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The Director  
Geological Survey  
Pretoria

**INVESTIGATIONS FOR UNDERGROUND WATER  
IN THE SOUTHERN FREE STATE**

The following districts were visited during February, March and April 1938: Smithfield, Bethulie, Springfontein, Trompsburg, Edenburg, Reddersburg, Brandfort and Excelsior.

1. SMITHFIELD AND BETHULIE

The farms visited in these districts belong to members of the Palmietfontein Boerevereniging and are the following:

SMITHFIELD	FARM	OWNER	NO. OF SITES
	Besemkop	FJ du Toit	2
	Merino	FJ du Toit	3
	Smalplaas	Mrs E Swanepoel	2
	Haasfontein	FJ du Toit	2
	Tampasfontein	F Smith	3
	Katelfontein	CF van Wyk	2
	Poortjesdam	CF van Wyk	1
	Damfontein	JP le Roux	2
	Bloubank	JM de Wet	1
	Elim	ER Linström	3
	Willoughby	JS van Dyk	1
	Gelukwater	AL Coetzee	3
	Klipfontein	P du Plessis	-
	Palmietfontein	BJ Labuschagne	2

BETHULIE	FARM	OWNER	NO. OF SITES
	Vaalbank	HJG Kruger	2
	Jantjiespos	JM Putter	-
	Diepfontein	HF Prinsloo	2
	Bloubank	GP Joubert	1
	Boshoek	JJ Venter	2
	Heuningfontein	P Pretorius	1
	Kraaifontein	JE Coetzee	1

2. SPRINGFONTEIN

The farms visited in this district belong to members of the "Springfontein Wolgreiers – en Boerevereniging" and are the following:

	FARM	OWNER	NO. OF SITES
SPRINGFONTEIN	Groot Suurfontein	PWS van Wyk	3
	Valleydors	F Kidson	-
	Staplehurst	S Staples	1
	Westdrook	S Staples	1
	Ou Spioenkop	L Steyn	2
	Warriston	PC Geyer	5

3. TROMPSBURG

	FARM	OWNER	NO. OF SITES
TROMPSBURG	Rietpoort Noord	AJ van Schalkwyk	3

4. EDENBURG

	FARM	OWNER	NO. OF SITES
EDENBURG	Wildebeestfontein	PJ Kock	2

5. REDDERSBURG

	FARM	OWNER	NO. OF SITES
REDDERSBURG	Molendam	PJ Spies	1

6. BRANDFORT

	FARM	OWNER	NO. OF SITES
BRANDFORT	Driekop	DR de Wet	3

Geologically these farms all consist of the Lower and Middle Beaufort beds with intrusive dykes and sheets of dolerite. The sediments vary from medium-grained sandstones to the characteristic blue shales of the Beaufort Series. The formations outcrop rather abundantly and wherever sites were selected advantage was taken of the dolerite dykes and sheets.

Only on a few farms in the districts of Smithfield and Bethulie some dykes could not be followed up on account of the overlying recent deposits and as this investigation had to be carried out without a magnetometer, it is suggested that a few days be spent on the farms in question in case of a future trip to the south.

The conditions for underground water vary considerably from farm to farm. Some of these, especially those near or in the drainage lines and those situated on broad flats, seem to have rich supplies and the selecting of sites becomes merely a matter of taking into consideration the dykes and sheets cutting across the country. In many cases, however, the owners have had much trouble in drilling for water especially on high-lying farms and where there are too many igneous intrusions interfering considerably with the circulation of the underground water-supplies. In such cases it was often necessary to pick more than one site in the same vicinity on which to drill in case the first choice be a failure.

On some farms no sites were selected, partly because of bad conditions and in some cases because the owners merely wanted my advice in connection with existing supplies.

## EXCELSIOR

The area investigated in the Excelsior District consists of the Upper Beaufort Beds with intrusive dykes and sheets of dolerite. Outcrops are very scarce and the magnetometer had to be used on all the farms. Unfortunately in several cases the dolerite was only weakly magnetic or non magnetic. On most farms, however, the magnetometer proved to be of great help.

A series of hills some 800 feet high, such as Korannaberg and MensvreTERSBERG, run through the area. The rest consists of "bults" through which the Vet River flows. The farms visited can therefore be divided into the following groups.

### 1. KORANNABERG EN MENSVRETERSBERG

Those situated along the slopes of

KORANNABERG	FARM	OWNER	NO. OF SITES
	Heeltevrede	JR Gouws	2
	Erfdeel	M Olivier	1
	Skuilhoek	JG Ebersohn	2
	Driehoek	CJM Gouws	1
	Klyntjie	CJM Gouws	1
	Mount Pleasant	SJ Gouws	1
	Dangerpoint	IL Rautenbach	1

MENSVRETERSBERG	FARM	OWNER	NO. OF SITES
	Craigmore	AL Harley	1
	Cornflat	AL Harley	1
	Rakhoi	JP Daniels	1

Geologically and topographically these farms are all alike. The dykes can be seen as low ridges running across the hills. These could be located with the help of the magneto meter some distance from the mountains and the sites were selected as far away from the latter as was possible. Due to the hills, however, the catchment is very poor and only moderate supplies, probably not exceeding a few

hundred gallons per/hour, can be expected. This was explained to the owners. The water is wanted for domestic purposes and is indeed a serious problem in this vicinity.

2. "BULT" FARMS

"BULT" FARMS	FARM	OWNER	NO. OF SITES
	Corneliasrust	JC Maartens	1
	Saakamp	JG Ebersohn	1
	Koringskamp	CJM Gouws	-
	Vrugbaar	HJ Wessels	1
	Makolobane	CHJ Maree	1
	Makolobane	JHB Maree	2
	Patrysvlug	SP Nel (jnr.)	2
	Nelsrust	F de Toit	2
	Jagkraal	DCJ Wessels	2
	Dwaalhoek	JD Goosen	2
	Tweespruit	BC Bezuidenhout	2

These farms are all situated on broad, flat "bults" with few inferior valleys, where little or no geology can be seen. Only occasionally could rock outcrops be encountered in donghas or on low hills and the work had to be done almost exclusively with the help of the magnetometer. Where possible advantage was taken of the few, small valleys but in most cases the water is required on the "bults". Generally speaking the catchment is poor and also on these farms only moderate supplies are expected. The water is wanted for domestic purposes and for watering stock.

3. LOW LYING FARMS (NEAR VET RIVER)

LOW LYING FARMS	FARM	OWNER	NO. OF SITES
	Spioenkop	PTE Nel	1
	Sanddraai	JPM Rautenbach	-
	Unity	AGM Brümmer	1

These farms are situated in the valley of the Vet River and are undoubtedly rich in underground water. The borehole put down on the site selected at Spioenkop yields about 1200 gallons per hour.

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