Annual medical and sanitary report / Swaziland.

SWAZILAND

ANNUAL MEDICAL & SANITARY REPORT

FOR THE YEAR 1962

HCP AG848

GENERAL REVIEW

Swaziland has an area of 6,704 square miles and is bordered on the north, west and south by the Transvaal, and on the east by Mozambique and Zululand.

The Territory is geographically divided into four well defined regions, running from north to south, namely the mountainous highveld in the west with an altitude of 3,500 and 5,000 feet; the middleveld with an average altitude of 2,000 feet; and the lowveld or bushveld with an altitude of 700 feet to 300 feet, and the Lebombo Plateau on the east, with an altitude of 2,000 feet. Scenically the Territory is one of the most attractive parts of Africa. The highveld has a temperate climate and frosts occur during the winter. The climate of the middleveld is subtropical and that of the bushveld is almost tropical.

Rainfall, which occurs chiefly in the summer, varies between approximately 60" a year in the highveld and approximately 30" a year in the lowveld. Drizzle and mists are frequent in the highveld areas. The country is well-watered by numerous perennial streams and rivers, some of which are of a considerable size and now provide water for three large irrigation schemes which have been established at Mhlume in the north-east, at Big Bend in the east (at both of which sugar is grown) and at Malkerns in the centre of Swaziland (which produces rice, sub-tropical fruit and citrus).

In addition to the irrigation schemes, other important agricultural activities are cattle ranching in the bushveld, sub-tropical fruit and rice production in the middleveld, in the southern portion of which a considerable amount of tobacco is also grown, and afforestation and sheep farming in the high veld. Significant mining development is at present restricted to the production of asbestos at Havelock Mine in the north west and a small amount of high-grade coal in the bushveld. Iron ore and additional coal deposits are about to be developed.

A census of the European and Eurafrican sections of the population was held in 1962, and an estimate was made of the African population at the same time. The resultant figures were:- Africans 270,000, Europeans 8,040 and Eurafricans 2,260. One half of the area of the territory is in communal ownership of the Swazi Nation and the remainder owned by individual tenure farmers. The Swazi have the exclusive use of the communal tenure areas and the remainder is open to farmers of all races without discrimination. Swazi dwellings for the most part consist of wattle-and-daub structures, or bee-hive huts, and small family collections of these huts are widely dispersed. Other than in the neighbourhood of the European towns, there are no villages. Whilst the agricultural activities of the Swazi are still, in the main, concentrated on the raising of cattle and goats and the cultivation of maize, the work of the Land Utilization Department is now producing results, and both the standard and scope of Swazi farming are improving year by year.

The medical needs of the Territory are met by Government Hospitals at Mbabane (150 beds), Hlatikulu (137 beds), Mankaiana (28 beds) and Pigg's Peak (39 beds); by Mission Hospitals at Manzini (246 beds), Mahamba (45 beds) and Stegi (35 beds); by 12 Government clinics (three of which are

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maintained by the Swazi National Treasury) and 17 Mission clinics in outlying areas; by the mine hospital at Havelock Mine; and by medical practitioners, either working on their own or employed by large industrial concerns, who are established at Mbabane, Manzini, Pigg's Peak, Stegi, Mhlambanyati, Malkerns, Mhlume, Big Bend and Mliba. There are, in fact, 38 medical practitioners working in Swaziland at present, two of these who hold foreign unregistrable qualifications being licensed to practice, under the relevant section of the Medical, Dental and Pharmacy Proclamation. There is thus 1 doctor per 7,368 persons in Swaziland, in comparison with the accepted Western European standard of 1 doctor for 1,000 patients and the "South of the Sahara" average of 1 doctor per 10,000 persons. The 680 hospital beds in use in Swaziland today give a ratio of 2.4 beds per 1,000 persons, as against the Western European average of 4 - 5 beds per 1,000. These figures are based on the estimated population of 280,000.

The Mbuluzi Leper Hospital, situated 10 miles from Mbabane and run by the Nazarene Mission, with the assistance of a Government grant, copes most adequately with the decreasing number of lepers in the Territory. There is no special tuberculosis hospital, but three general hospitals have separate tuberculosis wards. There is also no mental hospital, and dangerous and violent lunatics are detained and treated in sections of the gaols.

The British Red Cross Society is now running Infant Welfare Clinics at Mbabane, Hlatikulu, Stegi, Pigg's Peak and Goedgegun, at which most useful work is being done.

The Public Health services of the Territory are centered at the Health Office, Manzini, under the control of the Medical Officer of Health, in whose charge are also the malaria control unit and the bilharzia investigation unit.

The Medical Association of Swaziland, whose members include private practitioners, medical missionaries and Government medical officers, hold quarterly meetings, which are usually well supported and which make up to some extent for the lack of professional contact so common in territories such as Swaziland.

The Medical Department staffing position remained satisfactory in 1962. A Medical Officer was stationed at Goedgegun for the first time, from October, and as soon as housing is available it is hoped to station a Medical Officer at Mankaiana as well. In addition a fifth Medical Officer post was established at Mbabane Hospital. Applications for employment from African Staff Nurses continued to pour in and far exceeded the demand. Details of the staff at the various Government hospitals and at the Health Office will be found in Appendix I, page 61 .

The training of nurses in Swaziland is carried out at the Ainsworth Dickson Training College attached to the Raleigh Fitkin Memorial Hospital, where training for the High Commission Territories Nursing Council qualifications in General Nursing, lasting 4 years, and in Midwifery, lasting 1 year, is given. The Ainsworth Dickson Training College can at present train sufficient nurses for the needs of Swaziland. Dispensers and Laboratory Assistants are trained at Government hospitals as required.

Since the successful malaria control programme has resulted in the near-eradication of the disease from Swaziland, tuberculosis is now the main health problem and towards the end of the year team members of the W.H.O./ U.N.I.C.E.F. assisted Tuberculosis Control Project began

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to assemble in Manzini, from where they will operate from an extension built during the year onto the Health Office, and consisting of laboratory, X-Ray rooms, out-patient clinics and offices. Bilharzia is wide-spread among the indigenous population, and whilst the clinical manifestations are usually minimal, it is felt that a potentially very dangerous position exists at the irrigation schemes, and a careful watch is being kept on conditions here. Malnutrition and infantile diarrhoea are important causes of ill-health and death amongst young children, the former being especially noticeable at the post-weaning age, and heart-diseases and pneumonia also rank high as causes of death.

The conditions which cause most attendances at Government hospitals are acute upper respiratory tract infections, diseases of the genito-urinary system, minor disorders of the digestive system, venereal disease, rheumatism and infections of the skin and subcutaneous tissues. Among the infectious diseases, enteric fever was even more prevalent than before, although the majority of cases occurred sporadically.

The coverage it was possible to give to Public Health work improved during 1962, with the appointment of an additional qualified Health Inspector, the establishment now being four, two of whom are employed on general public health work, one on malaria and one on bilharzia work.

It was a great pleasure to welcome Dr. J.M. Liston, Chief Medical Officer at the Department of Technical Co-operation, to Swaziland at the end of July. Dr. Liston was taken on an extensive tour of the Territory and visited all hospitals.

In March Dr. H. Stott, of the Valley Trust, Botha's Hill, and Mr. Don Mackenzie of the Toc H. T.B. Settlement, Botha's Hill, visited Swaziland, the first to see the work of the Nutrition Survey team in the field, and the latter to investigate the possibility of Toc.H. extending its activities into Swaziland.

CHAPTER I - PUBLIC HEALTH

(a) COMMUNICABLE DISEASES.

I. TUBERCULOSIS.

1.1. Tuberculosis remains Swaziland's chief health problem, and as it was not possible to start the planned control project in 1962, activities were restricted to curative work, where maximum use continued to be made of the beds reserved for tuberculosis in the hospitals at Manzini, Mbabane and Hlatikulu, while reliance had to be placed on out-patient treatment with many patients, and in the absence of adequate "follow-up" facilities, this often proved unsatisfactory.

1.2. There was actually a slight fall in the number of cases of tuberculosis dealt with at Government and Mission hospitals in 1962 - viz. 1156 cases as against 1222 in 1961, constituting 0.9% of all cases attending, as against 1.1% in 1961 and also 1960.

1.3. During the year a building consisting of laboratory, X-Ray rooms, out-patients clinic and offices was erected in Manzini, adjoining the Health Office, for use by the W.H.O./U.N.I.C.E.F. assisted Tuberculosis Control Team now and for use of the Territory's tuberculosis control workers subsequently. Towards the end of the year members of the W.H.O./U.N.I.C.E.F. team began to assemble, and it is hoped that operations will be in full swing early in 1963.

2. MALARIA.

This report covers the period 1.7.61 to 30.6.62.

2.1. Climatic Conditions.

The middleveld and highveld areas had average summer rains, whereas in the bushveld, particularly in the southern parts, severe drought conditions were experienced. Big Bend had only 13.83 inches during the year and the temperatures rose to over 103°F. on several occasions during the months of January and February. The hottest day was registered at Gollel, namely 107.6°F. during February.

The rainfall and temperatures registered at five stations during the year at altitudes varying from 500 feet to 2200 feet are tabulated as follows:-

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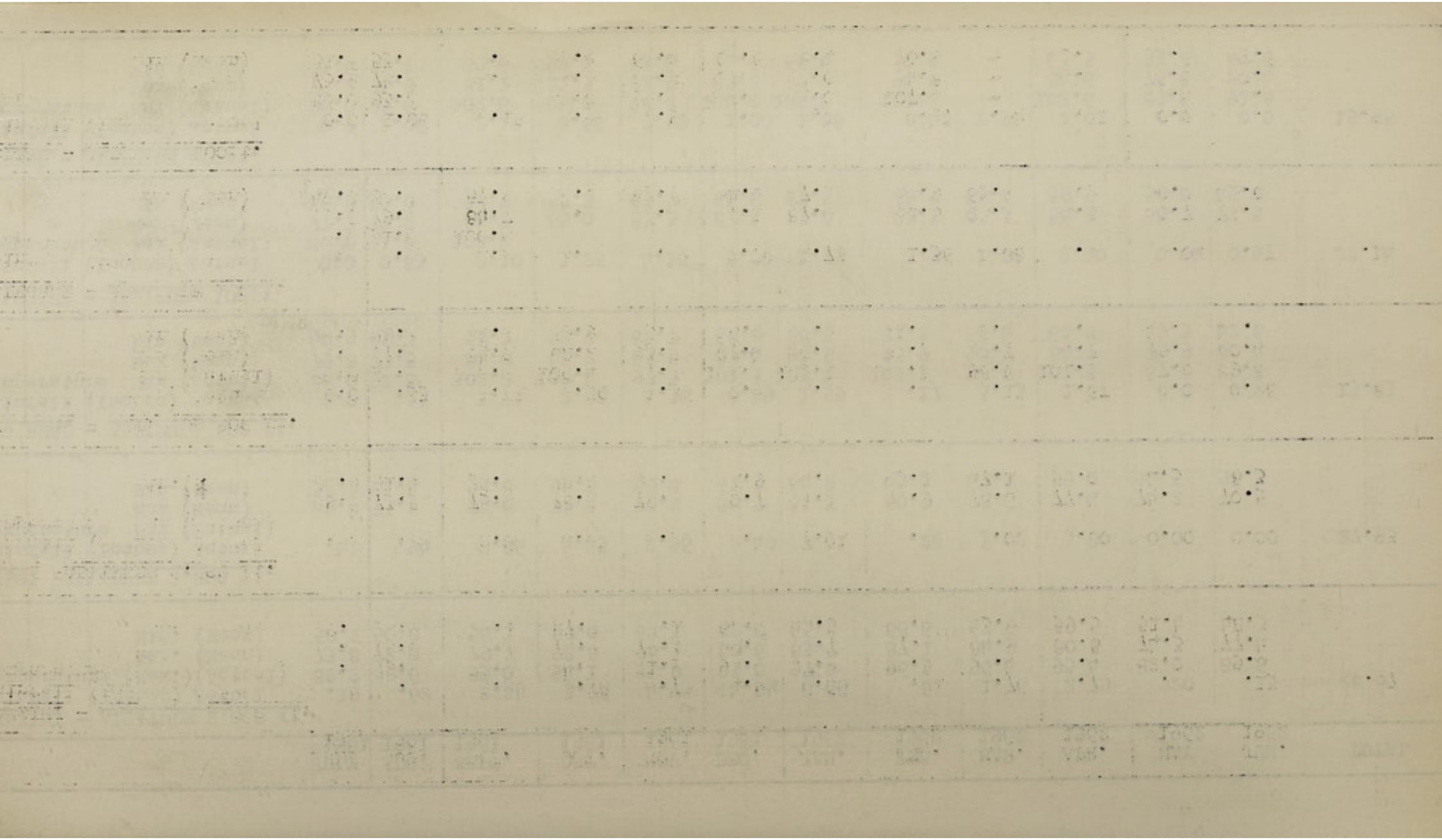
	JULY 1961	AUG. 1961	SEPT. 1961	OCT. 1961	NOV. 1961	DEC. 1961	JAN. 1962	FEB. 1962	MAR. 1962	APR. 1962	MAY 1962	JUN. 1962	TOTAL
MANZINI - ALTITUDE 2,000 ft.													
Rainfall (Inches) Actual	.19	.62	2.24	3.78	4.75	4.94	6.66	.81	1.76	2.79	.20	.13	28.87
Temperature, (Max.) (Actual)	82.2	89.6	99.0	94.1	91.9	93.0	97.2	96.3	96.4	95.4	82.0	89.6	
Max. (Mean)	73.8	72.0	79.7	78.8	78.3	80.6	83.7	87.1	84.9	80.8	74.3	77.4	
Min. (Mean)	50.2	50.0	58.1	57.0	62.1	62.6	65.5	66.6	63.9	59.5	51.4	48.3	
STEGI -ALTITUDE 2,200 ft.													
Rainfall (Inches) Actual	.41	.94	2.66	4.45	2.96	2.40	7.01	.28	3.02	3.80	0.00	0.00	27.93
Temperature Max (Actual)													
Max (Mean)	69.8	73.5	75.6	78.2	79.5	80.7	81.3	80.9	78.6	77.4	74.2	70.5	
Min. (Mean)	52.5	51.4	56.8	55.6	58.8	61.9	64.2	65.3	67.1	59.0	54.3	58.3	
BIG BEND - ALTITUDE 500 ft.													
Rainfall (Inches) Actual	0.0	.33	1.71	2.50	1.36	0.89	1.59	.17	3.13	1.87	0.0	0.28	13.83
Temperature Max (Actual)	86.0	92.8	102.2	100.4	97.3	101.3	103.1	103.1	98.6	101.3	87.8	89.8	
Max (Mean)	79.2	77.5	84.0	82.2	83.5	87.4	90.9	93.9	90.7	84.7	79.9	80.4	
Min (Mean)	46.4	49.3	58.1	59.9	65.7	66.0	68.5	71.2	66.4	60.8	49.3	42.8	
BALEGANE - ALAITUDE 100ft.													
Rainfall (Inches) Actual	0.0	0.83	2.10	3.25	4.18	3.80	1.73	1.36	1.88	2.40	0.04	0.57	22.14
Temperature Max (Actual)	86.0	91.6	100.4										
Max (Mean)	77.7	79.2	84.7	85.0	87.3	87.1	87.0	88.3	85.3	84.3	80.7	77.5	
Min (Mean)	46.8	50.0	57.9	58.8	63.7	64.6	67.5	68.9	65.1	59.9	50.0	45.0	
GOLLEL - ALTITUDE 600ft.													
Rainfall (Inches) Actual	0.0	1.06	2.19	2.66	2.92	1.00	1,08	0.47	2.94	1.61	0.0	0.0	15.93
Temperature Max (Actual)	86.0	93.6	102.6	99.0	98.6	104.0	104.0	107.6	-	102.6	89.6	91.8	
Max (Mean)	75.2	74.8	81.1	81.3	82.9	89.2	90.0	94.8	-	84.6	78.8	80.4	
Min (Mean)	51.6	53.2	60.6	59.4	64.4	64.6	68.4	70.9	-	63.3	53.8	49.6	



2.2. Meeting of the Field Staff.

The annual meeting of the field staff was held at Manzini during the first week of September, 1962, when a "refresher" course was given on malaria field work which included the following:-

(a) the taking of bloodslides;

(b) collection of entomological specimens;

(c) residual spraying;

(d) keeping of records, reporting etc.

Lengthy discussions followed on the numerous problems encountered by the field staff in their respective districts.

2.3. Population and Hut Count.

The season's work commenced by taking the usual census of population and huts in the surveillance areas.

Each Malaria Assistant recorded the number of huts and people accommodated in each kraal in their respective areas. During this survey the routine collection of bloodslides, and the treatment of tapeworm carriers, had been continued and entomological work was confined to suspect areas only.

The results of hut and population count were as follows:-

SWAZI AREAS.

AREA	KRAALS	HUTS	ADULTS	CHILDREN 1-12 yrs	INFANTS 1-12 m.	TOTAL (POPULATION)
1A	1240	6112	4121	3638	755	8514
1B	712	3479	2576	3037	318	5931
2A	493	1940	1521	1467	225	3213
2B	639	3338	2323	1859	355	4537
3	235	1020	454	979	96	1529
4	701	3002	2589	1918	305	4812
5A	487	1771	1656	1593	211	3460
5B	1850	5880	4220	3440	1264	8924
6A	363	1357	1195	1459	208	2862
6B	708	2144	2100	1300	486	3886
7A	389	1650	1207	1247	198	2652
7B	352	1191	794	913	151	1858
8A	196	1206	1109	701	87	1897
8B	292	1291	1064	1031	148	2243
9A	492	2183	1734	1946	396	4076
9B	660	2675	2144	1831	392	4367
10B	631	2994	1981	1948	403	4332
10C	398	1813	1408	1560	243	3211
	10838	45046	34196	31867	6241	72304

/Irrigation Schemes.....

IRRIGATION SCHEMES AND FARMS.

	COMPOUNDS	HUTS OR ROOMS	ADULTS	CHILDREN	INFANTS	TOTAL (POPULATION)
S.I.S.	17	887	1239	493	51	1783
MHLUME	11	1869	3593	1028	81	4702
BIG BEND	20	3067	3913	733	205	4851
TOTAL SCHEMES	48	5823	8745	2254	337	11336

TOTAL

	COMPOUNDS	HUTS OR ROOMS	ADULTS	CHILDREN	INFANTS	TOTAL (POPULATION)
IRRIGATION SCHEMES	48	5823	8745	2254	337	11336
OTHER FARMS	-	2004	1920	864	122	2906
Swazi AREAS	10838	45046	34196	31867	6241	72304
TOTAL	10886	52873	44861	34985	6700	86546

2.4. Malaria Control Measures.

2.4.1. Chemo-Prophylaxis.

Prophylactic doses of pyrimethamine("Daraprim"), 25 mgm per person, were given to the labour force at the three major irrigation schemes. No transmission took place at any of these schemes where a population of 11,500 people was engaged.

Immigrants and visitors from malarious areas outside Swaziland received an initial dosage of 800 mgm (4 tablets)of chloroquine sulphate ("nivaquine") plus 50 mgm (2 tablets) of pyrimethamine per adult at the time of taking their bloodslides. Whenever blood results were found positive, further treatment, as described above, with the exception of pyrimethamine, had been followed. Wherever possible each positive case had been followed up by blood examinations each fortnight in order to ascertain the efficiency of the treatment. No recurrence of malaria in any of the cases treated during the past season has been noted.

2.4.2. Parasitology.

Bloodslides taken during the year were examined at the Health Office by four microscopists, and the following results were recorded:-

SOURCE	NEGATIVE	POSITIVE	TOTAL	% POSITIVE
Indigenous	19,002	67	19,069	0.34%
Immigrants	2,923	142	3,065	4.6%
Combined	21,925	209	22,134	0.94%

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The "break-down" of the bloodslides taken from immigrants was:-

	NEGATIVE	POSITIVE	TOTAL EXAMINED	% POSITIVE
MOZAMBIQUE	1066	106	1172	7.4%
ZULULAND	767	25	792	3.5%
TRANSVAAL	898	10	908	1.0%
NOT SPECIFIED	190	3	193	

The question of immigrant parasite carriers is still a matter of serious concern.

2.4.3. Residual Spraying.

On account of dry weather conditions spray operations in the bushveld areas had been delayed until the first week in December. The irrigation schemes and the farms at Big Bend were tackled first and spray operations were then extended to the other bushveld areas and eventually covered the entire cordon of about 10 to 15 miles wide from the northern to the southern boundaries of the territory all along the Mozambique and Natal borders. The first treatment was completed in six weeks, and certain areas received a second application of insecticide after an interval of 8 weeks.

Towards the end of May i.e. eight weeks after the second spray - A. gambiae appeared in a few grass huts on the farms PicardieEstate and Poortsicht, at Big Bend, on the southern bank of the Usutu River. As these farms have a migratory labour force population it was necessary to spray that area for the third time during May 1962.

The irrigation schemes at Big Bend and Mhlume were treated with stocks of D.D.T. 75%, which had been carried over from the previous season. Only one application was given to these compounds. The remaining areas were all treated with B.H.C. 12½% gamma. With the aid of Landrovers in certain accessable areas, spraywork had been completed in the minimum of time.

The number of huts treated are tabulated as follows:-

RESIDUAL SPRAYING.

AREA NO.	HUTS 1ST SPRAY	HUTS 2ND SPRAY	HUTS 3RD SPRAY	TOTAL SPRAYS
3	1375	1497		2872
4	3081	981		4062
5	7613			7613
6	3449	3339		6788
7	1383	1150		2533
7B	1482	1488		2970
8	3340	1264		4604
9	7992	857		8849
S.I.S.	887			887
MHLUME	1869			1869
UBOMBO & BIG BEND	3067			3067
OTHER FARMS	1862	2083	420	4365
	37400	12659	420	50479

/Surveillance.....

2.4.4. Surveillance.

Routine surveillance work had been continued in the manner described in 1961. The Malaria Assistants, aided by trained Headmen, covered their respective areas regularly. Bloodslides were taken, immigrants and suspected malaria cases located and the prescribed treatment administered, where necessary. Entomological observations, by means of space spraying and larval collecting had been done throughout the areas.

In certain localities, where indigenous positive cases were found, and where transmission was suspected, more intensive entomological observations were made, by night catching. The results are reflected in the following table:-

SPECIAL INVESTIGATIONS CARRIED OUT BY HEALTH OFFICE STAFF WHEN INVESTIGATING "PARASITE CARRIERS"

DATE	LOCALITY	MAN BAITED NET	CALF BAITED NET	HAND CATCH AT CATTLE KRAAL	SPACE SPRAYING	LARVAE COLLECTED	WINDOW CAGE TRAPS
13.2.62	Mateta (Stegi) (Sprayed Area)	1 A. coustani 1 A.squamosus	-	2 A.coustani 1 A.squamosus	-	-	3 cages - Nil
14.2.62	" "	Nil	Nil	Nil	10 Huts-Nil	Nil	3 " - Nil
15.2.62	Mkondo(Lower) (Hlatikulu Dist.) (Unsprayed Area)	1 A.gambiae (fed)	-	8-12p.m. - Nil	15 Huts-Nil	Nil	-
16.2.62	" "	Nil	-	Nil	12 Huts-Nil	Nil	-
26.2.62	Nyakato (P.Peak Dist) (Unsprayed Area)	4 coustani	-	Nil	18 Huts-Nil	A.funestus (Type)	4 cages Nil
27.2.62	" "	Nil	1 A.coustani	Nil	- -	-	4 " "
4.4.62	Abercorn Drift (Stegi Dist) (Sprayed Area)	1 A.gambiae ♀ (fed) 1 A.coustani♀	-	-	12 Huts-Nil	-	-
10.4.62	Mabiya Dam (Nkombeni) (Unsprayed Area)	2 A.squamosus	11 A.squamosus	-	25 Huts-Nil	Nil	3 cages - Nil
11.4.62	" "	Nil	4 A.coustani 7 A.squamosus 1 A.coustani	-	14 Huts-Nil	Nil	3 " - Nil
12.4.62	S.I.S. Dam Nkambeni Area (Unsprayed Area)	Nil	6 A.squamosus	-	10 Huts-Nil	A.gambiae	3 cages - Nil
16.4.62	Nyokanyoka (Nkambeni) (Unsprayed Area)	1 A.gambiae (unfed)	1 A.squamosus 2 A.gambiae (fed)	Nil	12 Huts-Nil	A.gambiae	2 cages - Nil 2 cages - "
17.4.62	" "	Nil	2 A.gambiae (fed)	Nil	4 Huts-Nil	-	
18.4.62	Meinda Dam (Balegane) (Unsprayed Area)	Nil	5 A.squamosus	Nil	17 Huts-2A.gamb.(unfed) (Mosq.found in 2 storerooms)	A.gambiae "	3 cages - Nil 2 cages - "
1.5.62	" "	Nil	1.A.squamosus 1.A.pretoriensis 4.A.coustani 6.A.squamosus 1.A.gambiae (fed)	2.A.gambiae(fed) 4 A.squamosus		" "	2 cages - " 2 cages - "
3.5.62	" "	Nil	2 A.gambiae (fed) 6 A.squamosus	1 A.gambiae(fed) 1 A.marshalli 2 A.squamosus 1 A.cinereus	12 Huts-Nil	"	
17.5.62	Usutu Planters (Big Bend) (Sprayed Area)	3.A.coustani 2 A.maculipalpis 1 A.rufipes 1 A.squamosus 2 A.marshalli 1 A.demeilloni	-	1 A.coustani	17 Huts-Nil	Nil	5 cages - Nil

With the exception of the cases detected at the Mabiya Dam area in Nkambeni, (one imported and 9 indigenous), malaria was confined to isolated cases, at various places which had no connection with one another and there was no indication of the likely spread of malaria from any of these sources.

2.5. Entomological Investigations.

2.5.1. Routine Entomological Work Carried out by Field Staff.

As part of the surveillance routine, malaria staff carried out entomological surveys in their respective areas. Likely breeding places were regularly checked and living quarters, selected at numerous points in each area, were space-sprayed with pyagra. All the anopheline mosquitoes thus collected were identified and recorded at the Health Office, Manzini.

By means of the space spraying it was possible to determine the value of the residual insecticide and also to study the incidence of A. gambiae entering human habitation. In fact only 15 A.gambiae mosquitoes were found during a total number of 15,339 check sprays, while 26 A. funestus-group mosquitoes were found by check-spraying in an unsprayed area, north of the Komati River. These were unfortunately unsuitable for precipitin testing. This last collection was followed up by a more intensive search by using baited nets and window cages. The results were negative.

Note on A. Gambiae Larvae Collected.

Breeding in areas No. 1 and 2 (unsprayed) was confined to localised water courses. The heaviest breeding took place at the Msinda dam near Balegane adjoining Areas 1 and 2. Specimens from this area were sent to an entomologist at the S.A. Institute for Medical Research, who is at present working on differential studies of A. gambiae collected from various countries.

In view of the isolated position of this dam, anti-larval measures were instituted during June, 1962. Anti-larval work is contemplated at other sources whenever the need occurs and wherever such measure is considered to be practical.

A study of the habits of A. gambiae had been continued in the field at

(a) Big Bend (Umfula Planters)which is a sprayed area.
(b) Nkambeni (near Balegane), an unsprayed area.

Man and animal baited trapnets and window cages were again used.

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ROUTINE SPACE SPRAYING CARRIED OUT BY FIELD STAFF.

ADULT MOSQUITOES FOUND.

AREA NO.	NUMBER OF HUTS TESTED	A. GAMBIAE	A. FUNESTUS GROUP	A. PRETORIENSIS	A. SQUAMOSUS	A. DEMEILLONI	A. MARSHALLI	A. COUSTANI	A. MACULIPALPIS	A. RUFIPES	A. LONGIPALPIS	A. CINEREUS
1A	543	2	26									
B	1956					1		2				
2A	754		2	2		2				4	2	3
B	438							5				1
3	576					1						
4	514											
5A	858											
B	264	5		1			9					
6A	1459											
B	647											
7A	480											
B	519	3				2						
8A	342											
B	220											
9A	714											
B	1000											
10A	689						1					1
B	449			1								
C	736											
11	94											
12	85											
S.I.S.	198											
MHLUME	49											
UECMBO	379	1					1	1	1			
BIG BEND	166											
FARMS	210	4					12	5		4		
	15,339	15	28	4	-	6	23	13	1	8	2	5

ANOPHELINE LARVAE COLLECTED BY FIELD STAFF.

AREA NO.	A. GAMBIAE	A. FUNESTUS TYPE	A. LEESONI	A. PRETORIENSIS	A. SQUAMOSUS	A. DEMEILLONI	A. COUSTANI	A. MACULIPALPIS	A. RUFIPES	A. CINEREUS	A. PHAROENSIS	A. LONGIPALPIS
1A	29	18		152								
B		13	21	5		37		74				
2A	394	13	3	26			5					
B				6								
3												
4			1			1	12	4				
5A					26	5	4		3			
B							5					
6A				9	22	4	9		1	2		
B							1					
7A				27	4		5	30	38		6	
8A				110								
B				60								
9A	4			72	2	2		27	18	13		
B												
10A			6	4	12		15					
B							9					
C	1			5								
11				202	38							
12		9		102	26	18	84		18	9		2
S.I.S.					27				12			
MHLUME									8			
UBOMBO					52		85				12	
BIG BEND					28	12	45		15			
FARMS				88	15		152	65	52			
TOTALS	428	53	31	868	252	79	431	200	165	24	18	2

2.5.2. Observations re. Feeding Preferences of A.Gambiae at Umfula Planters and Picardie Estate Complex on Big Bend area.

The homesteads on these two farms are separated by swampy land of about 10 acres where A. gambiae were found to breed. The conditions on both farms, with reference to cattle and living quarters, were identified and they were equally affected by mosquitoes.

At the end of June the cattle were removed from Umfula and during July a survey was conducted as follows:-

(a) Umfula - Man baited net (in the absence of cattle).

(b) Picardie Estate - Calf baited net (in the absence of man).

From the results reflected in the following table it appeared that:

(i) 52% of the gambiae found in the man net had fed.

(ii) 100% of the gambiae found in the calf net had fed.

This test confirmed the previous findings namely that A. gambiae in that area fed on man and on animal depending on the availability of the host, and the chance of malaria transmission in that area depended entirely on the presence or absence of the infected human hosts.

	DATE	A. GAMBIAE FED	A. GAMBIAE UNFED	A. GAMBIAE TOTAL	A. MARSHALLI	A. ACULIPAIPIS	A. COUSTANI	A. DEMEILLONI	A. PRETORIENSIS	A. SQUAMOSUS	A. CINEREUS	A. RUFIPES	A. PHAROENSIS	A. FUNESTUS GROUP
MAN BAITED NET (IN ABSENCE OF CATTLE) AT UMFULA PLANTERS.	5.7.61	2	1	3										
	6.7.61	4	13	17	4	1	1							
	7.7.61	5	4	9	6	1	1	3	1					
	12.7.61				3		1							
	13.7.61	11		11	1		1							
	14.7.61	2		2			1							
	15.7.61													
	25.7.61	4		4	2	1	4							
	26.7.61				4		1							
	27.7.61	3	9	12	5	1	2	1	3					
	28.7.61	1	2	3	10	2	1	3	4	1				
		32	29	61										
		52%												
CALF BAITED NET (IN ABSENCE OF MAN) AT PICARDI ESTATES	12.7.61	14	-	14	4		1				1			
	13.7.61	17	-	17	21	6	1		11	1		2		
	14.7.61	19	-	19	8	6		1	7	1	1			
	15.7.61	6	-	6	6	3			3		1	1		
	25.7.61	5	-	5	15	1		2	7		4		1	
	26.7.61	9	-	9	13	7	2		3		2			
	27.7.61	22	-	22	31	7			16					
	28.7.61	6	-	6	8	4	1	3	7		2	2		1
		98		98										

The Umfula Farm and all the surrounding farms and Swazi areas were sprayed with B.H.C. at the end of July, 1961, and were resprayed in November and again in May, 1962.

From surveys made between these sprays it was found that the number of A. gambiae decreased considerably.

As there were no cattle on the Umfula Farm a calf was obtained from the Swazi area about one mile away, to use as bait in one of the nets.

Large numbers of other anopheline species were found but only 2 unfed A. gambiae were caught in the man baited net, and 6 fed A. gambiae were found in the calf baited net during twelve collections.

From the attached record of window cage trap collections it is also obvious that the numbers entering the traps decreased considerably since the cattle were removed and the huts sprayed with B.H.C.

MAN-BAITED NET, UMFULA.

DATE	A. GAMBIAE			A. MARSHALLI	A. MACULIPALPIS	A. COUSTANE	A. DEMEILLONI	A. PRETORIENSIS	A. SQUAMOSUS	A. CINEREUS	A. RUFIPES	A. NILI	A. PHAROENSIS	
	FED	UNFED	TOTAL											
24.10.61				22		5								
25.10.61				8		172								
26.10.61				1		26	1							
1.11.61		2	2	114	1	73			1					
2.11.61				65		64	2	2						
3.11.61				5		10								4-5a.m.only
21. 2.62				6		1								
22. 2.62				3		10			1		1			
23. 2.62				4										Strong wind all night
14. 5.62				8		44								
15. 5.62						29								
16. 7.62				13	2	28		1	2					

CALF?BAITED NET, UMFULA.

24.10.61				1				1						
25.10.61				17	3			2			2	2		
26.10.61				28	1		1	3						
1.11.61				39	1	34	2							
2.11.61				98		40	1	1						
3.11.61				6		5	2							4-5a.m.onl
21.2.62				139	1	10	2	8	9		3			
22.2.62				66		23		3	1					
23.2.62	1		1	51	1	12		3	1		2			Strong wir
14.5.62	1		1	340	16	176	2	4	6	2			1	
15.5.62				76	18	286	1	2	10	1	2			
16.5.62	4		4	124	14	230	3	1	10	1	4			

2.5.3. Malaria Transmission at Nkambeni (Unsprayed Area).

On the 12th December, 1961, a child of six years was found to be positive for Malaria. Investigations indicated that the infection was acquired at Msinda. During an intensive survey, which followed, no signs of malaria vectors were to be found. No mosquitoes were found from 85 huts space-sprayed and 200 blood-slides taken in the immediate surroundings were all negative. No breeding was found in the Msinda dam at that time and the source of infection remained undetected.

At the beginning of April, 1962, it was found during routine surveys that transmission had, in fact, taken place at Mabiya, a confined area about 8 miles north of Msinda, during January, 1961.

Nine positive slides were found out of approximately 300 slides taken. The likely source of infection appeared to be an immigrant from P.E.A., whose slide was also positive.

An intensive entomological survey, which consisted of space-spraying, night catches by means of man and animal baited nets and by using window cage-traps, revealed negligible results.

/2.5.4.....

2.5.4. The Endophilic and Exophilic Behaviour of A.gambiae Mosquitoes in relation to B.H.C. Residual Spray at Umfula Planters.

In order to study likely behaviouristic changes in A. gambiae, exit-cage-traps were fitted to windows of nine huts and the number of mosquitoes collected, before and after the application of B.H.C. to each hut, was recorded.

12½% gamma B.H.C. was applied at the rate of 0.2 gm/square metre of surface area.

Summary of Results.

A. Survey before B.H.C. spraying.

MONTH	PERIOD	A. GAMBIAE		
		FED	UNFED	TOTAL COLLECTED
July 1961	11 days	58	158	216

First application of B.H.C. 31st July, 1961.

B. Survey ten weeks after first application.

MONTH	PERIOD	A. GAMBIAE		
		FED	UNFED	TOTAL COLLECTED
October 1961	6 days	6	2	8

Second application of B.H.C. at the end of November, 1961

C. Survey 10 weeks after second application of B.H.C.

MONTH	PERIOD	A. GAMBIAE		
		FED	UNFED	TOTAL COLLECTED
February 1962	6 days	Nil.	Nil.	Nil.

From this small-scale experiment it is evident that our proved method of residual spraying, using B.H.C. as insecticide, remains most effective in the control of malaria in Swaziland.

/Bilharzia.....

3. BILHARZIA.

3.1. Bilharzia Control Pilot Project at Phonjwana.

Snail control measures were commenced in March, 1961, during which year four applications of copper sulphate to the dam were made. During 1962 five further sulphations were made. Pockets of snails kept recurring in the upper area of the dam which was covered in bulrushes. These were eventually cut down and the area re-sulphated. This latter measure proved effective as no snails have been found since September, 1962. During September, 1962, Physopsis were found in the first twenty-five yards of the stream leading from the dam. None were found since sulphation during the same month. Monthly surveys were carried out and heavy applications of copper sulphate made. The sulphations include one on the dam and one on the stream made during October even though no snails were found, as it was considered desirable to strike again before the heavy rains.

In view of the previous unsuccessful attempts at mass treatment of the children of this area with "Nilodin" it was decided to repeat the treatment.

The children who were still positive after the previous course of treatment plus those who complained of haematuria were weighed and a three day course of treatment calculated for each one, based on 75 m.g.m. per kilogram of body weight. Each child was given a sweet (such as was used for the oral administration of Polio vaccine) before and after taking the tablets, which were given in the morning at approximately 9.00 a.m. and in the afternoon at approximately 3.00 p.m. Only 31 out of the original 66 completed the treatment. Most of them complained of side effect viz. nausea and vomiting and many absented themselves from school after the first and second days' treatment. A month after completion of treatment, the urines of the 31 who completed the course were examined and 11 were found to be still passing viable ova. The remaining 20 who were negative, were then examined for the second time and as a result an additional 4 were positive, making a total of 15 out of 31 still positive.

As "Nilodin" has been given a fair trial at Phonjwana and results each time have been unsatisfactory, it is recommended that another form of treatment be attempted.

3.2. Urinary Bilharzia Survey of European School Children.

The following results were obtained:-

School.	No. Examined	No. +VE	% +VE
Tshaneni Government School	33	0	0
Big Bend Government School	31	2	6.5
Stegi Government School	20	1	5.0
Herbert Stanley School, Havelock	81	3	3.7
Pigg's Peak Government School	96	3	3.1
St. Marks Primary & High Schools, Mbabane	502	3	0.6
Usutu Forest School	112	3	2.7

In addition 22 stools at Tshaneni Government School and 17 stools at Big Bend Government School were examine and found negative for S.Mansoni.

/Other Parasitic.....

\Other Properties.....

\Other Properties.....

Other Parasitic ova found during the stool examinations were:-

	ASCARIS		TRICHURIS		STRONGYLOIDES	
	NO. +VE	% +VE	NO. +VE	% +VE	NO. +VE	% +VE
TSHANENI SCHOOL	0	0	4	18.2	1	4.5
BIG BEND SCHOOL	2	10	5	25.0	0	0

3.3. Ecological Surveys:

3.3.1. R.C. WEIR, MZIMNENE RIVER, MANZINI (SEE FIG.1)

TH	WATER TEMP. °F.	RAINFALL IN M.M.	PHYSOPSIS (4 MAN HOURS SEARCHING)				NO. SHEDDING CERCARIAE	BREEDING-NO. OF EGG MASSES IN 4 HOURS
			Smaller than 3 m.m.	Larger than 3 m.m.	Larger than 6 m.m.	TOTAL		
	86	91.2	0	3	56	59	12	59
.	74	18.4	0	39	118	157	15	68
.	72	37.7	0	8	241	249	15	130
.	64	77.8	1	14	208	223	17	169
	59	4.9	0	16	274	290	12	103
.	54	3.2	0	10	206	216	2	31
.	55	1.6	0	2	170	172	1	35
.	57	0.5	0	3	239	242	7	82
T.	75	48.0	0	0	109	109	14	108
.	72	374.0	2	5	46	53	1	18
.	77	2120.0	0	0	32	32	2	29
.	75	159.0	0	2	12	14	0	9

Heavy rains during January and September-December appear to have had a decided effect on snail populations.

3.3.2. Tung Oils Upper Dam. (See Fig. 2)

NTH	WATER TEMP. °F.	RAINFALL IN M.M.	BIOMPHALARIA (3 MAN HOURS OF SEARCHING)				NO. SHEDDING CERCARIAE
			Smaller than 3 m.m.	Larger than 3 m.m.	Larger than 6 m.m.	TOTAL	
N.	75	91.2	3	259	238	500	0
B.	72	18.4	0	249	148	397	0
R.	77	50.1	1	69	41	111	0
R.	59	65.4	6	119	30	155	0
Y	55	4.9	3(1)	47(7)	22(5)	72(13)	
N.	55	3.2	0	63(31)	23(10)	86(41)	0
L.	55	1.6	0	13(2)	36(9)	49(11)	0
G.	54	22.0	0	13(12)	26(1)	39(13)	0
PT.	77	26.5	0(1)	5(3)	39(8)	44(12)	0
T.	72	399.0	6	54(5)	13(3)	73(8)	0
V.	73	2275.0	1	8(4)	18(3)	27(7)	0
C.	75	159.0	6	9	13	28	0

The mortality amongst snails indicated by figures in brackets as far as could be ascertained was due to the pollution of the water with "Tall Oil Soap" (a by-product of pulp making from the Usutu Pulp Mill) which was discharged into the Usutu River.

3.3.3. Tung Oil Lower Dam. (See Fig. 3)

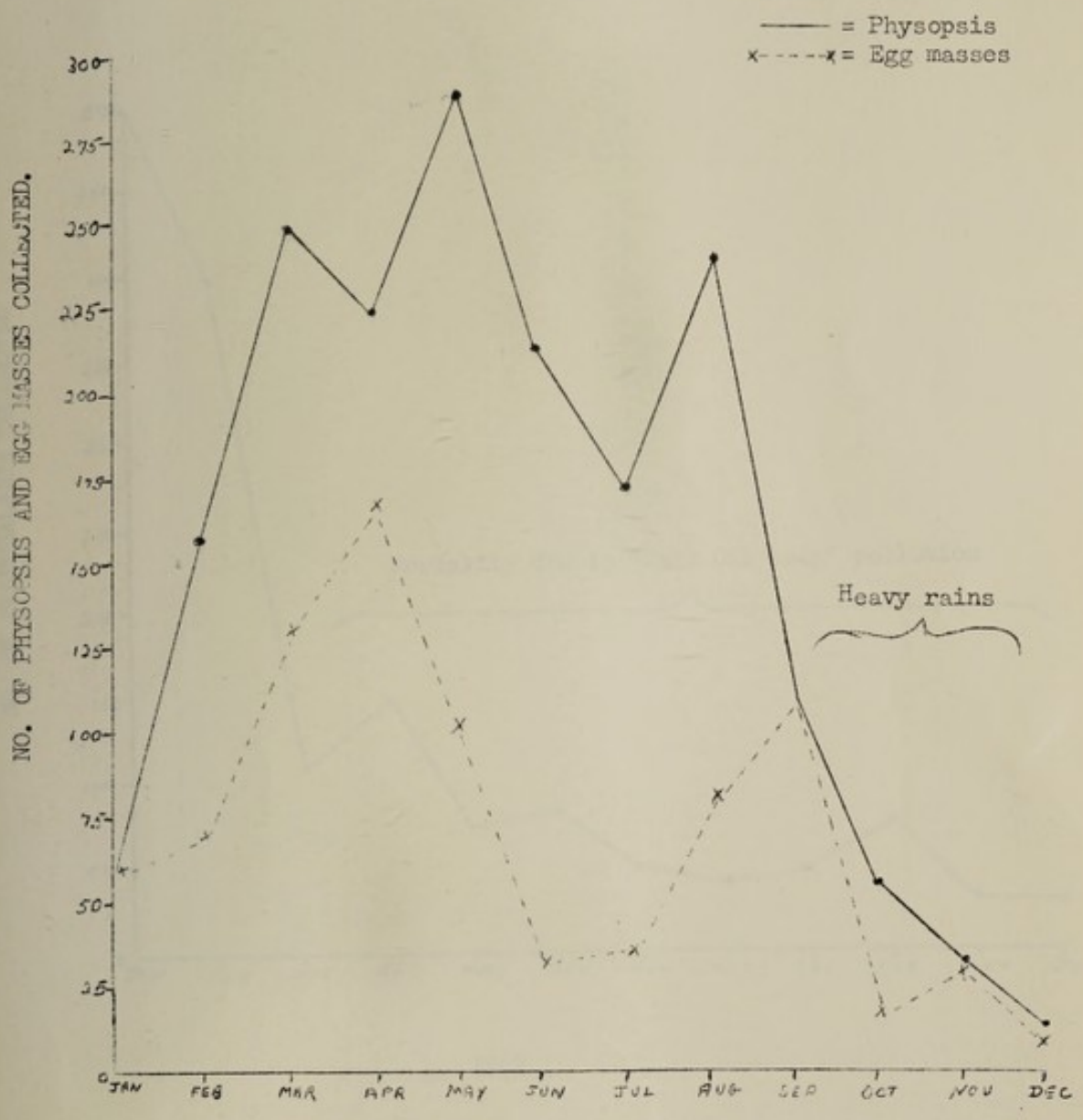
MONTH	WATER TEMP. °F.	RAINFALL IN M.M.	BIOMPHALARIA (4 MAN HOURS SEARCHING)				PHYSOPSIS (4 MAN HOURS SEARCHING)				BREEDING - EGG MASSES IN 4 HOURS
			Smaller than 3 m.m.	Larger than 3 m.m.	Larger than 6 m.m.	TOTAL	Smaller than 3 m.m.	Larger than 3 m.m.	Larger than 6 m.m.	TOTAL	
JAN.	75	91.2	0	53	171	224	0	1	31	32	31
FEB.	77	18.4	3	73	368	444	0	5	69	74	59
MAR.	79	50.1	1	22	249	272	0	2	18	20	20
APR.	70	65.4	2	66	404	472	0	1	8	9	52
MAY	61	4.9	3	138(2)	522(3)	663(5)	0	1	16	17	35
JUN.	57	3.2	1	67	492(15)	560(15)	0	3	17	20	63
JUL.	57	1.6	0	22	447	469	0	0	12	12	56
AUG.	55	22.0	12	58	317	387	0	0	4	4	60
SEPT.	77	26.5	33	58(2)	337(14)	428(16)	0	0(1)	7(1)	7(2)	56
OCT.	75	399.0	74	256(1)	452(13)	782(14)	0	0(1)	2	2(1)	72
NOV.	75	2275.0	26	394	833(1)	1253(1)	0	0	3	6	73
DEC.	75	159.0	46	235	282	563	0	0	6	6	21

Figures in brackets indicate dead snails.

Fig 1.

NO. OF PHYSOPSIS AND EGG MASSES COLLECTED

MONTHLY FROM R.C. WEIR, MZIMKULU RIVER.



1962

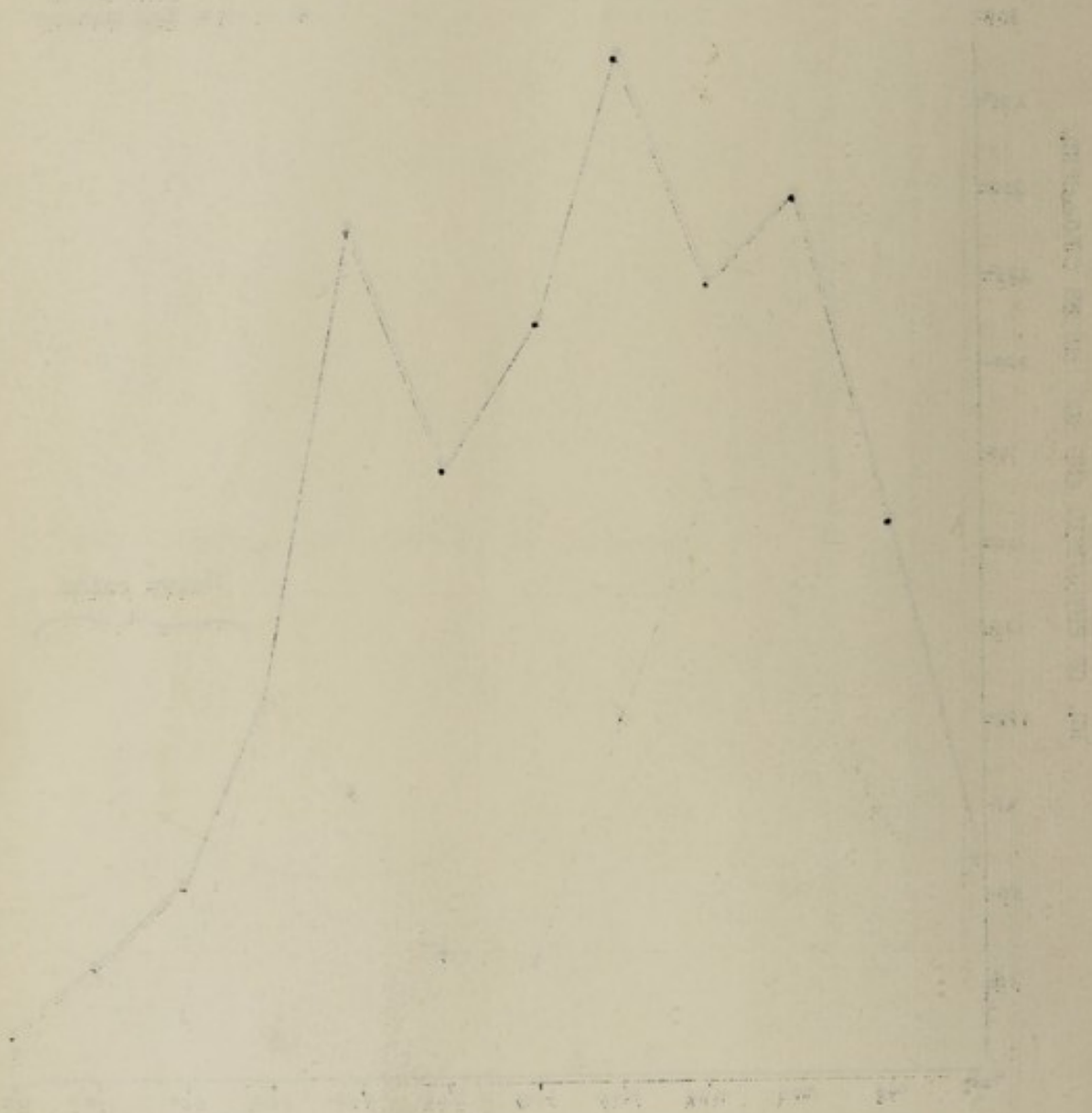
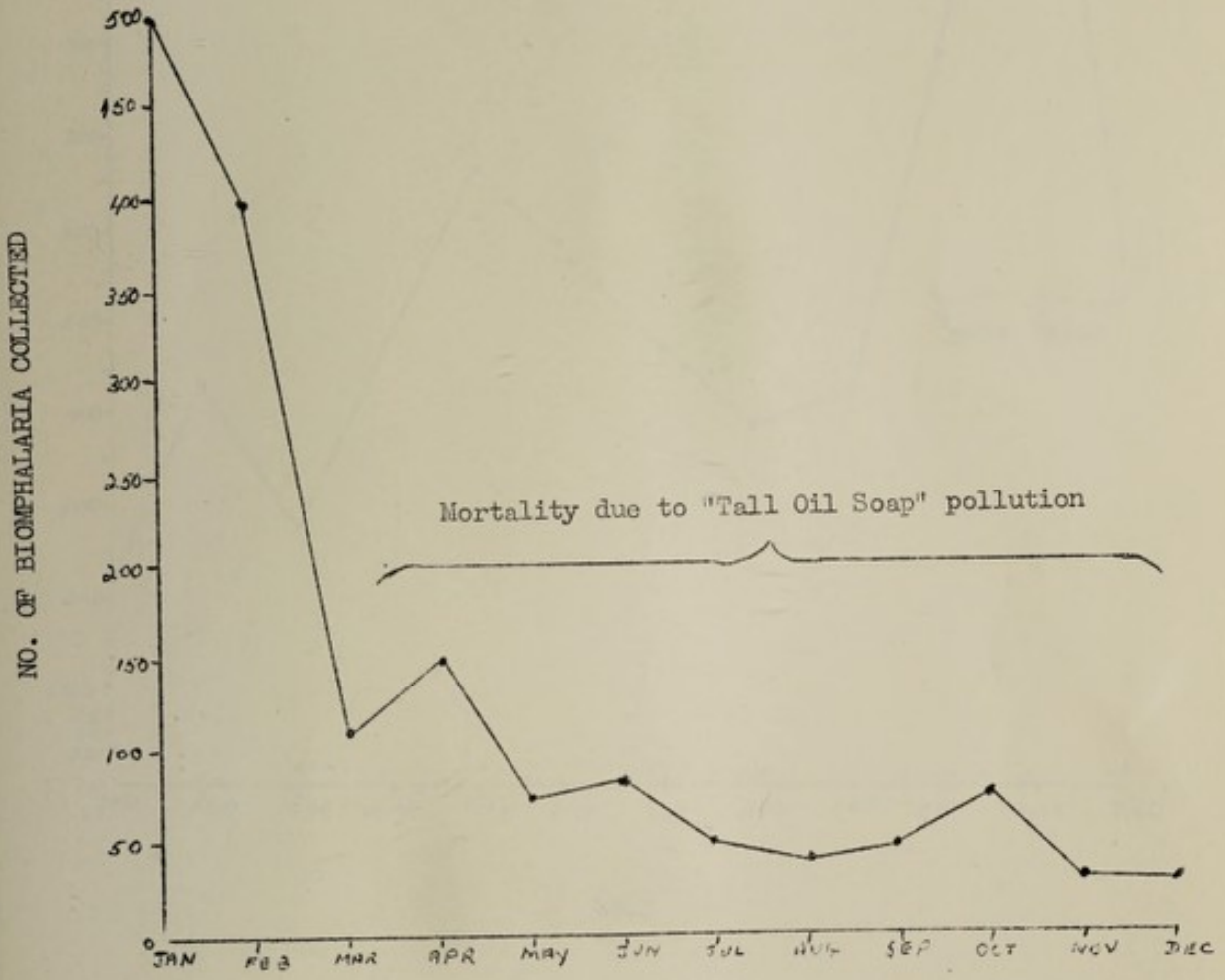


Fig.2.

NO. OF BIOMPHALARIA COLLECTED MONTHLY FROM

FROM TUNG OILS UPPER DAM



1962

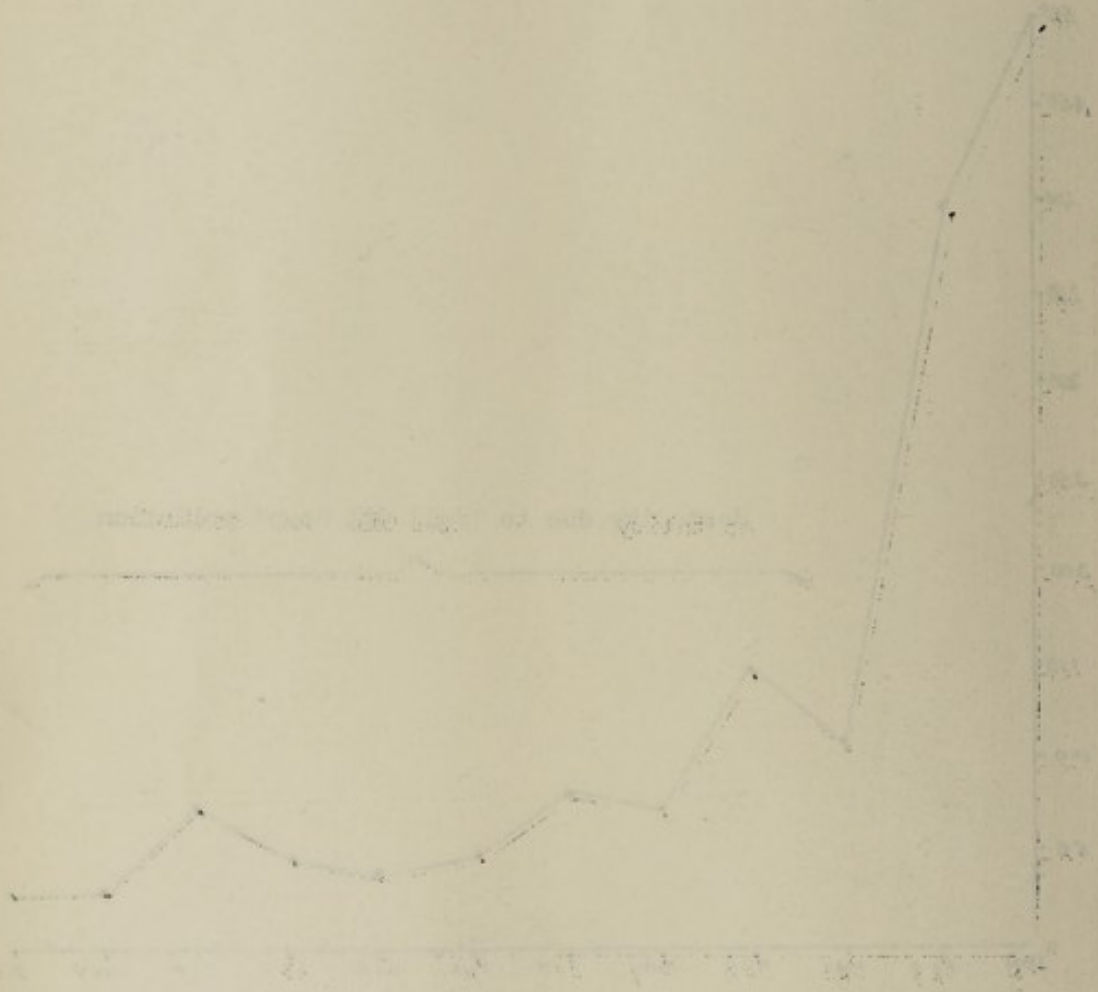
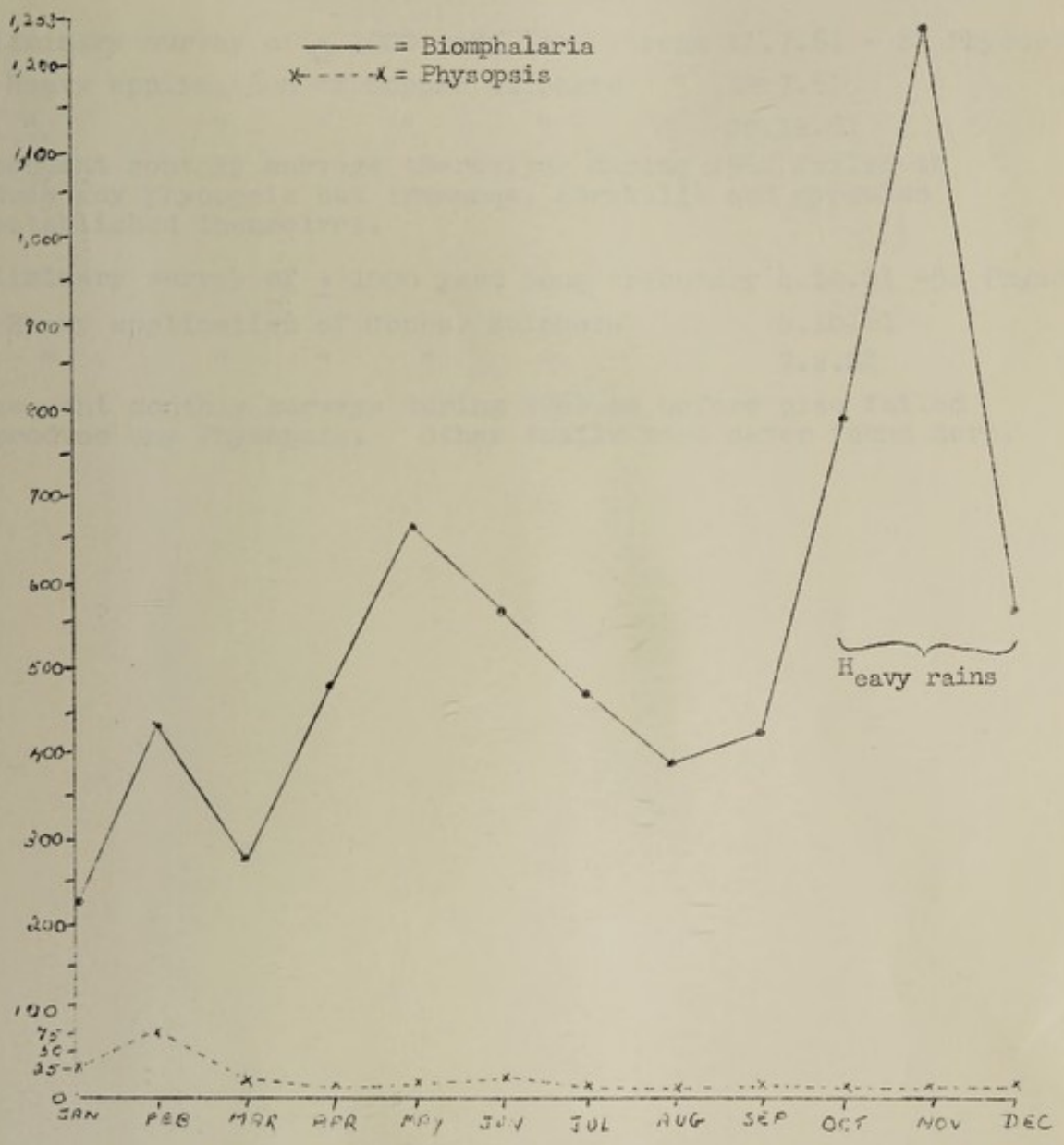


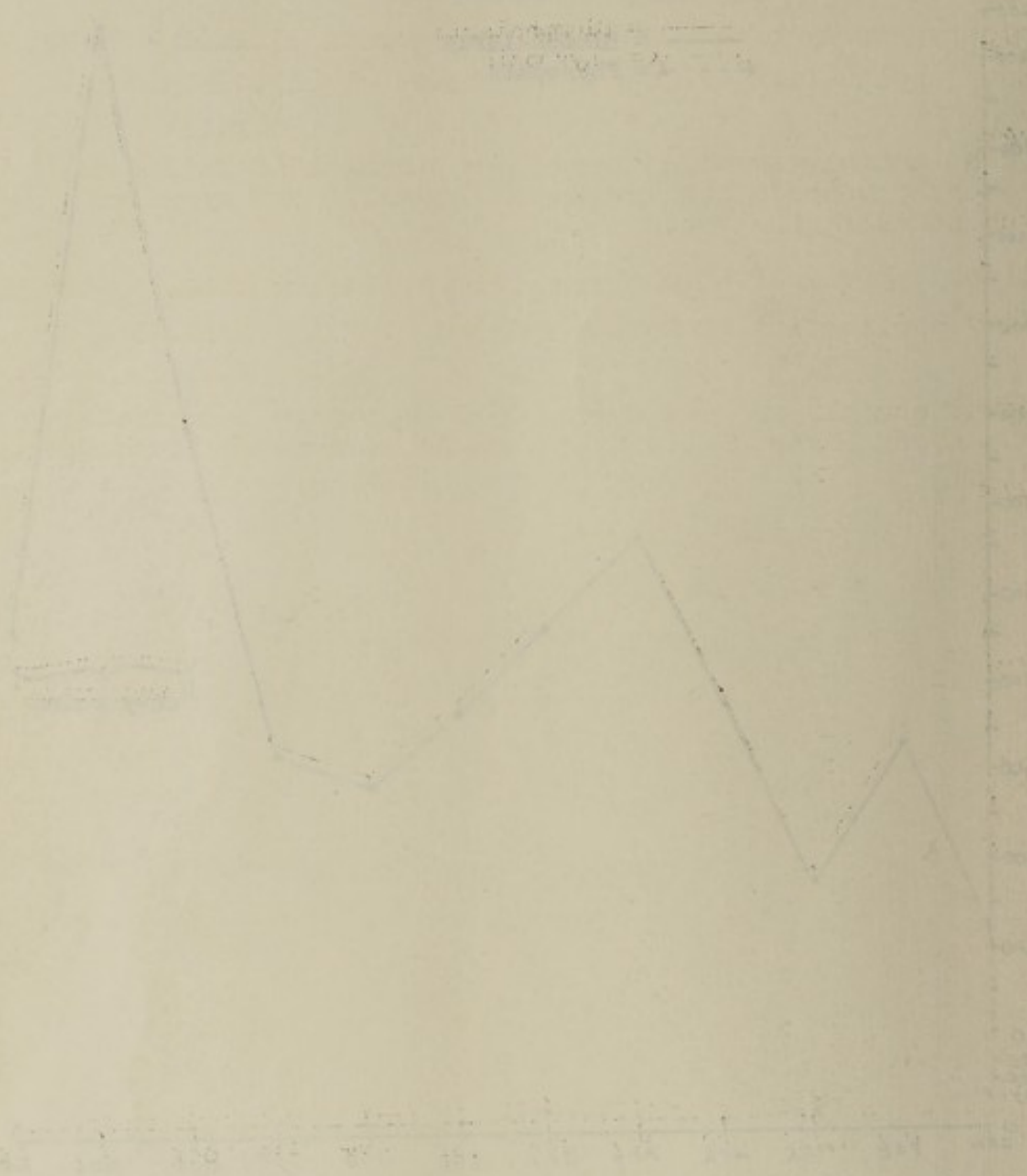
Fig. 3

NO. OF BIOMPHALARIA AND PHYSOPSIS COLLECTED

MONTHLY FROM TUNG OILS LOWER DAM.



1962



3.3.4. Snail Control Pilot Project -Thandelizwa Manzini District.

Preliminary survey of ± 2000 yard long stream 11.7.61 - 84 Physopsis.
1st Heavy application of Copper Sulphate 12.7.61
2nd " " " " " 20.12.61
Subsequent monthly surveys thereafter during 1962 failed to produce any physopsis but lymnanea, forskalii and gyraulus re-established themselves.

Preliminary survey of ± 1000 yard long tributary 4.10.61 -58 Physopsis.
1st Heavy application of Copper Sulphate 4.10.61
2nd " " " " " 7.2.62
Subsequent monthly surveys during 1962 as before also failed to produce any Physopsis. Other snails were never found here.

3.4. EPIDEMIOLOGICAL SURVEYS.

3.4.1. Epidemiological Survey - Ubombo Ranches, Big Bend.

(a) Snail Survey: A comparison with previous snail surveys is made:-

	BIOMPHALARIA				PHYSOPSIS				MELANOIDES			
	SEPT. 1958	MARCH 1959	AUGUST 1959	MARCH 1962	SEPT. 1958	MARCH 1959	AUGUST 1959	MARCH 1962	SEPT. 1958	MARCH 1959	AUGUST 1959	MARCH 1962
Main Canal	100	0	56	0	0	0	1	0	0	20	0	214
Branch Canal past Field Compound	66	1	12	0	6	5	2	0	0	0	0	0
Dam No. 2	180	13	8	4	6	30	0	0	0	0	0	0
Main Branch Canal	80	36	46	24	2	21	0	132	0	0	0	60
Branch Canal No.3	10	47	27	0	1	3	0	0	0	0	0	2
Stream below Old Mill Compound	-	19	2	39	-	18	1	1	-	0	0	1

In branch canal No. 3 only dead Biomphalaria and Physopsis (10 and 31 respectively) were found, in addition to the 2 live Melanoides. This was due to the fact that a weed killer known as"Aqualin" was applied to this canal only a week previously. As a weed killer it did not however prove a success.

(b) A parasitological survey at Bholi School, Big Bend, revealed the following:-

	S.HAEMATOBIUM			S. MANSONI		
AGE GROUP	NO. EXAMINED	NO. +VE	% +VE	NO. EXAMINED	NO. +VE	% +VE
0 - 10	50	34	68	50	32	64
11 - 20	50	37	74	50	18	36
TOTALS	100	71	71	100	50	50

By way of comparison the following are the figures for this area according to surveys conducted 3 - 3½ years previously:-

	S.HAEMATOBIUM			S. MANSONI		
AGE GROUP	NO. EXAMINED	NO. +VE	% +VE	NO. EXAMINED	NO. +VE	% +VE
0 - 20	113	80	71	108	16	15

The increased incidence in S. mansoni is striking as is the comparison in S. mansoni incidence between the two age groups.

3.4.2. Parasitological Survey - Nkambeni.

It was considered advisable to conduct a survey in a non-irrigated Swazi area adjoining the Swaziland Irrigation Scheme, Tshaneni, in order to establish the fact that the high incidence of bilharzia in the Irrigation Scheme was directly attributable to irrigation. Consequently Nkambeni School and a nearby kraal were chosen for this purpose and only children who were born and brought up in this area were examined.

A comparison is made between a similar group of children from Swaziland Irrigation Scheme, the results being as follows:-

	S. HAEMATOBIUM				S. MANSONI		
PLACE	NO. EXAMINED	AVERAGE AGE	NO. +VE	% +VE	NO. EXAMINED	NO.+VE	% +VE
S.I.S.	66	4.8yrs	23	34.8	64	12	18.7
NKAMBENI	66	7.2 "	10	15.0	66	1	1.5

3.4.3. Parasitological investigation at Thambankulu and Umbeluzi Estates.

At the request of the management, an investigation was conducted in order to assess the extent of the bilharzia problem amongst the children.

The following are the results:-

	S. HAEMATOBIUM			S.MANSONI		
PLACE	NO. EXAMINED	NO.+VE	% +VE	NO. EXAMINED	NO.+VE	% +VE
THAMBANKULU (Irrigated)	134	71	53	134	53	40
UMBELUZI (Not Irrigated)	39	14	36	36	5	13.9

Other parasitic ova found were:-

PLACE	PARASITE	NO. EXAMINED	NO. +VE	% +VE
THAMBANKULU	Ascaris	134	19	14.2
"	Trichuris	134	5	3.7
"	Taenia	134	2	1.5
"	H.nana	134	1	0.75
"	Strongyloides	134	1	0.75
UMBELUZI	Ascaris	36	4	11.1
"	Enterobius	36	1	2.8

In order to ascertain the possible sources of infection, the following snail survey was conducted:-

	PHYSOPSIS	BIOMPHALARIA
MAIN CANAL	0	0
CEMENT CANALS	0	0
1st CEMENT SUMP	13(5+ve)	0
2nd " "	18(2+ve)	61
STREAM AT ROAD CROSSING TO MAIN ROAD	2	0
THAMBANKULU STREAM	1	32
EARTH CANAL TO THANK. STR.	2	14

3.4.4. Comparative Epidemiological Investigations

A comparison is made with conditions found in previous surveys at the Swaziland Irrigation Scheme Tshaneni and the Mhlume Sugar Company.

(a) Snails - Swaziland Irrigation Scheme.

PLACE	BIOMPHALARIA		PHYSOPSIS	
	JULY 1959	AUGUST 1962	JULY 1959	AUGUST 1962
MAIN RICE CANAL	53	4	22	0
" " " DAM	130	6	9	24
MAIN RICE CANAL 3	122	71	8	18
	305	81	39	42

(b) Parasites - Swaziland Irrigation Scheme.

DATE	S.MAEMATOBIUM			S. MANSONI			% Double Infections	TOTAL % Infected Bilha
	NO. EXAM.	NO.+VE	% +VE	NO. EXAM.	No.+VE	% +VE		
MAR. 1961	169	100	59.2	168	76	45.7	34	71
SEPT. 1962	169	99	58.5	169	86	50.9	36.8	72.8

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(b) Parasites - Swaziland Irrigation Scheme (Continued)

DATE	S. HAEMATOBIUM		S. MANSONI	
	0 - 10 YRS.	11 - 20 YRS	0 - 10 YRS	11 - 20 YRS
MAR. 1961	38/80=47.5%	62/89=69.7%	36/80=45%	40/88=45.4%
SEPT 1962	38/82=46.3%	61/87=70.1%	38/82=46.3%	48/87=55.2%

(c) Other Parasites - Swaziland Irrigation Scheme.

DATE	ASCARIS	TRICHURIS	TAENIA	H.NANA	STRONGYLOIDES	ENTEROBIUS	TOTAL
MAR. 1961	3.6%	0.6%	1.8%	0.6%	0%	0%	6.5%
SEPT 1962	4.1%	1.8%	3.5%	1.2%	0%	0.6%	11.2%

(d) Snails - Mhlume Sugar Company.

PLACE	BIOMPHALARIA		PHYSOPSIS		
	JUNE 1959	AUGUST 1962	JUNE 1959	AUGUST 1962	
DAM 1	1	0	0	0	
" 2	0	0(1)	0	0	(1)dead snail
" 3	0	0(1)	0	0	
" 4	0	5	0	2	
WEST BRANCH CANAL	19	8	0	30	

The above indicates that the snails have worked their way into the irrigation system. In addition Biomphalaria and Physopsis were found in cemented canals.

(e) Parasites - Mhlume Sugar Co.

DATE	S.HAEMATOBIUM			S.MANSONI			% DOUBLE INFECT-IONS	TOTAL % INFECTED BILHARZIA
	NO. EXAM	NO. +VE	% +VE	NO. EXAM	NO.+VE	%+VE		
JUNE 1959	159	84	53	159	34	21	16.4	57.9
SEPT 1962	159	120	75.5	159	89	56	47.8	83.6

DATE	S. HAEMATOBIUM		S. MANSONI	
	0 - 10 YRS	11 - 20 YRS	0 - 10 YRS	11 - 20 yrs
JUNE 1959	32/59= 52.5%	52/100= 52%	18/59= 30.5%	16/100=16%
SEPT 1962	38/59= 64.4%	82/100= 82%	30/59= 50.8%	59/100=59%

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(f) Other Parasites - Mhlume Sugar Company.

DATE	ASCARIS	TRICHURIS	TAENIA	H.NANA	STRONGYLOIDES	ENTEROBIUS	TOTAL
JUNE 1959	5%	0%	2.5%	1.25%	1.25%	0%	10%
SEPT 1962	12%	19%	6.3%	1.25%	2.5%	0%	41.5%

3.4.5. Snail Survey - Ubombo Ranches, Big Bend.

As a result of a claim by the Management of Ubombo Ranches that the clearing of vegetation from the canals had substantially contributed towards snail eradication, it was decided to conduct a snail survey. The results were as follows:-

PLACE	BIOMPH-ALARIA	PHYSO-PSIS	LYMN-ARA	TROP-ICUS	MELAN-OIDES	FORSK-ALII	GYRA-ULUS	BIV-LVES.
Main Canal at Malay-inini Com-pound (+ 100 yards)	51	0	30	0	48	0	1	0
Adjoining Sump, Mal-ayinini Compound	0	0	0	30	0	0	0	0
Canals & Large Pool Mkhayabovu Compound	6	0	14	0	0	1	0	0
Canals & Large Pool Embonoweni Compound	100	1	31	35	24	0	0	4

The main canal despite haveing been well cleared from an irrigation point of view, still contained sufficient Potamogeton SP. (a water weed) and microflora to support molluscan life.

Vegetation clearance is obviously only part of the solution to the problem of snail eradication.

The management of Ubombo Ranches has agreed to co-operate with the Department in a snail eradication pilot project. A suitable section of the Main Canal near the end has been chosen and two screens are to be made and fitted to the canal as well as a device for applying a drip-feed to the water. The Department will provide the necessary Copper Sulphate for the initial sulphation and also for the continuous drip. If this is successful in keeping the section below these mechanical and chemical barriers free of snails, extension of the method will be considered.

3.4.6. Manzini Gaol.

In order to gain some idea of the possible effects of bilharzia on energy output, the urines of 83 prisoners were examined and the prisoners were grouped into three categories viz: "Bad workers" "Fair workers" and Good workers". The results were as follows:-

Bad workers - 12, of which 6 had bilharzia (i.e. 50%)
Fair workers- 21, " " 4 " " (" 19%)
Good workers- 50, " " 15 " " (" 26%)

/30.....

3.4.7. Numerous other small surveys were carried out during the year, at the request of Company Medical Officers, farmers, teachers, etc. and appropriate advice was given.

3.4.8. Taxonomy.

During 1962 snails were sent to Potchefstroom University for taxonomical examination - and the results were as follows:-

The intermediate host of S.haematobium was Bulinus (Physopsis) Globosus (Morel) in the case of specimens from Manzini, Mbabane, Ezulwini, Lobamba, Malkerns, Matapha, Sipofaneni, Big Bend, Lubuli, Kubuta, Tofus causeway.

Bulinus (Physopsis) Africanus (Krs.) were found at Bethel near Hluti and in the Mahosha River between Mhlotsheni and Dwaleni. In both instances some of the snails collected here were found to be shedding mammalian cercariae.

The intermediate host of S.mansoni was Biomphalaria pfeifferi pfeifferi (krs.) in the case of specimens from Manzini, Mbabane, Matapha, Sipofaneni, Big Bend, Lubuli, Kubuta.

3.5. EXPERIMENTS:

3.5.1. "Tall Oil Soap" as a Molluscicide.

As a result of the findings in the Tung Oils upper dam previously mentioned under para. 3.3.2 a snail survey was conducted at the weir in the Usutu River where the Malkerns Irrigation Canal commences and also in Malkerns. The results are compared with a survey conducted in May 1957.

	MAY 1957	SEPTEMBER1962
	No.snails	
Usutu River weir	76 Physopsis 10 Lymnaea.	
Main dam at Tung Oils	66 " (21 infected)	8 Physopsis + 6 dead 60 Biomphalaria + 89 dead. 30 Lymnana +16 dead.

In the Laboratory it was discovered that 40 parts per million of "Tall Oil Soap" (i.e. 40 mg/litre) appeared to have no effect on adult or baby snails, but proved to be lethal to fish.

From the above it would appear that "Tall Oil Soap" would not be practicable as a molluscicide as it would upset the ecological balance of the waters to which it was applied.

3.5.2. "Dettol" and "Germotol" as Cercaricides.

Tests were carried out with "Dettol" and "Germotol" in order to establish their efficacy as cercaricides, as it appears that some people add "Dettol" to their bath water in order to safeguard themselves against bilharzia.

The experiments were based on the fact that 30 gallons of water constituted a fairly full bath.

/The results.....

The results revealed that:-

2	Tablespconsful	of	Dettol	killed	cercariae	in	7 minutes.
3	"	"	"	"	"	"10	"
4	"	"	"	"	"	" 2	"
5	"	"	Germotol	"	"	"10	"
6	"	"	"	"	"	" 9	"
7	"	"	"	"	"	" 6	"
8	"	"	"	"	"	" 6	"
10	"	"	"	"	"	" 3	"

The use of"Germotol" would thus not be an economic proposition whereas "Dettol" would certainly be more practicable.

3.5.3. The effect of centrifugal force on cercariae by means of a 1 h.p. centrifugal pump running at 2,850 R.P.M. was tested. A head of 18 lbs/square inch was obtained and cercariae were pumped through and examined. It was found that a few cercariae had survived this process as they were fully active, but most had lost their tails and the schistosomules were crawling around actively on the bottom of the container. A few dead schistomules were also observed.

3.6. BILHARZIA EXAMINATIONS AT HEALTH OFFICE.

209 urines, 8 stools and 3 labial warts were examined for evidence of bilharzia at the Health Office, Manzini.

4. POLIOMYELITIS. Three cases.

The three cases of Poliomyelitis reported during the year were all sporadic in distribution and consequently no special investigations were undertaken. Oral Poliomyelitis vaccine was made available to the public during the year. A letter to the "Times of Swaziland" and "Izwi lama Swazi" advertising the availability of the vaccine had little effect in stimulating the public interest. At the Health Office only 68 doses have been administered since the vaccine was made available. At other centres the response has been similarly poor.

5. DIPTHERIA. Seven cases with two deaths.

All the cases of Diphtheria reported were sporadic in distribution. At Ubombo Ranches where there was a suspected case in a very unhygienic compound all contacts were passively immunised with Antitoxin. No further cases developed.

6. ENTERIC FEVER. Three hundred and thirty-four cases with eighteen deaths.

6.1. There has been a disturbing increase in the number of cases reported over the last few years. In 1959 there were 141 cases with 8 deaths, in 1960 there were 202 cases with 14 deaths, in 1961 there were 285 with 15 deaths. The most disturbing aspect of the situation is that though many cases are seen by Medical Officers, there are probably as many if not more, that are not seen, and these unseen and untreated cases are in all probability acting as the reservoirs for the further spread of the disease. Another important factor is the poor attendance at immunisation points. Usually

/the turn-out.....

the turn-out for the first injection is good, but due to the local and general reaction to the vaccine both of which may be severe, the attendance for the second and most important immunising dose is always extremely poor. Consequently, the number of protected persons remains low. The number of "Carriers" developing after an attack of Typhoid Fever especially among the untreated section of the population, may be considerable, but it remains an unknown factor. However, "Carriers" and active cases combined with the insanitary habits of the people (as far as the disposal of their excreta is concerned) provide a situation which is most serious and which is most difficult to overcome. The only solution would be health education and a system of mass immunisation.

6.2. The following table shows the number of people immunised against Typhoid Fever:-

JANUARY - MARCH, 1962	1st INJECTION	2nd INJECTION
Lavumisa	393	76
Lesibovu	28	7
Goedgegun Government School	207	361
Christ the King School, Hlatikulu	224	312
Central School, Hlatikulu	380	402
Bethal, Hluti	1,578	1,253
Lady of Sorrows, Hluti	553	423
Florence, Hluti	290	177
Nazarene, Hluti	1,849	1,825
Lubuli Clinic	1,036	564
Lubuli Mission	599	423
APRIL - JUNE, 1962		
Lulakeni	607	308
Sandleni	822	492
Dumisa	426	249
"	74	-
JULY - SEPTEMBER, 1962		
Phemba Mission	180	140
Ngcampalala (Hlatikulu District)	74	249
Matiwane " "	109	106
Madubeni " "	55	26
Matiwane " "	130	-
Madubeni	55	26
"	20	-
Balegane	168	111
"	68	-
Nhlambeni (Manzini District)	270	245
"	28	-
River Bank Sugar Co.	177	142
"	18	-
OCTOBER - DECEMBER, 1962		
Matanjeni	636	398
"	60	-
Mgampondo	658	481
"	109	-
Gollel	476	260
"	30	-
Lavumisa	760	150
"	31	-
Gebeni (Mgamunde)	123	103
"	40	-
Sigar D.R.C. School	101	92
"	32	-
	13,474	9,401

T.A.B. GIVEN AT OTHER CENTRES: Not separated into 1st and 2nd injections.

Goedgegun Clinic	2955
Hlatikulu Hospital	2765
Hluti Clinic	1069
	6789

7. SMALL-POX. No cases.

7.1. During the year two suspected cases of Small Pox were seen. One was reported from Mahamba Mission and the other from Pigg's Peak. Investigation showed that both cases were indeed not Small Pox but severe Chicken Pox.

7.2. The Vaccinator who joined the service in 1961 resigned at the end of February. A temporary vaccinator was taken on strength from the first of March. At this time there was a great demand for vaccinations as the Republic had made vaccination a compulsory condition for entry. This demand for vaccinations continued for several months and the vaccinator was kept busy throughout the period. Arrangements were made for the vaccination of sections of the rural population. At Mankaiana vaccinating centres were arranged through the District Commissioner, with specific dates for each centre. The response on the part of the people was very poor and it was then decided that a better method would be to advertise the campaign through District Team meetings. The Manzini District Team then planned a series of meetings, giving the question of vaccination priority. All meetings were attended by representatives of the Health Office and appeals were made to the people to attend in force on the dates fixed for the various vaccinating centres. The talks with the people were well received and after each meeting it was promised that the people would turn out enbloc when the vaccinator appeared. In spite of all this the turn-out for vaccination was extremely poor. The vaccinator has, however, been kept well occupied by vaccinating all the scholars at the African Schools throughout the territory.

7.3. Vaccinations carried out by the Department for the year amounted to 24,811. In addition, the Medical Superintendent of Mahamba Hospital vaccinated 3,448 school children. It is sincerely hoped that vaccinating the rural population in the new year will meet with more success.

8. OTHER INFECTIOUS DISEASES.

There were two cases of Meningitis, while Chicken Pox, Measles and Whooping Cough have shown the usual seasonal and district variations.

9. VENEREAL DISEASES.

The number of cases of Syphilis and Gonorrhoea treated in 1962 show quite a marked increase over the 1961 figures. Syphilis rose from 1604 to 2255 and Gonorrhoea 3518 to 4194. The number of re-attendances for treatment in 1962 were:

Syphilis	4510
Gonorrhoea	5196

The above figures are from hospitals and clinics and will not coincide with the figures given in the nosological returns which are from hospitals only.

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(b) NUTRITIONAL AND DEFICIENCY DISEASES.

1.1. The field work of the Nutrition Survey carried out by Miss Sonya Jones, M.Sc., working on a Natal University fellowship, and assisted by local staff, was completed in March, and the report of the survey is due shortly. It is expected that the report will provide much needed information on the actual diet of the Swazi, and its deficiencies, and of the food available, on which it will be possible to plan future action.

1.2. Financial assistance has been received from the Oxford Committee for Famine Relief for the establishment of a small Health Education/Nutrition Unit. The Unit in the first instance will consist of a trained Health Assistant with experience in this type of work, and a well qualified Nursing Sister, who assisted Miss Jones in her Nutrition Survey. The Unit will be provided with a caravan and other necessary teaching aids, and will visit the clinics and schools, and will maintain close contact with the Agricultural Department. The Unit will concentrate on the proper use of food; the dangers of unbalanced diets - and also on rural sanitation.

1.3. Assistance continues to be received from U.N.I.C.E.F. in the form of dried skimmed milk, and also Vitamins A and D capsules. The dried milk is widely distributed through clinics and other agencies for pregnant and lactating women, and children in need of a dietary supplement - and is readily acceptable to the people.

1.4. The Save the Children Fund has initiated school feeding - at present only on a pilot project basis but it is hoped that this will develop on an increasingly wide basis, as school feeding would be of great value to Swaziland.

1.5. In 1962 the number of cases diagnosed as malnutrition or "deficiency disease" again increased, and the Territorial totals for the past ten years are as follows:-

1953 - 286
1954 - 388
1955 - 330
1956 - 454
1957 - 1010
1958 - 1459
1959 - 2010
1960 - 2196
1961 - 2864
1962 - 3240

The "break-down" of the cases over the past three years is as follows:-

	1960		1961		1962	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Total Cases of Malnutrition	**2196**	**66**	**2964**	**71**	**3240**	**101**
Kwashiorkor	423	30	487	24	685	35
Pellagra	693	5	938	6	912	4
Scurvy	40	1	13	-	14	-
Malnutrition unqualified	1040	30	1426	41	1629	62

(c) SANITATION - WATER SUPPLIES - FOOD SUPPLIES.

1. SEWAGE DISPOSAL.

1.1. The sewage disposal plant at Mbabane continues to work very satisfactorily. There are, however, still quite a number of places in Mbabane that are using the bucket system and the disposal of the pail contents has on occasion lead to the creation of a nuisance. The question of disposing of pail contents into the existing sewers is receiving attention, and when a suitable site on the sewer line has been chosen all excrement will then pass into the disposal works. This will be a much more hygienic method of disposal - the trench method if not properly supervised always leads to the creation of nuisance.

1.2. A considerable amount of trouble with sewage disposal has been experienced in Manzini during the year. The primary cause of the trouble has been the impervious nature of the soil. This had lead to overflowing of french drains and in an endeavour to alleviate the position the construction of conservancy tanks has been permitted and many of the new buildings are using this system. Unfortunately more of these tanks have been built than can be adequately coped with by the single vacuum tanker and the result has been chaotic at times, with sewage effluent running down the street gutters. The situation was made worse by the repeated breakdown of the vacuum tanker. The conservancy system is a well recognised method of sewage disposal but it is absolutely essential to have a sufficient number of vacuum tankers to dispose adequately of all effluent received into the tanks, and a sufficient number to allow all tanks to be emptied in the event of the vehicles breaking down. Manzini is badly in need of a sewage disposal works to overcome the really great danger to the public health caused through the above-mentioned drainage problems. A start on the works was made during the latter months of the year and it is hoped that the system will be operating by the end of 1963. Unfortunately only a portion of the town will be served initially, but it is going to alleviate a great deal of the trouble.

1.3. The smaller towns in the territory all have pail closets in the older buildings but all new houses are equipped with waterborne systems. The aim is the gradual elimination of all pail closets and their replacement by water-borne systems.

1.4. Unfortunately, the pit privy system is still in use in some places. This is often a most unhygienic method of disposal as the pits are seldom constructed according to plan and as a consequence are not fly proof and therefore a considerable danger to health. Aqua Privies have proved their worth when they have been properly constructed and properly supervised. On the other hand, where they have not been so constructed and supervised they have been most unhygienic and offensive. The R.O.E.C. system has been introduced into the territory and where properly constructed it is giving good results. This system needs no water and due to the method of construction no odour is produced.

/2. RURAL SANITATION.....

2. RURAL SANITATION.

Rural sanitation is virtually non-existent. The Swazi people do not attempt any form of hygienic disposal of their excrement. The nearest bush, clump of grass or donga serves as the "lavatory". This would not be a bad system if an attempt were made to cover the faeces, but unfortunately this is never done and it does not require much imagination to understand how disease can spread from this habit. There are generally abundant numbers of flies around the kraals and these play a most important role in the spread of disease. Very often a dry stream bed is used for these very insanitary practices and when the rains come the excreta may be washed into the drinking water stream.

The increase in intestinal diseases can be attributed to this lack of rural sanitation, and it is of the utmost importance that a system of Health Education be developed to help overcome this most unhealthy state of affairs.

3. REFUSE REMOVAL.

The larger towns have reasonable refuse removal services with proper enclosed refuse removal vehicles. The refuse in these towns is taken to selected sites where it is dumped and covered. In Manzini refuse is used for the reclamation of lost ground along the Mzimnene River at the Show Grounds. Unfortunately in some places the refuse is dumped without being covered with earth and it is in situations like this that nuisances due to odour, fly attraction and fly breeding occur.

4. WATER SUPPLIES.

4.1. There has been a great improvement in the quality of water supplied to the smaller towns. Manzini and Mbabane have excellent supplies, but it would appear that quantities produced are insufficient for the needs of these rapidly expanding towns, and it will be soon necessary to enlarge the pumping and purifying capacities of these plants.

4.2. The following tables show the number of water supplies submitted for bacteriological examination.

PLACE	DATE	COLLECTION POINT	PRESUMPTIVE E. COLI	FAECAL E. COLI
Mbabane	2.1.62	1.Effluent sewage works	110	17
		2.River above effluent inlet	1800	1800
		3.Swimming bath	50	0
		4.Engineer's House	250	8
	15.1.62	Swimming pool	0	0
	22.1.62	1.Raw Water	380	14
		2.Hospital	0	0
		3.Kent Rock House	0	0
	12.3.62	1.Raw Water	170	13
		2.Lower Kent Rock	0	0
		3.St. Mark's	2	0
		4.Swimming Pool	0	0
		5.River above effluent intake	1800	1800
		6.Final Effluent	900	7

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PLACE	DATE	COLLECTION POINT	PRESUMPTIVE E. COLI	FAECAL E. COLI
MBABANE	15.5.62	1. Raw Water	8	0
		2. Kitchen	0	0
		3. Effluent Sewage Works	1600	25
		4. Raw from River above works	900	900
		5. Black Umbeluzi River	25	5
	2.7.62	1. Effluent Sewage Works	1600	30
		2. River water above Sewage Works	50	13
		3. St. Mark's	0	0
		4. Raw Water	13	0
	30.7.62	1. Effluent Sewage Works	1800	6
		2. Raw Water	9	2
		3. St. Mark's	0	0
		4. Raw above Sewage Works	110	2
	17.9.62	1. Effluent Sewage Works	1800	4
		2. Raw Water above works	900	20
		3. Raw water	11	0
		4. Swimming Bath	5	0
		5. St. Mark's	0	0
		6. Residency	0	0
	9.10.62	1. Effluent Sewage Works	600	2
		2. River above works	900	0
		3. Raw water	25	2
		4. Swimming Bath	0	0
		5. Residency	0	0
		6. Garden	0	0
	13.11.62	1. Raw water	600	2
		2. River	1800	2
		3. Effluent Sewage Works	900	0
		4. Swimming Bath	0	0
		5. Garden Tap	0	0
		6. Kitchen Tap	0	0
MANZINI	5.2.62	1. Reservoir	0	0
		2. Garage	0	0
		3. Government School	0	0
		4. Abattoir	0	0
		5. Matapha School	0	0
		6. Raw water	1800	200
	23.3.62	1. Swimming Bath	0	0
		2. " "	0	0
		3. Usutu Orchards	70	4
	8.5.62	1. Usutu Orchards	110	14
	4.9.62	1. Kitchen	0	0
		2. Tap outside	0	0
		3. Tap P.W.D. Office	0	0
		4. Bremersdorp Hotel	0	0
		5. Raw water	250	0
	11.12.62	1. Raw water	1800	1800
		2. P.W.D.	0	0
		3. Tap at Reservoir	0	0
		4. Kwaluseni P.O.	0	0
		5. Water Department Camp	0	0
		6. Pump Station Lab. Tap	0	0

/WATERFORD SCHOOL.....

PLACE	DATE	COLLECTION POINT	PRESUMPTIVE E. COLI	FAECAL E. COLI
WATERFORD SCHOOL	23.10.62	1. Tap water	250	0
		2. Spring	50	2
STEGI	30.1.62	1. Raw water	1800	380
		2. Bamboo Inn	13	0
		3. Outside tap-main supply	50	2
		4. Tap P.W.D. Office	170	0
		5. Tap Gaol	20	2
		6. Tap House	25	5
	27.2.62	1. Post Office	0	0
		2. P.W.D. Office	0	0
		3. Gaol Tap	0	0
		4. Roads Department Office	0	0
		5. Tap District Commissioner's Garden	0	0
		6. Raw water	1800	600
	18.6.62	1. Raw water	50	0
		2. School	0	0
		3. Market	0	0
		4. P.W.D. Office Tap	0	0
		5. Butchery	0	0
		6. Police	2	0
	23.10.62	1. Raw water	380	11
		2. Schumans	11	0
		3. Kitchen	14	0
MDUTSHANE	6.3.62	1. Raw water	600	17
		2. Administration Office	140	17
		3. Other Office	380	50
		4. Residential	130	25
	4.6.62	1. Raw water, Dam	130	17
		2. " " Furrow	600	35
		3. Workshops	0	0
		4. Residence	0	0
		5. Usutu River upper	600	25
		6. " " lower	900	380
	21.8.62	1. Raw water	35	0
		2. Residence	17	2
		3. Workshop	25	0
	4.12.62	1. Raw water	1800	4
		2. Reservoir	0	0
		3. Lab.	0	0
PIGG'S PEAK	15.1.62	1. Raw water 1	250	130
		2. Pigg's Peak Hotel	0	0
		3. Raw water 2	600	130
		4. Hospital	0	0
		5. Prison	0	0
	3.4.62	1. Raw water 1	95	13
		2. " " 2	130	25
		3. School	0	0
		4. Prison	0	0
		5. Hospital	0	0
		6. Hotel	0	0

/PIGG'S PEAK (CONT).....

PLACE	DATE	COLLECTION POINT	PRESUMPTIVE E. COLI	FAECAL E. COLI
PIGG'S PEAK (CONT.)	1.5.62	1. Raw water 1	80	5
		2. Cafe	0	0
		3. Hotel	0	0
		4. Raw water 2	50	0
		5. Hospital	0	0
		6. Location	0	0
	26.9.62	1. Raw water	25	0
		2. Hotel	0	0
		3. Hospital	0	0
		4. Havelock raw water	17	0
		5. Club	0	0
		6. Hospital	5	0
	27.11.62	1. Raw water 1	380	4
		2. " " 2	80	0
		3. Hospital	2	0
		4. School	2	0
		5. Bank	0	0
		6. Hotel	2	0
HLATIKULU	9.1.62	1. Raw water	350	173
		2. Hotel	0	0
		3. Garden Tap	25	8
	29.3.62	1. Raw water	600	25
		2. Garden	0	0
		3. Hotel	0	0
	17.7.62	1. Raw water	130	14
		2. Treated	0	0
GOEDGEGUN	9.1.62	1. Raw water	250	5
		2. Hotel	0	0
		3. Garden Tap	2	0
	29.3.62	1. Raw water	35	17
		2. Market	0	0
		3. Hotel	13	0
	17.7.62	1. Raw water	0	0
		2. Treated	0	0
MANKAIANA	22.1.62	1. Raw water	1600	600
		2. Stores	0	0
		3. Park	2	2
	17.7.62	1. Raw water	35	5
		2. Treated	0	0
	21.8.62	1. Raw water	600	2
		2. Park	0	0
		3. Shop	0	0
	4.12.62	1. Raw water	1600	11
		2. River	0	0
		3. Stand Pipe	0	0

A total of 161 water samples were examined from all sources throughout the year.

/5.FOOD IN RELATION TO DISEASE.....

5. FOOD IN RELATION TO DISEASE.

5.1. Trade Premises.

The usual routine inspection of all foodhandling trade premises were carried out throughout the year. Wherever unsound food stuffs were found these were seized and destroyed. More attention has been given to rural trade premises since the two new Health Inspectors have joined the staff and it is hoped that a great increase in the standard of these premises will develop with stricter control.

The following articles were seized and destroyed:-

2	x	1 lb	Tinned Food (unlabelled)
15	x	2 "	Loganberry Syrup
2	x	10 oz.	Vienna Sausages
1	x	15 lb	Pilchards in Tomato
3	x	1 lb	Fruit Salad
1	x	1 lb	Vegetable Soup
1	x	1 lb	Sugar Beans
4	x	1 lb	Pears
1	x	15 oz.	Pilchards in Tomato
9	x	1 lb	Golden Syrup
29	x	8 oz.	Pickled Fish
1	x	1 lb	Melon and Lemon Jam
2	x	1 lb	Non-fat Milk
11	x	½ lb	Biscuits
20	x	1 lb	Sausage
2 dozen			Vienna Sausages
5 lengths			Polony
4½ lbs			Mixed Cooked Meat
2	x	½ lb	Bacon
2	x	1 lb	Cheese
5	x	1½lb	Rolls
150 lbs			Uncooked beef and pork
420 lbs			Uncooked beef
7 lbs			Haddock
23			Stock Fish
13			King Klip
222			Salmon
4	x	16 lb	Fillet of Snoek
1	x	5 lb	" " "
2	x	16 lb	" " Sole
1	x	9 lb	" " "
1	x	1 lb	" " Kob
1	x	19 lb	" " "
4	x	1 lb	Snoek
85 lbs			Small fish
3 doz.			Snappery Salmon
52			Stump Nose
25			Grunter
13			Fresh Herrings
18 lbs			"Fish Sticks"
71			Bunches Carrots
3 boxes			Brindgals
1 box			Naartjies
44			Pumpkins
½ pocket			Green Beans
1 box			Radishes
2 boxes			Peppers
31 bunches			Parsnips
3 boxes			Pawpaw
2 "			Beetroot
2 "			Green Peas
2 "			Turnips
4 Packets			Parsley
4 "			Celery

5.2. Abattoirs.

5.2.1. The Mbabane and Manzini abattoirs are under the direct control of Health Inspectors and it is only at these two abattoirs that the meat is thoroughly inspected prior to removal to the butcher shops. The other abattoirs unfortunately only receive periodic inspection. The abattoir attendants have had short courses of instruction in meat inspection, but, as has been stated before, they are not very reliable, as no carcasses, apparently, are ever condemned for "measles" apart from those at the Manzini and Mbabane abattoirs, and this is definitely not an indication that meat inspection is being well done.

5.2.2. The abattoirs at Mbabane and Manzini are too small for the amount of slaughtering taking place. These two towns have grown to such an extent that the abattoirs cannot cope with the demand for meat. The design of both abattoirs are poor and the time has come for the construction of new abattoirs in both towns or alternatively, the construction of a large central abattoir that could serve these two major towns and possibly Stegi as well. The new abattoirs should include a Freezing Chamber so that all measly carcasses can be frozen under proper supervision. At present measly carcasses are handed over to the butchers for freezing and the possibility exists that carcasses may be removed for sale to the public before the required period of freezing has elapsed. Also, the temperature of the freezing chamber should be kept constantly at -10° C but with butchers frequently opening and shutting the freezer it is doubtful if this regulation temperature is maintained constantly.

5.2.3. The following table shows the number of animals slaughtered at the Manzini and Mbabane abattoirs and the numbers of carcasses either frozen, cooked or condemned for measles.

ABATTOIR	NO. CARC. EXAMINED			NO. CARC. FROZEN			NO. CARC. COOKED			NO. CARC. DESTROYED			INCID. OF C. BOVIS	INCID. OF C. CELL
	B	P	S	B	P	S	B	P	S	B	P	S		
MANZINI	1976	662	1108	62	-	-	4	-	-	8	32	-	3.7%	4.8%
MBABANE	1757	690	1212	-	-	-	3	-	-	5	11	-	0.45%	1.6%

B = Bovines P = Pigs S = Sheep

5.2.4. Portions of Carcasses Condemned at Manzini Abattoir.

(i)	Bovine	Livers	(flukes)	= 56
	"	"	(Abscesses)	= 4
	"	"	(Angioma)	= 1
	"	"	(Fatty degeneration)	= 1
	"	"	(Echinococcus C.)	= 1
	"	Lung	"	= 1
	"	Spleen	"	= 1
	"	Kidney	"	= 1
	"	Tongue	(Measles)	= 2
	"	Heads	"	= 1
	"	Hearts	"	= 3
	"	Shins	(Bruising)	= 5

carcasses.....

(ii)	Sheep	Livers	(Flukes)	= 132
	"	"	(Cirrhosis)	= 1
	"	"	(Abscesses)	= 5
	"	"	(Stilesia)	= 32
	"	"	(Milk Spots)	= 7
	"	Lungs	(Abscesses)	= 3
	"	"	(Pneumonia)	= 1

Whole Carcasses Condemned at Manzini Abattoir.

Bovine	(Fevered and jaundiced)	= 2
"	(Measles)	= 8
"	(Sarcocysts)	= 1
"	(Bruising and gangrene)	= 1
Pigs	(Measles)	= 32
Sheep	(Fevered)	= 1

Portions of Carcasses Condemned at Mbabane Abattoir.

Bovine livers	(Flukes)	= 3
Sheep "	(")	= 12

5.3. Butcheries.

Butcheries in the Urban Areas have always been regularly inspected by the Health Inspectors. The rural butcheries have, in the past, only been inspected occasionally, but now, with the increase in the inspectorate staff, more attention is being given to these and an effort is being made to make the owners bring them up to a reasonable standard. During the year a new butchery was opened in Manzini and it is pleasing to note that it is considered the best butchery in the territory.

5.4. Milk Supplies.

5.4.1. There has been a gratifying improvement in milk supplies of the territory during the year. Several new dairies of high standard have been established. There is now no need for anybody living in Manzini or Mbabane to receive milk from unregistered sources as the dairies now operating can supply the needs of these towns. Some dairymen have welcomed inspection and advice and have requested bacteriological examination of their supplies and have generally shown that they are eager to produce a milk supply of high quality.

5.4.2. A start has been made on the Tuberculin Testing of dairy herds. This is a most welcome step, which will lead to a still better quality milk, when all herds are free of reactors.

6. HOUSING.

There is still considerable room for improvement in the standard housing provided for labour on some of the larger irrigation projects.

7. PARASITOLOGY.

7.1. Tape Worm Treatment.

The treatment by the malaria field staff of people suffering from tape worm infestation, has been continued throughout the year. The drug Dichlorophen is still used and is giving good results. The dosage scheme was revised on instructions from the manufacturers - the adult dose being increased from 12 to 18 tablets.

/The number of persons.....

The number of persons treated for the year is 5,705 and the total number treated since the start of the campaign in 1957 is 30,893. These figures do not include people treated by farmers and by hospitals in the territory.

Cysticercosis Bovis.

The following table shows the decline in infected animals as seen at the Manzini abattoir, since the start of the tape worm campaign in 1957.

YEAR.	PERCENTAGE OF INFECTED CARCASSES.
1957	8.0
1958	7.0
1959	5.0
1960	4.3
1961	3.9
1962	3.7

These figures seem to indicate that the treatment of tape worm infestation in the people, has a definite bearing on the amount of C.bovis found in cattle.

7.2. Bed Bugs.

These insects have developed a definite resistance to DDT and BHC and this tendency is noted throughout the territory. This is probably due to the use of these insecticides in anti-malaria work in the past. The number of bugs appear to be increasing at an alarming rate, according to the number of applications received daily for assistance in eradicating them. The field staff report that in every part of the territory the people complain about bugs and that they are more interested in "Medicine" to kill bugs, than "Medicine" to kill mosquitos. In some areas the bug menace is so severe that people do not sleep indoors anymore.

Fortunately other insecticides are available and the less toxic phosphorus products (Diazinon) and the carbomate insecticide known as Sevin (Karbaspray and Sevkol) have been used with good results. The people are reluctant to buy these insecticides for use themselves and they would rather have the work done by the Health Department spray staff, and pay for it, even though it is more expensive this way. There is not the staff available to adequately meet the demand for bug spraying and one wonders to what extent this new insect menace will increase without proper control methods. The future does not look very promising.

Spraying had been done for the public at a cost of 15 cents per hut or room but this has now been increased to 25 cents to cover the cost of insecticide and transport expenses.

7.3. Cutaneous Myiasis.

There have been many cases of cutaneous myiasis in the middle and low veld areas. This disease is caused by the fly Cordylobia anthropophaga which lays its eggs either directly on to the skin or on to clothing hanging on the line. The eggs hatch and the larvae burrow into the skin. They feed on the tissues and the reaction gives an appearance rather like a boil. Many cases occurred in Manzini, where babies and young children were mostly involved though some adults also showed the infestation.

/7.4. Congo Floor Maggot.....

7.4. Congo Floor Maggot.

A report was received, that people living in the neighbourhood of the Usutu Gorge were being attacked by some blood sucking worms. Investigation showed that this was so, the area being heavily infested with the Congo Floor Maggot - the larval stages of the fly Auchmeromyia luteola. The number of maggots found in a small area of the floor of a hut was surprising and lead one to believe that this insect might yet prove to be quite a menace.

It is not confined to this area, as specimens of the adult fly have been caught in the mosquito Window Traps in several places. Further investigation into the distribution of this fly will be undertaken in the future.

7.5. Lice.

Not many complaints about lice are received, but it was found that the prisoners at Mbabane gaol were heavily infested. The application of suitable insecticides usually eradicates these vermin without any trouble.

8. HEALTH PROPAGANDA AND LECTURES.

As far as health propaganda is concerned not much has been done on these lines due to shortage of staff. During District Team Meetings the opportunity was taken to put across a certain amount of propaganda. The main theme during the year was the question of immunisation against disease.

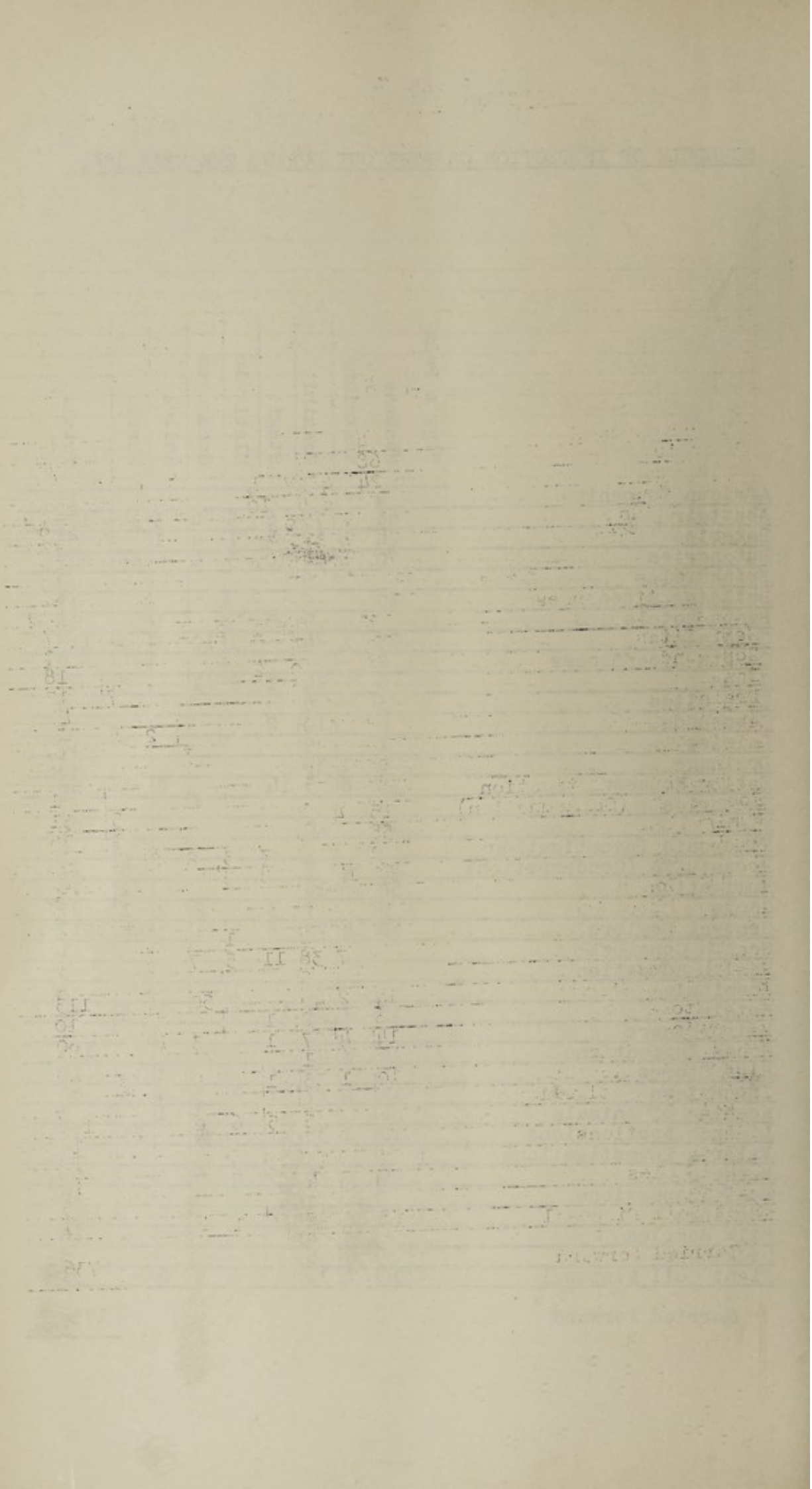
At the Annual Agricultural Show the Health Office Exhibit was built up around the theme "Food Hygiene". The exhibit showed how to keep food fresh and clean and a good deal of interest was shown on the part of the public. We hope that the principles embodied in the theme have made an impression and that they are being carried out in practice in the homes of all who visited the exhibit.

Lectures were given to the Trainee Cattle Guards at the Mpisi Government Farm and to Domestic Science teachers attending a refresher course.

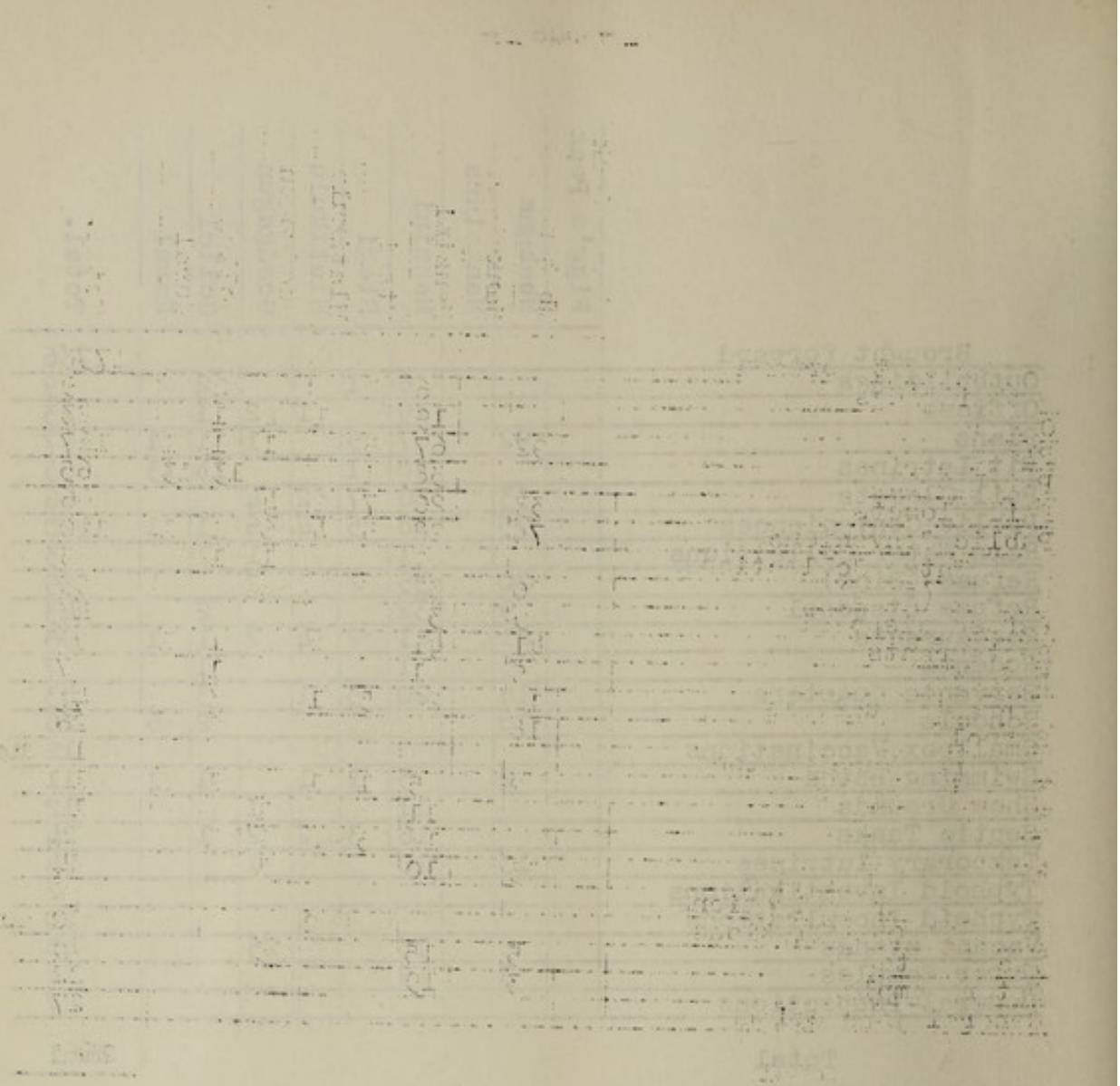
Lecture-Demonstrations on Malaria and Bilharzia control were given to Trainee nurses from the Raleigh Fitkin Memorial Hospital.

SCHEDULE OF INSPECTION CARRIED OUT DURING THE YEAR 1962.

	Pigg's Peak	Mbabane	Mankaiana	Manzini	Stegi	Hlatikulu	Goedgegun	Gollel	Rural	Total.
African Townships		4		7						11
Abattoir		68		75	8	5	4	3	12	175
Bakeries		24	4	17	4	1	4	1		55
Butcheries		70	8	58	10	5	4	6	66	227
Brickfields				9						9
Building Sites		10		2						12
Bantu Hotels				9	5			1		15
Complaints		25	1	74		1	10	1	1	113
Courts Attendances		2								2
Clubs		6		14	1	2	1		3	27
Camp Sites		3		6						9
Compounds		6		10	2					18
Dairies		1		9					7	17
Drainage		4	1	39						44
Eating Houses		35	8	5	14			2	4	68
Factories		4					3			7
Flats		16		10						26
Fluorosis Investigation										1
Foodstuffs (Condemnation)		15	4	7					5	31
Fumigation		58		16					1	75
Gaols		9		7	3	3	2	2	1	27
General Dealers		60	14	72	8	5	11	3	44	217
Health Congress										1
Health Education										3
Hospitals				2		1				3
Hotels		19	7	38	11	5	7	2	5	94
Hairdressers		2		5						7
House Inspections		14	2	45			50	2		113
Hide Stores		6		2	1			1		10
Interviews		14	4	27	1	2	3	4	5	60
Keeping of Animals				1			1	1		3
Licence Applications		10	1	33	1		4		23	72
Malaria Investigations										2
Markets		60		25	5	6	6			102
Meat Inspections										16
Meetings	1	3		12	2					18
Milk Samples				4					6	10
Milkshops				5						5
Night Soil Disposal		10	2	12		1	4	2		31
Carried forward										1736



	Pigg's Peak	Mbabane	Mankaiana	Manzini	Stegi	Hlatikulu	Goedgegun	Gollel	Rural	Total.	
Brought forward										1736	
Outbuildings				6	1			2		9	
Offices				19		1	2	1		23	
Plans		92		67	5		1	1	1	167	
Pit Latrines				38	1			13	13	65	
Pail Closets		33		20	7	2	4			66	
Public Conveniences		75		28	5	4	6	1	1	120	
Rain Water Collections				1			1	1		3	
Refuse (Bins)		20		35	2		2			59	
Refuse disposal		9		32				2		43	
Restaurants		41		41	2	4	2	1	1	95	
Rodents		5		1				1		7	
Servants Quarters		14		20	5	1		3		43	
Schools		18						2	6	26	
Smallpox Vaccinations										12	days
Swimming Baths		2		5	1	1		1	1	11	
Show Grounds				11			1			12	
Septic Tanks				16	3	2	2	1		24	
Temporary latrines		13		10			1			24	
Typhoid Investigations										2	
Typhoid Inocullations						2				20	areas
Vacant stands		5		15			25			45	
Water Samples		3		19						22	
General Inspections										27	
Total										2661	



CHAPTER II

HOSPITALS AND CLINICS

1. GOVERNMENT HOSPITALS AND CLINICS.

During the year a clinic was built at Dwalile in the Mankaiana district, with the assistance of the Prisons Department who provided a warder builder and prison labour, and of the local people who provided certain of the building material while the construction was supervised by the District Commissioner. Dwalile is near the western border of Swaziland but supports a school of 200 students and adjoins a Swazi area with no medical facilities.

Extensions to Pigg's Peak Hospital consisting of 17 additional beds and alterations to existing accommodation to provide a small operating theatre and other improvements were completed and occupied in December whilst earlier in the year an X-Ray plant had been installed there.

The funds for Dwalile Clinic and the Pigg's Peak Hospital extensions were provided from C.D.&W. sources.

As from April the New Haven Mission Clinic was visited and supervised by Hlatikulu Hospital medical staff.

The number of in-patients and out-patients treated at Government hospitals rose during 1962, particularly in respect of in-patients at Hlatikulu Hospital. Clinic attendances fell slightly, probably due to the imposition of stricter control over the free medical attention previously given to school children.

Details of the work done at the various hospitals and clinics and of the staff dispositions at the hospitals are as follows:-

GOVERNMENT HOSPITALS - 1962

	Mbabane	Hlati-kulu	Man-kaiana	Pigg's Peak	Total
Establishment					
Medical Officers	5	3	-	1	9
Matron	1	1	-	-	2
Nursing Sisters	6	3	1	1	11
Pharmacist/Storekeeper	1	1	-	-	2
Radiographers	1	-	-	-	1
Housekeeper	1	-	-	-	1
Medical Assistant	1	1	-	-	2
Laboratory Assistant	1	1	-	-	2
Dispensers	2	1	-	-	3
Pupil Dispensers	-	2	-	-	2
Nurses	32	24	6	7	69
Outpatient Attendants	2	-	1	-	3
Ambulance Drivers	2	2	1	1	6
Ward Attendants and Orderlies	15	12	1	3	31
BEDS.					
(a) Private Wards	8	8	-	-	16
(b) General Wards	142	129	28	39	338
ADMISSIONS:					
(a) Private Wards	326	135	-	-	461
(b) General Wards	3736	3374	1220	1197	9527
DAILY AVERAGE NO. OF IN-PATIENTS.					
(a) Private Wards	4.7	1.5	-	-	6.2
(b) General Wards	193.3	164.4	43.2	41.7	442.6
DEATHS:	181	168	18	46	413
OPERATIONS:					
(a) Major	577	93	-	-	670
(b) Minor	959	655	-	71	1685
X-RAY:					
(a) Examinations	3470	2123	-	346	5949
(b) Screenings	247	7	-	-	254
OUT-PATIENTS.					
(a) First Attendances					
(i) in Private Ward section of hospital	6449	1233	41	621	8344
(ii) in General Ward section of hospital	21606	14958	6974	8800	52338
(b) Subsequent Attendances					
(i) in Private Ward section of hospital	6373	581	3	84	7041
(ii) in General Ward section of hospital	17813	13247	3066	1421	35547
Grand Total	52241	30019	10084	10926	103270

/Clinics

GOVERNMENT CLINICS

	First Attendances	Subsequent Attendances	Total Attendances	Districts' Totals
MBABANE DISTRICT				
Government Farm Clinic	6455	2344	8799	8799
HLATIKULU DISTRICT				
Goedgegun	17562	12922	30484	
Mhlotsheni	3623	1945	5564	
Hluti	3696	2382	6078	
sipofaneni	4205	2593	6798	
Vimy Ridge (Gollel)	581	-	581	
Lubuli +	3332	1277	4609	
St. Phillips Mission	3144	1038	4182	
New Haven Mission (April-Dec.)	4844	1014	5858	64154
MANKAIANA DISTRICT				
Mahlangatsha	2444	2456	4900	
Dwalile (July-Dec)	556	605	1611	6511
PIGG'S PEAK DISTRICT				
Horo	7453	5763	13216	
Lesters +	3536	1976	5512	18728
STEGI DISTRICT				
Nomahasha +	845	268	1113	1113
TOTAL GOVERNMENT CLINIC ATTENDANCES				99305

+ = Clinics maintained by the Swazi National Treasury

2. MISSION HOSPITALS.

The three Mission hospitals in Swaziland which are subsidised by Government, continue to render most valuable service to the Territory, and during 1962 they again worked at full pressure.

With the assistance of C.D.&W. funds, much needed extensions to the private patient block and to the probationer nurses' home at the Raleigh Fitkin Memorial Hospital at Manzini was started towards the end of the year and are expected to be completed early in 1963.

Details of the work done in the Mission hospitals and clinics follows:

/Mission Hospitals...

MISSION HOSPITALS AND CLINICS.

	Raleigh Fitkin Memorial Hospital	Good Shepherd Hospital	Mahamba Methodist Hospital	TOTALS
BEDS. (a) Private Wards	10	5	-	15
(b) General Wards	236	30	45	311
ADMISSIONS.				
(a) Private Wards	332	39	-	371
(b) General Wards	4633	908	731	6272
DAILY AVERAGE NO. OF IN-PATIENTS.				
(a) Private Wards	7.2	0.6	-	7.8
(b) General Wards	258.1	25.6	26.4	310.1
DEATHS:	153	21	35	209
OPERATIONS (a) Major	411	-	33	444
(b) Minor	980	81	143	1204
X-RAY: Examinations	2091	314	145	2550
Screenings	2	56	98	156
OUT-PATIENTS.				
(a) First Attendances				
(i) in Private Ward section of hospital	4099	400	61	4560
(ii) in General Ward section of hospital	13251	4918	3600	21769
(b) Subsequent Attendances				
(i) in Private Ward section of hospital	1442	133	86	1661
(ii) in General Ward section of hospital	9505	1064	1405	11974
(c) GRAND TOTALS	28297	6515	5152	39964

MISSION CLINICS.

	First Attendances	Subsequent Attendances	Total Attendances	Mission Total
NAZARENE MISSION (Raleigh Fitkin Memorial Hospital)				
Endingeni	5924	3092	9016	
Stegi	4568	3166	7734	
Pigg's Peak	2225	919	3144	
Mayiwane	1043	4967	6010	
Mliba	660	1556	2216	
Mafuteni	529	646	1175	
Bhekinkosi	884	1089	1973	
Balegane	645	1250	1895	
Malinda	888	808	1696	
Malandela	406	248	654	
Tambankulu	1307	697	2004	
Ebenezer	276	348	624	
				38141
METHODIST MISSION (Mahamba Hospital)				
Gege	2077	1285	3362	
Dwaleni	814	210	1024	
School Examinations	1570		1570	
				5956
TOTAL MISSION CLINICS ATTENDANCES				44097

3. HAVELOCK MINE HOSPITAL.

The number of Africans who were not mine employees or their dependants who were treated at Havelock Mine Hospital during 1962 was as follows:-

Number of admissions	231
Number of out-patients (new cases)	359
Number of out-patients (re-attendances)	270
Daily number of in-patients	4.1

4. MEDICO-LEGAL POSTMORTEM EXAMINATIONS.

The number of medico-legal postmortem examinations carried out at the various Government and subsidised Mission hospitals in 1962 was as follows:-

Mbabane Hospital	84
Hlatikulu Hospital	34
Pigg's Peak Hospital	17
Raleigh Fitkin Memorial Hospital	73
Good Shepherd Hospital	15

5. MEDICAL EXAMINATION OF SCHOOL CHILDREN.

The routine medical examination of the children in the Methodist Mission schools in southern Swaziland was continued during the year by the Medical Superintendent of Mahamba Hospital, and the number of children with defects of some kind was again high - 41% in the boys and 45% in the girls, which is very similar to the figures obtained in 1961.

The detailed results were as follows:

.../REPORT ON SCHOOL HEALTH SERVICE
CONDUCTED FROM MAHAMBA
METHODIST HOSPITAL - 1962

REPORT ON SCHOOL HEALTH SERVICE CONDUCTED FROM MAHAMBA METHODIST HOSPITAL - 1962

GENERAL:

SCHOOL	BOYS Exam-ined	BOYS Defects	GIRLS Exam-ined	GIRLS Defects	TOTAL Exam-ined	TOTAL Defects
Thawela	133	49%	103	47%	236	48%
Mahlangatsha	196	36%	157	44%	353	40%
Seyendla	34	27%	28	32%	62	29.5%
Mashobeni	40	45%	53	57%	93	51%
Nsongweni	222	37%	197	56%	419	46.5%
Nyamane	79	28%	77	23%	156	25.5%
Nkoneni	17	65%	54	18%	71	29%
Madulini	48	40%	41	58%	89	49%
Thembelihle	117	38%	59	41%	176	39%
Dudusini	18	50%	31	71%	49	60%
Usuthu	53	43%	50	40%	103	41.5%
Gege	138	35%	103	54%	241	43%
Mahamba	230	43%	247	51%	477	47%
Mbukwane	78	46%	130	43%	208	44.5%
TOTALS:	1403	41.5%	1330	45.5%	2733	43.5%

BREAKDOWN INTO DISEASE GROUPS:

DISEASE:	SICK PUPILS BOYS No.	BOYS %	GIRLS No.	GIRLS %	TOTAL No.	TOTAL %	ALL PUPILS BOYS No.	BOYS %	GIRLS No.	GIRLS %	TOTAL No.	TOTAL %
Anaemia	307	26	411	34.5	1181	100	307	11.3	411	15	2733	100
ENT.	66	5½	84	7	1181	do	66	2½	84	3	2733	do
Malnutr.	34	3	8	0.7	1181	do	34	1.2	8	.3	2733	do
Resp.Syst.	52	4½	20	1.7	1181	do	52	1.9	20	.7	2733	do
Skin.	25	2	11	1	1181	do	25	.9	11	.4	2733	do
Refr.Error +	77	6½	94	8	1181	do	77	12½	94	15	605	do

+ Only pupils in Standard Two and higher had refractions done.

INDIVIDUAL DISEASES:

	Male	Female
Tuberculosis	17	7
Cardiac	3	3
Cripples	3	2
Imbeciles	3	0
Deaf	2	0

CHAPTER III

MATERNITY AND CHILD WELFARE SERVICES.

Ante-natal clinics are held at all Government and Mission Hospitals, and at most of the outlying clinics. In previous years, it was necessary to encourage Swazi women to come into hospital for their confinements, but the maternity wards are now so popular that overcrowding may in the future necessitate restricting admissions to primiparous women and others in whom difficulty is expected.

The number of antenatal examinations and confinements carried out during the past 4 years has been as follows:-

	Antenatal Examinations				Confinements			
	1959	1960	1961	1962	1959	1960	1961	1962
Mbabane Hospital	2068	1704	2130	2311	436	611	705	802
Hlatikulu Hospital	1373	1315	1298	1596	247	375	409	528
Mankaiana Hospital	694	1798	983	535	154	171	188	180
Pigg's Peak Hospital	636	807	930	1087	146	168	221	241
Raleigh Fitkin Mem.Hospital & Clinics	4998	5722	4996	3049	1054	1276	979	574
Good Shepherd Hospital	1242	791	972	917	137	132	139	161
Mahamba Methodist Hospital	584	550	192	571	76	84	79	74

Child Welfare clinics have continued at the Nazarene Mission health centres and also at the Government clinics at Sipofaneni and Lubuli and Hlatikulu Government Hospital where the following attendances were recorded -

Sipofaneni	794	
Lubuli	148	(January to March only)
Hlatikulu Hospital	1615	(May to December only)

/Chapter IV .....

CHAPTER IV

TRAINING OF NURSES.

Nurses are trained at the well-equipped Ainsworth Dickson Nursing College, attached to the Raleigh Fitkin Memorial Hospital at Manzini, for the High Commission Territories Nursing Council certificates in General Nursing and Midwifery, the syllabuses of which are based on those of the South African Nursing Council. In the past training was also offered for the Swaziland Executive Nursing Committee certificates in General Nursing and Midwifery, which are of a lower standard and for which the educational requirement is only Standard VI. As a sufficient number of candidates with the higher educational standard required by the High Commission Territories Nursing Council (viz. Junior Certificate) are now coming forward, candidates for training for the Swaziland Executive Nursing Committee certificates are no longer accepted, although the training of those who have already started this course, of course, continues.

The results of the examinations held during the year were as follows:-

HIGH COMMISSION TERRITORIES NURSING COUNCIL

	Passed	Failed
Preliminary Examination in General Nursing	16	1
Final Examination in General Nursing	4	2

SWAZILAND EXECUTIVE NURSING COMMITTEE

Final Examination in General Nursing	1	1
Midwifery Examination	8	-

The number of nurses in training at end of December 1962 was

General Nurses	1st year	16
	2nd year	19
	3rd year	14
	4th year	6
Midwifery Students		11
		66

/Chapter V ....

CHAPTER V

LABORATORY SERVICES.

The Pathology Laboratory in Mbabane continues to function satisfactorily - and to fulfil a very useful purpose in dealing with serology, cultures, sensitivity tests and blood chemistry on a territorial basis.

Histological examinations and certain other investigation continue to be carried out at the South African Institute for Medical Research in Johannesburg, whilst the small laboratories at Mbabane Hospital, Hlatikulu Hospital, Raleigh Fitkin Memorial Hospital, Good Shepherd Hospital and Mahamba Hospital continue to deal with the less complicated laboratory work.

The routine examination of blood slides for malaria parasites and of urines and stools for bilharzia ova, are carried out at the Health Office at Manzini, and the results of these examinations are reported under the sections dealing with malaria and bilharzia, and are not included in the figures which follow:-

(a) PATHOLOGY LABORATORY, MBABANE.

TEST	1961	1962
Blood Culture	219	211
Widal (TMX)	733	898
Vi Test		14
Stool Culture	92	52
Stool Parasitology	108	59
Urine complete	55	42
Urine Bilharzia	26	47
T.B. direct	225	203
T.B. culture	27	36
Blood Sugar	19	47
Blood Urea	20	23
Serum Protein	18	6
Serum Bilirubin	5	8
Blood Cholestrol	-	3
Blood Amylase	-	2
Serum Calcium	-	3
Serum Phosphatase	-	1
C.S. Fluid	31	21
Malarial Slides	25	3
Culture	79	131
Sensitivity Tests	84	129
Blood Grouping	6	14
Blood Count	56	55
E.S.R.	2	3
Slides for Microscopy	3	6
Diphtheria	31	26
Water Analysis	114	160
Milk Analysis	-	14
V.D.R.L. Test	5496	6288
TOTAL	7501	8506

(b) HOSPITAL LABORATORIES.

	Mbabane Hospital	Hlatikulu Hospital	Raleigh Fitkin Memorial Hospital	Good Shepherd Hospital	Mahamba Hospital
Urine Examinations (including microscopy)	6375	3503	8202	250	233
Stool Examinations	1157	1056	84	7	258
Sputum Examinations	2647	621	557	9	41
Other Bacteriological Smears	6255	52	15	60	707
Full Blood Counts	427	-	136	20	44
Red Cell Counts	-	35	11	40	-
White Cell Counts	94	226	9	85	-
E.S.R.	1615	91	130	40	-
Haemoglobin Estimations	-	338	18	-	-
Blood Films for Parasitology	-	64	58	-	-
Other Examinations	-	22	29	-	-

.../CHAPTER VI

CHAPTER VI - VITAL STATISTICS

The registration of births and deaths is compulsory only in the case of European inhabitants of Swaziland, and available statistics are consequently of limited value. They are as follows:-

Total European population (1962 Census)	8,040
European births 1962	138
European deaths 1962	38
Deaths of European infants under 1 year in 1962	3

CHAPTER VII - PRISONS

Regular medical inspections of the prisons at Mbabane, Hlatikulu, Manzini and Stegi have been carried out, and in spite of overcrowding and antiquated buildings, sanitary conditions and the health of the prisoners have been satisfactory on the whole.

Mentally disordered patients in need of care and supervision are cared for in the prisons - the majority being housed in Mbabane Gaol. This is a most unsatisfactory state of affairs - and a mental hospital in Swaziland is urgently required.

CHAPTER VIII - LEGISLATION

Legislation affecting the Medical Department enacted during 1962 was -

Government Notice No. 26 of 1962 - Amendment of Government Hospital Charges.

/Chapter IX ....

CHAPTER IX - FINANCE.

The financial statement of the Department for the period 1st April 1961 to 31st March 1962 is as follows:-

Revenue	R	R
Hospital, Health Centre and other fees		16,777
Expenditure.		
Personal Emoluments	173,200	
Travelling Expenses	8,430	
Operation & Maintenance of Vehicles	3,931	
Other Transport Charges	10,294	
Allowances & Fees - Medical	5,471	
Maintenance of Patients	63,522	
Maintenance of Mental Patients	7,485	
Lighting and Heating	5,665	
Purchase of Plant and Equipment	12,398	
Upkeep of Grounds	174	
Anti-Malaria Measures	4,949	
Bilharzia Control	452	
Laboratory Services	1,523	
Public Health Measures	235	
Sample Nutrition Survey	3,559	
Grants to Missions	33,633	
High Commission Territories Nursing Council	262	
Polio Immunisation Campaign	4,398	339,581
C.D.W. Schemes Expenditure		
D.4912 Extensions to Medical Services	4,740	
D.4913 T.B. Control	11,572	
D.4453 Construction of Clinics	1,160	17,472
Total Expenditure on Medical & Sanitary Services		R357,053
Total Revenue of Territory		R3,335,256
The relationship of medical expenditure (territorial) to total revenue of Territory		10.40%

CONCLUSION.

I wish to express my sincere appreciation of the loyal and efficient manner in which members of the Department carried out their duties during the year, often under extremely difficult conditions.

B. D. WHITWORTH

DIRECTOR OF MEDICAL SERVICES.

APPENDIX I.

MEDICAL DEPARTMENT STAFFING (AS AT 31.12.62)

(a) DIVISION I AND II.	Name	Station
Director of Medical Services	Dr. B.D. Whitworth	Mbabane
1 Medical Officer of Health	Dr. R.D. Gauldie	Manzini
8 Medical Officers	Dr. L.E.D.F.Joubert	Mbabane
	Dr. J.F. Alexander	Mbabane
	Dr. F. Friedman	Mbabane
	Dr. J.M.L. Klopper	Hlatikulu
	Dr. A.M. Nxumalo	Mbabane
	Dr. D.M. Macfadyen	Hlatikulu
	Dr. S.P.N. Shongwe	Hlatikulu
	Dr. D.W.C. Wagner	Pigg's Peak
2 Pharmacist/Storekeepers	Mr. J.L.van der Vyver	Hlatikulu
	Mr. G.R. Gibbon	Mbabane
2 Matrons	Miss E.M. Bailey	Mbabane
	Miss J.A. Wilson	Hlatikulu
13 Nursing Sisters	Miss D.E. Burns	Hlatikulu
	Miss A. Martin	Hluti Health Centre
	Mrs. P.T. Mdiniso	Mbabane
	Mrs. A.C.T. Mabuza	Mbabane
	Mrs. A.L. Ogden	Mankaiana
	Miss J. Renzema	Mbabane
	Mrs. S. Dowling	Goedgegun
	Miss M. Dolman	Hlatikulu
	Mrs. N.N. Dludlu	Hlatikulu
	Mrs. V.W.S. Mabuza	Pigg's Peak
	Mrs. J. Spencer	Mbabane
	Miss W.A. Schakel	Mbabane
	1 Post Vacant	
1 Radiographer	Miss R.J. O'Shea	Mbabane
1 Laboratory Technician	Mrs. M.E. Gibbon	Mbabane
4 Health Inspectors	Mr. G.J. van Eeden	Manzini
	Mr. D.M. Eckard	Manzini
	Mr. C.D. Nxumalo	Manzini
	Mr. L. Mtetwa	Mbabane
2 Medical Assistants	Mr. E.S. Njenje	Mbabane
	Mr. A.F.K. Phiri	Hlatikulu
1 Housekeeper (Mbabane Hospital)	Mrs. M. McCall	Mbabane
1 Higher Executive Officer	Mr. J.H. Thomas	Mbabane
1 Lady Clerk	Mrs. D.M.C. Lane	Mbabane

/DIVISION III.

(b) DIVISION III.

4 Dispensers
1 Pupil Dispenser
4 Laboratory Assistants
4 Clerks
88 Nurses
4 Out-patient Attendants
8 Ambulance and Truck Drivers
1 Senior Malaria Assistant
10 Malaria Assistants
3 Bilharzia Field Assistants
1 Vaccinator
4 Dispensary Orderlies
7 Ward Attendants
24 Orderlies
3 Nurse Aides
3 Wardmaids
12 Laundresses
2 Seamstresses
2 Office Messengers
2 Night Watchmen
5 Groundsmen
5 Cooks
3 Assistant Cooks
5 Housemaids

APPOINTMENTS, PROMOTIONS, RESIGNATIONS, RETIREMENTS IN DIVISION I AND II DURING 1962

APPOINTMENTS

Dr. D.W.C. Wagner	Medical Officer	1. 3.62
Mrs. J. Spencer	Nursing Sister	1.11.62
Miss W.A. Schakel	Nursing Sister	1.11.62
Mr. C.D. Nxumalo	Health Inspector	4. 6.62
Mr. L.L. Mtetwa	Health Inspector	1. 7.62

RESIGNATIONS

Mrs. S.M. Cooper	Nursing Sister	10. 3.62
Mrs. I.J. Jenner	Nursing Sister	24.11.62
Mr. J.F. Bateson	Health Inspector	2. 2.62
Mr. J.B. Mwali	Medical Assistant	8. 3.62

APPENDIX II

ANNUAL REPORT OF THE MBULUZI LEPER COLONY

FOR THE YEAR ENDING 31ST DECEMBER, 1962.

I. Staff.

Dr. K.A. Stark	Medical Superintendent
Dr. David Hynd, C.B.E.	Medical Officer
Miss E. Cole, S.R.N., S.C.M. M.B.E.	Matron
Miss B. Mamba	Nurse
Mrs. Prisca Manana	School Teacher
2 Labourers	

II. State during past year.

No. of patients December 1961 - 41
" " " " " " 1962 - 36

III. Additions to Population.

	Males	Females	Total.
Admissions	9	8	17
Re-admissions	4	2	6
	13	10	23

IV. Losses in Population.

Deaths	-	-	-
Desertions	1	-	1
Discharges	14	13	27
	15	13	28

V. Origin of Patients Admitted.

Manzini	1	4	5
Stegi	1	1	2
Mbabane	2	3	5
Mankaiana	2	3	5
Pigg's Peak	1	4	5
Hlatikulu	1	-	1
	8	15	23

VI. Duration of Disease before Admission.

Duration	Admissions
0 - 1 years	3
1 - 2 "	8
2 - 3 "	4
3 - 4 "	3
4 - 5 "	5
	23

/Classification...

VII. Classification on Admission.

Type	Admissions
Lepromatous	5
Neural	23

VIII. Average Age on Admission - 33.9 years

IX. Proportion of Children to Total Admissions.

There were 2 admissions of children under the age of 16 years out of a total of 23 admissions, i.e. 8.7%

X. Diseases treated.

Arthritis	2
Conjunctivitis	8
Cystitis	1
Diarrhoea	11
Dental Caries	13
Epistaxis	4
Influenza	12
Lepra reaction	12
Malnutrition	3
Otitis Media	2
Sciatica	1
Tapeworm	3
Trophic ulcers	18

XI. Laboratory Report.

	Skin - Positive	Skin - Negative
Lepromatous	17	19
Neural	-	46
	17	65

XII. Financial.

The running costs for the year ending 31st December, 1962 were as follows:-

Food	R1150.29
General Supplies	610.55
Medical Supplies	366.42
Salaries and wages	1822.08
Repairs	170.57
Telephone and Office Supplies	24.53
Transportation and Railage	233.20
Insurance	37.92
Inpatients Hospital Fees (R.F.M. Hospital)	100.25
Cow Feed	139.41
	R4655.22

/Conclusion...

Conclusion.

Dr. David Hynd, who has retired and is assisting in the running of the Leper Colony, has submitted the following remarks.

"Treatment has been the same as last year. Etisul inunctions have been continued and seem to be of definite help. Lepra reactions have been treated with A.C.T.H. injections or Prednisolone tablets.

Rev. Samuel Dlamini retired after 13 years service as Chaplain.

The school continued throughout the year for the 6 children isolated in the Colony.

The Resident Commissioner and Mrs. Marwick attended the Christmas Party and Nativity Play given by the patients, and distributed Christmas gifts to the patients.

The regular monthly visits of Mr. Cuthbert Pretious, M.B.E. of the Mbabane Division of the Red Cross, with comforts for the patients are greatly appreciated.

Dr. Teale of the Veterinary Department showed great interest in the care of the Dairy Herd at the Colony, and the resultant supply of milk forms a staple article of the patients' diet. Agriculture and vegetable gardening by the patients helps to supplement to some extent the patients' diet, but much more could be done along this line if someone with expert knowledge in agriculture and animal husbandry could be added to the staff.

Grazing camps for the cows have been fenced off during the year."

We wish to express our gratitude to the staff, the Red Cross Society, the Mission to Lepers, the Swaziland Government, the Church of the Nazarene and many others, who have helped to make the running of the Leper Colony a success during the past year.

K. A. STARK

MEDICAL SUPERINTENDENT.

RETURN OF CASES TREATED : GOVERNMENT AND MISSION HOSPITALS, 1962.

Detailed List No.	Group Causes	Total Cases	Out-patients	In-patients	Deaths
001-008	Tuberculosis, Respiratory System	891	290	601	55
010	Tuberculosis of Meninges or C.N.S.	4	-	4	2
011	Tuberculosis of Intestines and Peritoneum	63	17	46	6
012-013	Tuberculosis of Bones and Joints	30	9	21	1
014-019	Tuberculosis - All other forms	168	89	79	1
020	Congenital Syphilis	60	44	16	1
021	Early Syphilis	480	460	20	-
024	Tabes Dorsalis	3	1	2	-
025	General paralysis of Insane	1	1	-	-
022-023) 026-029)	All other Syphilis	212	196	16	1
030-035	Gonococcal Infection	1505	1484	21	-
036-039	Other Venereal Diseases	95	94	1	-
040-041	Enteric Fever	324	6	318	18
044	Brucellosis	13	-	13	1
045	Bacillary Dysentery	389	270	119	5
046	Amoebiasis	306	119	187	7
050	Scarlet Fever	3	2	1	
055	Diptheria	7	1	6	2
056	Whooping Cough	870	728	142	7
057	Meningococcal Infections	4	1	3	1
060	Leprosy	9	6	3	-
061	Tetanus	16	-	16	3
080	Acute Poliomyelitis	3	-	3	-
081-083	Late Effects of Poliomyelitis	3	1	2	-
085	Measles	1033	824	209	17
092	Infectious Hepatitis	46	22	24	3
104	Tick-bite Fever	21	21	-	-
116	Malaria	8	3	5	-
123-1	Bilharzia (Vesical)	891	836	55	-
123-0	Bilharzia (Intestinal)	6	3	3	-
126	Tape Worm	825	803	22	-
130-0	Ascariasus	776	750	26	-
124,128) 130-1)	Other Helminthic Diseases	139	134	5	-
049	Poisoning - Food	29	4	25	-
087	Chickenpox	210	165	45	-
131	Dermatophytosis	714	710	4	-
135	Scabies	182	178	4	-
137,138	Other Infective and Parasitic Diseases	297	240	57	-
140-150	Malignant Neoplasms of (a) Mouth, Pharynx & Oesophagus	4	-	4	-
151-154	(b) Stomach Intestine, Rectum	15	1	14	6
161-163	(c) Larnyx, Trachea, Lung	4	1	3	1
170	(d) Breast	11	3	8	-
171	(e) Cervix Uteri	11	2	9	3
172	(f) Body of Uterus	19	10	9	2
177	(g) Prostate	9	3	6	2
191-9	(h) Skin	11	7	4	-

/(j) All other Sites

Detailed List No.	Group Causes	Total Cases	Out-patients	In-patients	Deaths
	Malignant Neoplasms:				
199	(j) All Other Sites	64	18	46	12
204	Leukaemia	3	1	2	1
210-239	Benign Neoplasms	411	272	139	-
250-251	Non-Toxic Goitre	162	147	15	-
252	Thyrotoxicosis	20	15	5	-
260	Diabetes Mellitus	41	17	24	2
281	Pellagra	912	805	107	4
282	Scurvy	14	14	-	-
286-6	Kwashiorkor	685	372	313	35
286-5	Malnutrition - unqualified	1629	1249	380	62
290	Hyperchromic Anaemias	6	4	2	-
291	Hypochromic Anaemias	11	5	6	-
292,293	Anaemia, unspecified	1349	1330	19	4
241	Asthma	457	339	118	4
240,242) 245)	Other Allergic Disorders	358	349	9	-
300-309	Psychoses	21	16	5	1
310,324) 326)	Psychoneuroses & Hysteria	408	337	71	-
325	Mental Deficiency	41	31	10	2
330-334	Vascular Lesions of C.N.S.	19	14	5	2
340	Meningitis (Non-Meningococcal)	18	4	14	4
353	Epilepsy	114	65	49	1
370-379	Inflammatory Diseases of Eye	1929	1814	115	-
385	Cataract	93	45	48	-
387	Glaucoma	11	5	6	-
390	Otitis Externa	452	441	11	-
391-393	Otitis Media & Mastoiditis	1329	1248	81	-
380-384	All Other Diseases of Eye	552	505	47	-
341-344	All Other Diseases of C.N.S. & Sense Organs	460	430	30	3
400-402	Rheumatic Fever	48	27	21	-
410-416	Chronic Rheumatic Heart Disease	90	74	16	1
420-422	Arterio-Sclerotic & Degenerative Heart Disease	182	103	79	14
430-434	Other Diseases of Heart	455	293	162	28
440-443	Hypertension & Heart Disease	139	118	21	2
444-447	Hypertension	355	301	54	-
450-456	Diseases of Arteries	48	37	11	5
460-468	Other Diseases of Circulatory System	443	356	87	3
470-475	Acute Upper Respiratory Tract Infections including Acute Tonsillitis	5429	5027	402	6
480-483	Influenza	2710	2422	288	1
490	Lobar Pneumonia	310	106	204	17
491	Broncho-Pneumonia	729	401	328	31
492,493	Atypical Pneumonia	144	86	58	3
500	Acute Bronchitis	5153	4872	281	13
501,502	Bronchitis, Chronic & Unsuspected	848	820	28	-
512	Chronic Pharyngitis & Chronic Tonsillitis	634	597	37	-
518,521	Empyeme & Lung Abscess	11	4	7	2
519	Pleurisy	207	148	59	2
523	Pneumoconiasis	32	16	16	-
520-522	Other Respiratory Diseases	174	163	11	-
530	Dental Caries	3576	3534	42	-
531-535	All Other Diseases of Teeth & Gums	687	635	52	-
540	Gastric Ulcer	54	35	19	-
541	Duodenal Ulcer	39	33	6	-

/Gastritis

Detailed List No.	Group Causes	Total Cases	Out-patients	In-patients	Deaths
543	Gastritis & Duodenitis	2244	2012	232	1
550-553	Appendicitis	196	112	84	-
570	Intestinal Obstruction	23	6	17	3
560	Hernia	103	54	49	1
570-0	Gastro-enteritis (4 weeks to 2 yrs)	4844	4199	645	114
571-1	Gastro-enteritis (Over 2 yrs)	3266	2812	454	15
572	Chronic Enteritis and Colitis	140	135	5	-
581	Cirrhosis of Liver	99	44	55	13
585-585	Cholecystitis	89	67	22	-
536-539) 544,573) 580,582) 583,586) 587)	Other Diseases of Digestive System	2661	2453	208	15
590	Acute Nephritis	101	71	30	2
591-594	Chronic Nephritis	29	20	9	3
600	Infection of Kidneys	372	314	58	-
602,604	Calculi of Urinary System	18	13	5	-
610	Hyperplasia of Prostate	13	11	2	-
620,621	Diseases of Breast	98	84	14	-
613	Hydrocele	85	47	38	-
634	Disorders of Menstruation	1449	1326	123	-
601,603) 605-609) 611,612) 614-617) 622-633) 635-637)	All other Diseases of Genito-Urinary System	4330	3785	545	8
660	Normal Deliveries	2315	-	2315	-
671,) 673-678)	Delivery with Complications	349	-	349	8
640,641) 681,682) 684)	Sepsis of Pregnancy, Childbirth and Puerperium	61	46	15	-
642	Toxaemia of Pregnancy	35	17	18	1
643m644) 670,672)	Haemorrhage of Pregnancy and Childbirth	23	2	21	2
650	Abortion	384	88	296	-
651	Abortion with Sepsis	37	11	26	2
690-698	Infections of Skin and Subcutaneous Tissues	2492	2186	306	-
720-725	Arthritis and Spondylitis	487	432	55	
726,727	Muscular Rheumatism & Rheumatism Unqualified	1824	1758	66	-
730	Osteomyelitis & Peri-Ostitis	119	3	116	-
737,745) 749)	Ankylosis & Acquired Musculo-Skeletal Deformity	76	45	31	-
700-714	All Other Diseases of Skin	1589	1495	94	-
731-736) 738-744)	All Other Diseases of Muscule-Skeletal System	1179	1022	157	-
750-759	Congenital Malformations	37	20	17	1
760-762	Birth Injuries	12	5	7	2
765	Ophthalmia Neomatorum	12	10	2	-
770	Haemolytic Disease (Neo-Natal)	11	-	11	6
773-776	Other Diseases Early Infancy	319	262	57	10
791	Senility	25	21	4	1
788-9	P.U.O.	276	215	61	3

/All Other defined

Detailed List No.	Group Causes	Total Cases	Out-patients	In-patients	Deaths
788-1- 788-7 788-9 789-792 795	All other ill- defined causes of Morbidity	410	398	12	-
793	Observation without need for further care	293	240	53	-
635	Menopausal Condition	24	24	-	-
776	Prematurity	32	-	32	17
	"E" CODE ALTERNATIVE CLASSIFICATION OF ACCIDENTS, POISONINGS AND VIOLENCE (EXTERNAL CAUSE)				
E810-E835	Motor Vehicle Accidents	645	390	255	10
E800-E802	Other Transport "	190	148	47	4
E870-E895	AccidentalPoisoning	108	60	48	
E900-E904	Accidental Falls	1817	1325	492	1
E612	Accidents caused by Machinery	147	112	35	1
E916	Accidents caused by Fire	286	143	143	18
E917,E918	Accidents caused by Hot substances and corrosives	261	212	49	3
E919	Accidents caused by Firearms	14	9	5	
E910-E913- E915,E920- E928,E930- E965	All other accidental causes	2677	2257	420	5
E970-E979	Suicide & Self-Inflicted Injury	4	-	4	1
E980-E985	Assault, Homicide	1610	960	650	12
	"N" CODE ALTERNATIVE CLASSIFICATION OF ACCIDENTS, POISONINGS AND VIOLENCE (NATURE OF INJURY)				
N800-N804	Fracture of Skull	114	7	107	14
N805-N809	Fracture of Spine & Trunk	34	14	20	2
N810-N829	Fracture of Limbs	1018	466	552	1
N830-N839	Dislocation	85	53	32	1
N840-N848	Sprains & Strains	1044	960	84	
N850-N856	Head Injury (Excluding Fracture)	419	315	104	4
N860-N869	Internal Injury, chest abdomen and pelvis	46	15	31	6
N870-N908	Laceration & Open Wounds	2734	2021	713	4
N910-N929	Superficial Injury contusion	1158	958	200	-
N930-N936	Foreign Body entering through Orifice	241	197	44	-
N940-N949	Burns	599	392	207	22
N960-N979	Effects of Poisons	76	31	45	
N950-N959) N980-N999)	All other effects of External Causes	91	48	43	1

/Medical

Detailed List No.		Group Causes	Total Cases	Out-patients	In-patients	Deaths
Y00		Medical Examinations, Boards and Tax Exemption Examinations	5012	5010	2	
Y02		Prophylactic Injections	5728	5728		
	(a)	Smallpox Vaccination	3299	3299		
	(b)	T.A.B.	1733	1733		
	(c)	Diptheria, Whooping Cough and Tetanus	217	217		
	(d)	Diptheria	15	15		
	(e)	Diptheria & Whooping Cough	83	83		
	(f)	Tetanus	116	116		
	(g)	Poliomyelitis	69	69		
	(h)	Yellow Fever	196	196		
Y08		Attendants admitted as In-patients with sick children	1763		1763	
TOTAL "NEW" PATIENTS			104,317			

SUBSEQUENT ATTENDANCES.

Subsequent Ante-Natal Attendances	4,877
Subsequent Prophylactic Injections	2,017
All Other Subsequent Attendances	49,329
Grand Total Subsequent Attendances	56,223