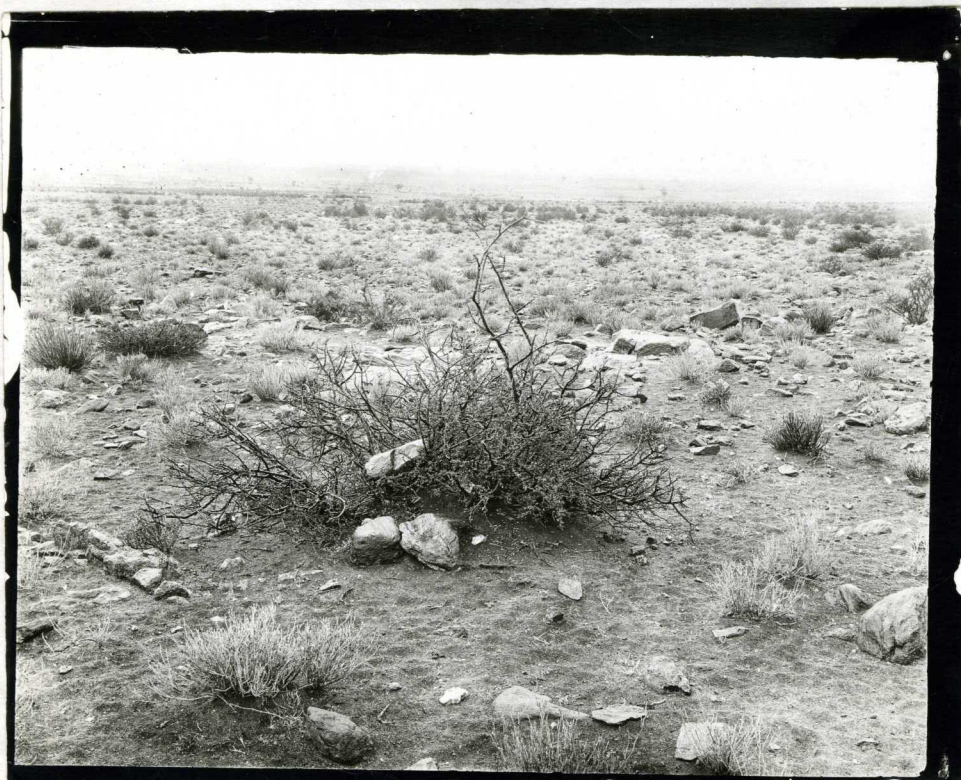
S8--The only prominent ruderal in Upington. See Herb. 189. Argemone mexicana. A native village on the hill behind the acacia tree.



S9--Shows a view of the desert above Upington. The shrub in the foreground is Chrysothamnus like, while the darker plants in the back are what I have called black brush.



S10--A detailed view of a pure stand of black brush.



S11--Near the top of the ridge. Shows the Chrysothamnus-like shrub in the foreground, an acacia in the back.