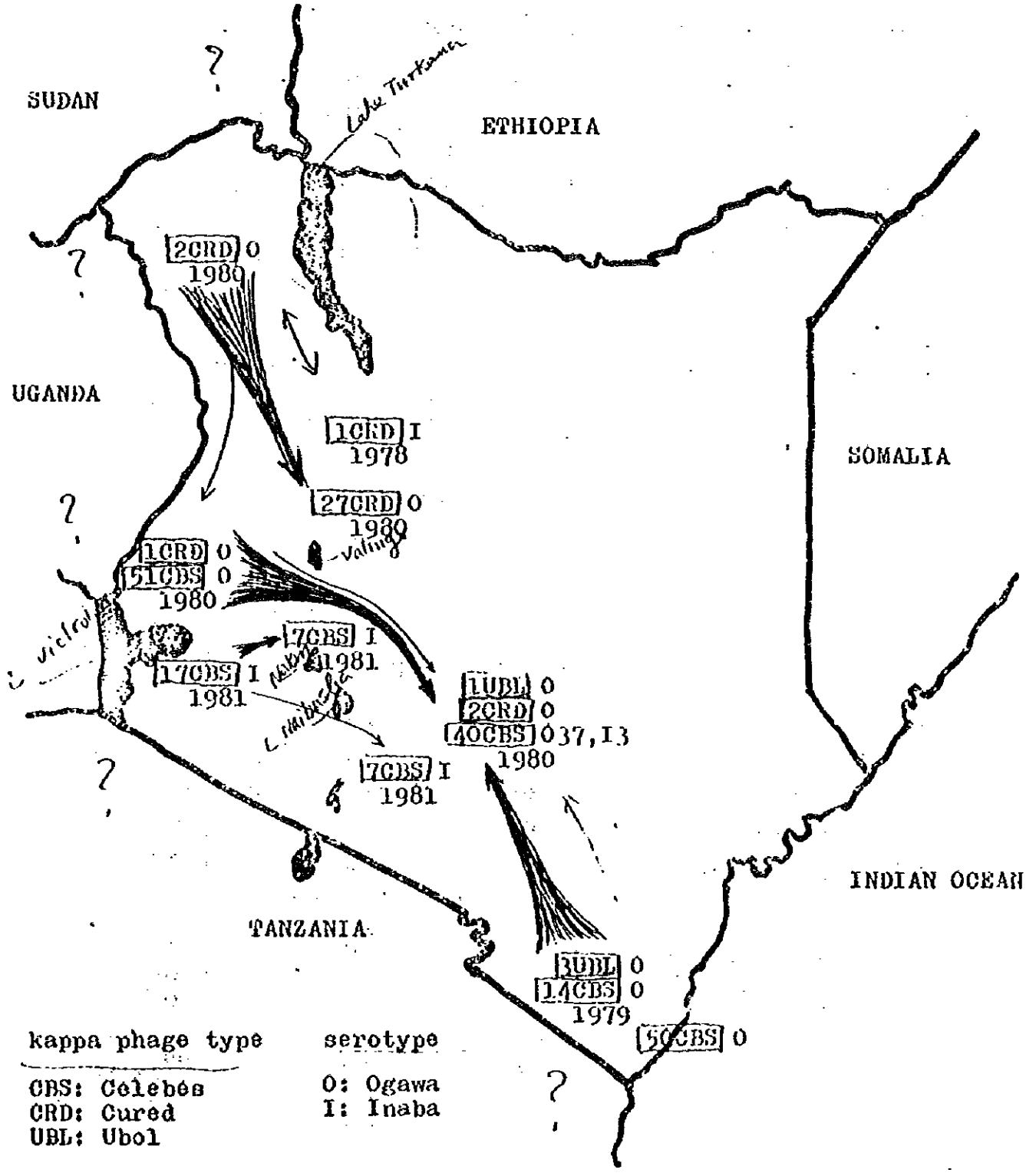
CHOLERA IN KENYA

(The route of spreading)



kappa phage type	serotype
CBS: Celebes	O: Ogawa
CRD: Cured	I: Inaba
UBL: Ubol	

DRUG SENSITIVITY

	Shigella flexneri (33)			Vibrio cholerae (117)		
mcg/ml	CP	TC	AM-PC	CP	TC	AM-PC
0.2					38	
0.4	6			1	46	
0.8	40	30		83	13	
1.6	48	37	60	14	3	3
3.2	13		28	1		4
6.4			3			89
12.5						4
25.0						
50.0		3				
100.0		9				
100.0<	3	18	9			

	Nyeri	Nairobi	Mombasa
Shigella	22%	25	7
Salmonella	1	9	4
Pathogenic E.coli	8	23	15
Vibrio cholerae	0	0	0
Vibrio parahemolyticus	0	0	0
Klebsiella oxytoca	6	0	1
Bacillus	0	1	0
Staphylococcus	1	2	0
Total	38	60	27

Preliminary Draft of Kenya-Japan Joint Studies on Parasitic Diseases (August 1981 - March 1984)

Studies on Schistosomiasis

I) Epidemiological Studies on Schistosomiasis

1: Studies on prevalence, incidence and intensity of schistosomiasis in endemic areas.

Examination for ova of schistosome at a given intervals by quantitative method.

Immunological diagnosis by using COPT(Circum Oval Precipitation Test), IHA(Indirect Haemagglutination) and CF(Complement Fixation).

Blood examination.

2: Investigation of population, distribution, mode of infection and infection rate of snails.

Oogram and miracidial hatching test on ova.

Collection of snails and shedding of cercariae.

How the eggs reach to water.

3: Investigation of waters infested with cercariae.

Cercariometry, animal exposure to infested water.

4: Studies to quantitate human contact with water.

Inquiry on human contact with water.

II) Experimental Work in Laboratory

1: Circulating antigen

2: Development in stage specific diagnosis

3: Development in cercariometry

4: Schistosomule cytotoxity test

5: Ecology and physiology of snail

6: Biology of miracidium and susceptibility of snail

7: Pattern of excretion of ova of S. haematobium into urine

III) Preparation for preventive measures

Effect of molluscicide derived from fuel and repellent against cercariae: the offer from Dr. Tsu Tei Ron in China.

IV) Necessary preparations for studies

1: Pilot areas

2: Census

3: Sampling and questionnaire

4: Laboratory space

5: Breeding room of animals and snails

6: Transportation

7: Training

8: Equipments

9: Inquirer for census and questionnaire

Studies on Other Intestinal Parasites

Stool examination is expected to reveal the prevalence of parasitic diseases and intensity of infection in pilot areas. AMS III procesure and Formalin-Ether concentration.

Preliminary Draft of Kenya -Japan Joint Studies on Parasitic Diseases in Kwale District (August 1981 - March 1984)

Studies on Schistosomiasis haematobium

Among the parasitic diseases in Kwale district, schistosomiasis haematobium is one of the diseases which is regarded as a public health problem. It is, therefore, necessary to carry out intensive studies on schistosomiasis.

The prevention or control of schistosomiasis depends on a profound understanding of the epidemiology of the disease. The chief aim of the joint studies is to determine the mode of infection, the most important things before anythingelse; for instance, water area infested with cercariae, time of infection etc. It is expected that the epidemiological study will contribute effectively towards the prevention of disease.

In addition to epidemiology, more research should be undertaken into a full understanding of the transmission of schistosomiasis. These include biological, immunological and ecological studies on parasites or snails.

Preliminary studies on preventive measure are also carried out in the joint studies.

I) Epidemiological Studies on Schistosomiasis haematobium

1: Studies on prevalence, incidence and intensity of schistosomiasis in endemic areas.

Examination of urine for ova of schistosome at a given intervals by nucleo pore filtration and sedimentation method.

Immunological diagnosis by using COPT (Circum Oval Precipitation Test), IHA (Indirect Haemagglutination) and CF (Complement Fixation).

Blood examination.

2: Investigation of population, distribution, mode of infection and infection rate of snails.

Oogram and miracidial hatching test on ova in urine.

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7: Pattern of excretion of ova of S. haematobium into urine

III) Preparation for preventive measures
Effect of molluscicide derived from fuel and repellent against cercariae; the offer from Dr. Tsu Tei Ron in China.

IV) Necessary preparations for studies
1: pilot areas
2: census (to be attached)
3: sampling and questionnaire (to be attached)
4: laboratory space
5: breeding room of animals and snail
6: transportation
7: training
8: equipments (to be attached)
9: inquirer for census and questionnaire

Studies on Other Intestinal Parasites

Stool examination is expected to reveal the prevalence of parasitic diseases and intensity of infection in pilot areas. AMS III procedure and Formalin-Ether concentration.

CENSUS

I: Mapping

1. location of house
2. water contact site
   - 2-1. river and water system
   - 2-2. agricultural field

reference

1. large scale map (1/50,000)
2. aerial photograph

II: Identification of inhabitants

1: Individual number

place(Provine, District, Village)
house number
order

2: Name

3: Sex

4: Age

5: Relation

6: Place of birth

7: Preiod of residence (history)

8: Occupation

9: Photo

QUESTIONNAIRE

The following questions will be put to the individuals in the pilot areas to quantitate human contact with water.

The inquirer should ask villagers when, where, how long, and how frequent they contact water.

1: Water supply
piped, pump, well, drain, canal, lake, river etc.
2: Washing body
3: Fishing
4: Swimming (playing in water)
5: Washing cloth
6: Washing utensils
7: Source of water in the field
8: Washing stables
9: Experience of dermatitis on arms or legs, especially in relation to the contact with water
10: Behavioural pattern in rainy season
11: Latrine

EQUIPMENTS

Centrifuge, Tully counter, Balance, Microscope (with oil immersion lens), Distilled water system, Stereoscopic(Dissecting)microscope, Differentiation counter, Scoop

Glass wares and Reagents

Possible Parasitic Agents That Cause Diarrhoea

Studies on bacterial, viral and parasitic agents causing diarrhoea has been carried out on June and July in 1981 at Coast Prov. Gen, Hospital, Mombasa.

This report deals with the possible parasites causing diarrhoea, which distribute in Mombasa district.

Three hundreds seventy seven stool specimens were examined for cyst of protozoa, larvae and ova of helminth by using Formaline-Ether concentration method. Among these specimens, diarrheic and semi-formed stool were examined for trophozoit of protozoa.

The proportion of faecal samples containing parasites were 50% in diarrheic, 61.6% in semi-formed and 53.2% in formed stool. The parasites which were found in stool were listed in Table 1.

Although trophozoites of amoeba were found in some diarrheic samples, the variety of parasites detected in diarrheic stool did not differ essentially from that in semi-formed and formed stool.

The prevalence of T. trichiura infection was as high as 27.3 %. Those of E. hystolytica, E. coli, E. nana, T. hominis, Ch. mesnili, A. lumbricoides and hook worm infection were over 5 %. The percentage of semi-formed and formed stool containing these parasites was as high as that of diarrheic stool.

Out of 76 diarrheic stool, to which both bacteriological and parasitological data were available, 24 specimens were positive for entero-pathogenic bacteria. Table 2 shows incidence of parasites infection in diarrhoea of possible bacterial origin. Ova of T. trichiura were frequently found in bacteria-related diarrhoes.

Out of 52 diarrheic samples free from entero-pathogenic bacteria, 28 specimens were positive for intestinal parasites. The parasites detected in these specimens are listed in Table 3-A.

Table 3β shows the parasites which was detected in individual specimens. Most of diarrheic stool of non-bacterial origin were found to be infested with at least one of the following parasites; E. hystolytica, T. hominis, G. lamblia and T. trichiura.

T. hominis is occasionaly found in diarrhoea but so far there is no proof that it is pathogenic. Amoebiasis, giardiasis and trichuiasis are reported to be a frequent cause of diarrhoae by WHO scientific working group.

Although percentage of asymptomatic infection of T. trichiura, E. hystolytica and G. lamblia is high (see Table 1), these parasites are possible parasitic agents that frequently cause diarrhoea in Mombasa district.

Table 4 indicates infection rate of E. hystolytica, G. lamblia and T. trichiura by age. Children are the most commonly infected by G. lamblia. There is little difference in infection rate of E. hystolytica by age. The prevalence of T. trichiura infection are high and children aged 4 to 9 years are frequently infected.

Table 5 shows the interesting fact that 80 % of children aged 0-1 years infected with T. trichiura had diarrhoea. Table 5 also shows that children infected with E. hystolytica are likely to have diarrhoae.

Diarrhoea is not a characteristic symptoms of intestinal parasitic infection and percentage of asymptomatic infection is usually high. And several factors, for instance, coexistence of malnutrition or bacterial enteric infection, may be involved in etiology of parasite-related diarrhoea. These facts might put difficulties in diagnosing the diarrhoea of parasitic origin. The data obtained from Coast Prov. Gen. Hospital, however, might indicate that giardiasis, amoebiasis and trichuiasis should be considered as one of the parasitic agents which cause diarrhoea; especially as a frequent cause of diarrhoae of children.

Table 1. Parasitological Examination of Stool at Coast Prov. Gen. Hospital, Mombasa.

	Diarrheic+		Semi-formed+		Formed++	
No. examined	86		73		218	
No. positive for trophozoit, cyst ova, larva	43	(50.0)	45	(61.6)	116	(53.2)
Amoebae						
Entamoeba hystolytica	6(2)	(7.0)	4	(5.5)	14	(6.4)
E. coli	6(2)		11		48	
Endolimax nana	1(1)		2		18	
Iodamoeba butschlii	2		0		9	
Flagellates						
Trichomonas hominis	6	(7.0)	4	(5.5)	N/D	
Gialdia lamblia	2	(2.3)	6	(8.2)	3	(1.4)
Cheilomastix mesnili	4(1)		3(1)		12	
Nematodae						
Ascaris lumbricoides	3		9		8	
Hook worm	11		10		31	
Trichuris trichiura	30	(34.9)	25	(34.2)	48	(22.0)
Rabditis larvae	1		2		2	
Trematodae						
Schistosoma mansoni	0		0		3	
Cestodae						
Taenia spp.	0		0		1	
Mix infection	16	(18.6)	20	(27.4)	52	(23.9)

+ : Direct smear and concentration method were combined.
++ : Concentration method alone.
(_): No. of samples in which trophozoites were detected.
( ) : per cent

Table 2. Parasitological Finding of Diarrhoaes of Possible Bacterial Origin.

bacterial agents	No. exam.	No. positive for ova & cyst+	E. coli	T. trichiura	Hook worm	S. mansoni
Shigella	6++	1		1		
Salmonella	4	4		4	2	
E. E. coli	13	7	1	6		1
Klebsiella	1	0				

+ : Direct smear and concentration method were combined.

++ : dysenterric

Table 3-A. Parasitological Finding of Diarrhoae of Non-Bacterial Origin

	Child	Adult
No. examined	31	21
No. positive for parasites	17 (50.0)	11 (61.0)
Entamoeba hystolytica	4(2)	2
E. coli	2	3(2)
Endolimax nana	0	1(1)
Iodamoeba butschlii	0	2
Trichomonas hominis	4+	3
Gialdia lamblia	2+	0
Cheilomastix mesnili	2(1)	2
Ascaris lumbricoides	3+	0
Hook worm	4	3
Trichuris trichiura	10+	7
Rabditis larvae	0	1
Mix infection	8	7

( ): per cent

(_): No. of samples in which trophozoites were detected

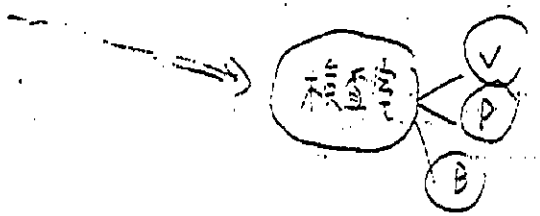
\+ : One specimen was positive for rotavirus or CPE

WHO scientific group. 1980

Table 3-B. Parasitological Finding of Diarrhoae of Non-Bacterial Origin

		Parasites found	Rota	CPE
Child	1	E.h.(T), T.h., T.t.	-	
	2	T.t., H.w.	-	
	3	G.l., Ch.m.(T&C), H.w.	-	
	4	E.h.(T), T.t., A.l.	-	
	5	E.c.(C), H.w.	-	
	6	T.t.	-	
	7	G.l.	-	+
	8	T.t.	-	
	9	E.h.(C)		
	10	T.h.	-	+
	11	T.t., A.l.	+++	
	12	T.t.	+++	
	13	E.h.(C), T.h., T.t.	-	
	14	T.t.	-	
	15	T.t.	-	
	16	T.h.	-	
	17	E.c.(C), Ch.m.(C), A.l., H.w.	-	

		Parasites found	Rota
Adult	1	E.h.(C), Ch.m.(C)	-
	2	E.c.(T), E.n.(T), T.t.	
	3	E.h.(C)	
	4	E.c.(T), T.t., R-L, H.w.	-
	5	I.b.(C), H.w.	
		...., T.t., H.w.	-
	7	T.t.	-
	8	T.t.	-
	9	T.h., Ch.m.(C), T.t.	-
	10	T.t.	-
	11	T.h., E.c.(C), I.b.(C).	



Abbreviation: E.h.-E. hystolytica, E.c.-E. coli, E.n.-Endolimax nana,
I.b.-Iodamoeba butschlii, T.h.-Trichomonas hominis,
G.l.-Gialdia lamblia, Ch.m.-Cheilomastix mesnili,
A.l.-Ascaris lumbricoides, T.t.-Trichuris trichiura,
H.w.-Hook worm, R-L-Rabditis larvae.
(T): Trophozoit (C): Cyst

Table 4. Infection Rate of Intestinal Parasites which may cause Diarrhoae by Age.

age	No. exam.	E. hystolytica	G. lamblia	T. trichiura	R-larvae
0- 1 yrs.	38	0	3 (7.9)	10(26.3)	0
2- 3	35	1 (2.9)	3 (8.6)	13(37.1)	0
4- 5	14	1 (7.1)	0	6(42.9)	0
6- 9	20	1 (5.0)	0	13(65.0)	0
10-19	42	1 (2.4)	1 (2.4)	10(23.8)	1
20-29	96	10(10.4)	0	18(18.8)	3
30-39	36	3 (8.3)	0	8(22.2)	0
40-	45	2 (4.4)	0	11(24.4)	1
unknown child	29	3(10.3)	4(13.8)	12(41.4)	0
adult	22	2 (9.1)	0	2 (9.1)	0
Total	377	24 (6.4)	11 (2.9)	103(27.3)	5

( ): per cent

Table 5. Relationship between parasitic infection and diarrhoae by age

age	No. of patients infected with Trichuris trichiura	No. of patients with diarrhoae (%)	No. of patients infected with E. hystlytica	No. of patients with diarrhoae (%)
0- 1 yrs	10	8 (80.0)		
2- 3	13	5 (38.5)	1	1
4- 5	6	2 (33.3)	1	1(1)+
6- 9	13	2 (15.4)	1	
10-19	10	2 (20.0)	1	
20-29	18	4 (22.2)	10	2
30-39	8	1 (12.5)	3	
40-	11	3 (27.3)	2	
unknown child	12	3 (25.0)	3	2(1)+
adult	2	0	2	

( )+ : Trophozoites were detected

Virological survey in Coast Prov. gen. Hosp.

Virological studies were carried out to detect the rotavirus antigens and to isolate the other viruses.

Specimens: Stool specimens(both diarrhea and non-diarrhea) were collected at the laboratory in Coast Prov. gen. Hosp. during the periods of 24th, June through 3rd, July and 15th through 23rd, July.

Methods: Stool specimens were mixed with buffered solution and centrifuged. The supernatants were harvested and tested for the presence of rotavirus antigens by enzyme-linked immunosorbent assay. The remaining supernatants were kept frozen and brought to Virus Research Center, Nairobi. They were, then, tested for the isolation of the viruses by tissue cultures.

Results: The results obtained, so far, were shown in Table 1 and Table 2. During the first survey period, one rotavirus positive case could be found, whereas during the second period, five cases could be found. The virus isolation in tissue cultures are being continued. So far, the virus were successfully isolated from two and six specimens collected during the first and the second survey period respectively. The characterization of these viruses have not yet done.

Comments: Although the number of specimens tested are not much, the rotaviruses are commonly detected in children. A greater incidence of infection during the cold month has been reported. Our data also showed the increase in number in July than in June. So, there is a possibility of increasing the number of the rotavirus infected children in August and September. Eight other virus strains could be isolated by tissue cultures. Although they are not yet identified, they seem to be enteroviruses. The relation between enteroviruses and diarrhea have not yet been clear. However, enteroviruses sometimes cause neurological disturbance to the children. Moreover, these viruses might interfere with polio vaccine when administered. So, care should be taken on these viruses,

Preliminary draft of Kenya-Japan joint studies on virus disease.

The purpose of this studu is to to find various viruses existing in the faeces and to know the causative viruses of diarrhea in Kenya, which might be a help to establish diagnosis, treatment and prophylaxis in the epidenic season.

I. The research will be carried out to find out the answers of the following questions:

1) Rotavirus:
   1. Are there any seasonal variations on the rotavirus prevalence?
   2. Are there any differences between high land and low land on the rotavirus prevalence?
   3. Which subtype of rotavirus is existing in this country?

2) Enteroviruses and other viruses:
   1. What kind of enteroviruses are prevailing in this country?
   2. Do these enteroviruses interfere with the production of antibody against poliovaccine?
   3. Do these enteroviruses cause disease of the central nervous system?

3) Seroepidemiology:
   1. Geographical distribution of antibody to rotavirus and other viruses.
   2. Age distribution of antibody to rotavirus and other viruses.

II. Place of collecting specimens:

1) General hospitals at Mombasa and Nyeri.
2) Rural health centers in Mombasa and Nyeri.

III. Specimens:

Stool specimens(both diarrhea and non-diarrhea) are taken from children under 5 years of age. The information about age, sex, tribe, home place, collected date etc of the specimens are obtained at the same time.

IV. Methods of examinations:

1) Rotavirus antigens in the stool specimens are examined by ELISA.

2) Virus isolation is carried out using tissue cultures (Vero cells, MA 104 cells, HeLa cells and possibly primary monkey kidney cells)

3) Identification of viruses is done by either neutralizing test, fluorescent antibody test or ELISA.

V. The following personel should be incorporated into our research group.

1) Three assigned research fellows.

2) Two assigned assistants.

Future virological studies on the diarrheal disease

The purpose of this study is to find various viruses existing in the faeces and to know the causative viruses of diarrhea in Kenya, which might be a help to establish diagnosis, treatment and prophylaxis in the epidemic season.

Materials and methods: (1) The faecal samples from children under five years of age are collected at the laboratory in Nyeri Prov. gen. Hosp. and Coast Prov. gen. Hosp. during the period of one week of each month. They are mixed with buffered solution and centrifuged. The supernatants are used for the detection of the rotavirus by the enzyme-linked immunosorbest assay method. The remaining supernatants are kept frozen and brought to Virus Research Center, where the samples are tested for the virus isolation using the tissue cultures. The isolated viruses are characterized biophysically, biochemically and morphologically. These studies will be continued for two years and we try to find seasonal variations, if any, of the virus infections. (2) Sera will be collected at both hospitals and tested for antibody to rotavirus and other viruses.

The developemtn and the future plan of the communicable disease research and control project

1. The arrangement of the laboratories

(March,1979 - October,1981)

By the particular consideration of the Ministry of Health, especially the NPHLS and VRC, the laboratories for this project were equiped properly.

2. The first stage of the activity in the Central Provincial General Hospital

(November,1980 - April,1981)

The investigation on the diarrheal diseases was carried out in the Central Provincial General Hospital. It was noted that the carrier state of Shigella and Entoamaeba hystritica was indicated about 20% to 30% among the diarrheal and non-diarrheal cases. It was suggested that the epidemic or sporadic cases might occur by areas. The identification of Rotaviruses which are important agents caused the gastroenteritis among children was also made in the diarrheal cases.

3. The second stage of the activity in Nairobi and the Coast Provincial General Hospital

(May,1981 - August,1981)

The incidences of bacillary dysentery and amebiosis decrease relatively in number than those in the Central Provincial General Hospital. However, the evidence must still indicated to pay the attention for the improvement of the health condition among peaples.

The epidemic of cholera was investigated in evry rainy season not in the Coast area but in Nairobi and the West areas in Kenya. However, the incidence of cholera cannot be identified in the dry season. The seasonal prevalence of cholera must be clarified by the investigation on the ecology of cholera and the enviromental factors. The incidences of Rotavirus infection among the gastro-enteritis of children were identified in Nairobi and the Coast Provincial General Hospital.

4. The future plan

The detail of the future plan of the project will be attached in this paper.

5. Counterparts

The cpunterparts fixed for this project could be arranged the post graduates of young scientits as possible.

6. The constraction of the laboratory for the communicable disease research and control project

The constraction of the laboratory is under going with rapid process and it will be completed in December this year.

By Prof. K. Hayashi
Team leader of the project

1979-1983

(DRAFT)

THE FUTURE PLAN : KENYA/JAPAN COOPERATION
THE COMMUNICABLE DISEASES RESEARCH AND CONTROL PROJECT

The Japanese Implementation Survey Team visited Kenya in February and March, 1979 for the purpose of working out the details of the technical cooperation programme concerning the Communicable Diseases Research and Control Project in Kenya.

After a series of discussions, the Government of Japan and the Government of Kenya agreed to cooperate in the said project and the Record of Discussions was signed on 9th March, 1979. The term of cooperation will be five years for the said date of signing Record of Discussions.

According to the schedule of the said project, we had some connection with the Medical Officers and Scientists in Nairobi, Nyeri and Mombasa. And members of the Japanese Medical Team and Kenyan counter-parts examined the feces, especially diarrhoea ones for the purpose of transfer medical technique and collecting basic data and information to make the future plan.

Now we would like to propose the future plan for the purpose of the implementation of the said project. The Plan is to be attached.

25th August, 1981

The Japanese Medical Team

NATIONAL IMMUNIZATION SCHEDULE

Effective from 1.1.1981

PRIMARY VACCINATIONS

VACCINATION	AGE	REMARKS
B.C.G.	AT BIRTH	OR AT FIRST CONTACT WITH CHILD
D.P.T. I ORAL POLIO I	3 MONTHS	OR AT FIRST CONTACT WITH CHILD AFTER THAT AGE
D.P.T. II ORAL POLIO II	4 MONTHS	4 WEEKS AFTER THE FIRST DOSE OF DPT AND POLIO OR AT NEXT CONTACT WITH CHILD
D.P.T. III ORAL POLIO III	6 MONTHS	4 WEEKS AFTER THE SECOND DOSE OF DPT AND POLIO OR AT NEXT CONTACT WITH CHILD
MEASLES	8 MONTHS	OR WHEN IN CONTACT WITH THE CHILD AFTER EIGHT MONTHS

OTHER VACCINATIONS (2 YEARS AND OVER)

B.C.G.	2-15 YEARS	CAN BE GIVEN ANY TIME DURING THIS PERIOD IF NO BCG SCAR PRESENT
TETANUS TOXOID	DURING PREGNANCY PEOPLE WITH OPEN WOUNDS	TWO DOSES OF TETANUS TOXOID AT LEAST AT 4 WEEKS INTERVAL ONLY ONE DOSE TO BE GIVEN IF IMMUNIZED DURING LAST 3 YEARS
OTHERS LIKE TYPHOID AND EPIDEMICS	SPECIFIC GROUPS AND THOSE AT RISK	
INTERNATIONAL TRAVEL	TRAVELLERS REQUIRING VACCINATIONS AS SPECIFIED BY THE INTERNATIONAL HEALTH REGULATIONS	

ISSUED BY THE DIVISION OF COMMUNICABLE DISEASES CONTROL, MINISTRY OF HEALTH, P.O. BOX 30781, NAIROBI.

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Climatology Form

IIETUNE PROJECT

Weekly information on rainfall to be collected by Patric Musau or his assistant.

Name of Collector .....

Week starting 08.00 a.m. on Monday .....19....

Day of filling this form 08.00 a.m.	Rain in the previous 24 hours				
	No rain	Just a drizzle	a (few) shower(s)	steady rain(s)	heavy down pour(s)
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					
Modnay					

Everyday one box must be "ticked" (✓) to describe the type of rainfall at the site of the weather station. Each 24 hours' period runs from 08.00 a.m. on one day until 08.00 a.m. on the next. For example on Tuesday you describe the rainfall between 08.00 a.m. on Monday and 08.00 a.m. on Tuesday. If you have been away for past of the day you must enquire with local people. If you are going to be away for some time, don't forget to instruct the fieldworker who is going to be replacing you in getting this form filled out.

No rain = absolutely no rain whatsoever (the grass may be wet in the morning because of dew)

Just a drizzle = a fine type of rain for a short time, just enough to moisten the soil.

a (few) shower(s) = One or more short rain with thick drops.

Strady rain = Long rains, lasting a few hours.

heavy down pour(s) = Incesiant heavy rains.

)Monday 08.00 a.m. rain guage emptied

☐ Yes
☐ No

rainfall in mm

IIETUNE WATER CONTACT STUDY
SNAIL SITE COLLECTION SHEET.

SITE DRY

CONDITIONS NO FLOW
FLOWING
FLOODED/FLUSHED

SITE ----------
DATE ----------
NO +ve----------
COLLECTOR ----------

WEATHER CONDITIONS: SUNNY, CLOUDY, RAINING; WARM, COOL

	A LESS THAN 5MM	B 5-10MM	C OVER 10MM	TOTAL
INFECTED				
TOTAL				

NO	SIZE	INFECTION	NO	SIZE	INFECTION	NO	SIZE	INFECTION	NO	SIZE	INFECTION
1			16			31			46		
2			17			32			47		
3			18			33			48		
4			19			34			49		
5			20			35			50		
6			21			36			51		
7			22			37			52		
8			23			38			53		
9			24			39			54		
10			25			40			55		
11			26			41			56		
12			27			42			57		
13			28			43			58		
14			29			44			59		
15			30			45			60		

121 122 123 124 125	126 127 128 129 130	131 132 133 134 135	136 137 138 139 140
101 102 103 104 105	106 107 108 109 110	111 112 113 114 115	116 117 118 119 120
81 82 83 84 85	86 87 88 89 90	91 92 93 94 95	96 97 98 99 100
61 62 63 64 65	66 67 68 69 70	71 72 73 74 75	76 77 78 79 80

The medical cooperation between Japan and the Republic of Kenya

The medical cooperation aimed to search and control of communicable diseases in Kenya has started by the agreement of both the governments from March 1979, for five years. The outline of the project is as follows:

The functional development of the National Public Health Laboratory Services (NPHLS) is extended and a system of laboratory services is promoted for the improvement of the preventive measures against the epidemic of communicable diseases. In this connection, the epidemiological serveys and the operational research in the model areas where are selected Mombasa and Nyeri should be performed and the effective control measures must be searched. The research works in the model areas are carried out in the base of the provincial hospitals.

Since the organizations of the Kenya Medical Research Institute (KMRI) was established at February in 1980, all the research activities should be executed under the superintendence of the KMRI.

The communicable diseases research and control project contains three major subjects: (1) the functional development of NPHLS and related organizations; the virus research center and the clinical research center which are executed under the KMRI, (2) the despatch of Japanese experts, (3) the technical improvement of Kenyan personel including the despatch of Kenyan scientists or technologists sponsored by the Japanese government to Japan.

The major phase of the project is to elucidate the causative agents of the diarrheal diseases which are the big morbility in Kenya. The survey of the diarrheal diseases is carryied out from the stand point of virological, bacteriological, protozoological and parasitological views. The results of the survey and the effective control measures to be considered will be presented to the stearing committee.

For the successful implementation of the project, the stearing committee and the planning and implementation committee were established with the members of the lists.

I. Stearing committee

Chairman	Dr. W. K. Koinange
Members	Dr. J. M. Gekonyo
	Dr. J. N. Kaviti
	Dr. T. A. Siongok
	Prof. K. Hayashi
	Assistant Team Leader
	Mr. K. Onoda
	An official of the Embassy of Japan and the Representative of JICA attend the meeting as observors.

II. Planning and implementation committee

Chairman	Dr. J. M. Gekonyo
Members	Dr. J. N. Kaviti
	Dr. T. A. Siongok
	Dr. P. M. Tukei
	Prof. H. Nsanze
	Prof. K. Hayashi
	Assistant Team Leader
	Mr. K. Onoda

General plan for the implementation of the project

The Japanese team, the National Public Health Laboratory Services (NPHLS), the Virus Research Center (VRC), the pediatrics in the Kenyatta National Hospital and the Clinical Research Center (CRC) should work in the cooperation for the research activities of the project. The survey in the model areas must be coworked with the scientists in the provincial hospitals.

I. Virological field

(1) Clinical virology

The major subjects are the investigations on the respiratory and the intestinal diseases caused by viruses. The rapid diagnosis of viral diseases is proceeded by the immunofluorescent method. The advanced enzyme linked immunosolubent assays (ELISA) should be applied as well as the virus isolation and identification by the microculture methods and the serogiagnosis by the microtiter systems.

(2) Arbovirology

The arboviruses in Kenya should be investigated continuously since the VRC has carried out the arbovirus study untill today. The particular seroepidemiological survey on the hemorrhagic fever diseases is a major problem, because, the north areas of Kenya is close to the tropical rain forest where the known or an unknown severe diseases are invading.

(3) General virology

The diarrheal diseases caused by viruses should be investigated and the interference agents against the attenuated live poliovirus vaccine must be also examined.

(4) Viral hepatitis

The analysis of HB-antigen, hepatitis A viruses and non-A and non-B viruses are most impotant problem in connection with the effective prevention of hepatitis.

II. Bacteriological field

(1) General bacteriology

The diarrheal diseases due to the bacterial enteritis including salmonella, shigella, and food poisoning due to vibrio parahemolyticus and anaerobic bacteriae are investigated. Campylobacter jejuni which is recently known as an important enteropathogenic organism is also examined.

(2) Bacteriological reference center

The facilities for the identification of the isolates and the maitenance of the standard strains are prepared.

III. Protozoological and parasitological field

The intestinal protozoal diseases are investigated in connection with the diarrheal diseases and the helminthological examination are also proceeded. The preventive measures against protozoal and helminthic agents are further examined.

IV. Vaccine examination

The antibody distribution against viral vaccines and the survival virus titer of the attenuated live vaccines after transfer to districts are examined as well as the improvement of maintenance of the vaccines.

V. Immunology, epidemiology, entomolgy and electron microscopy will be attached at any requested time during the progress of the project.

VI. Model areas

The characteristic geographical conditions of the highland and the coast area in Kenya will influence on the distribution of the communicable diseases and the reflactory situation of the antibodies against the vaccination. The model areas are selected in Mombasa and Nyeri and the research works are carried out with the assistance of the provincial hospital under the close cooperation of the Kenyan scientists.

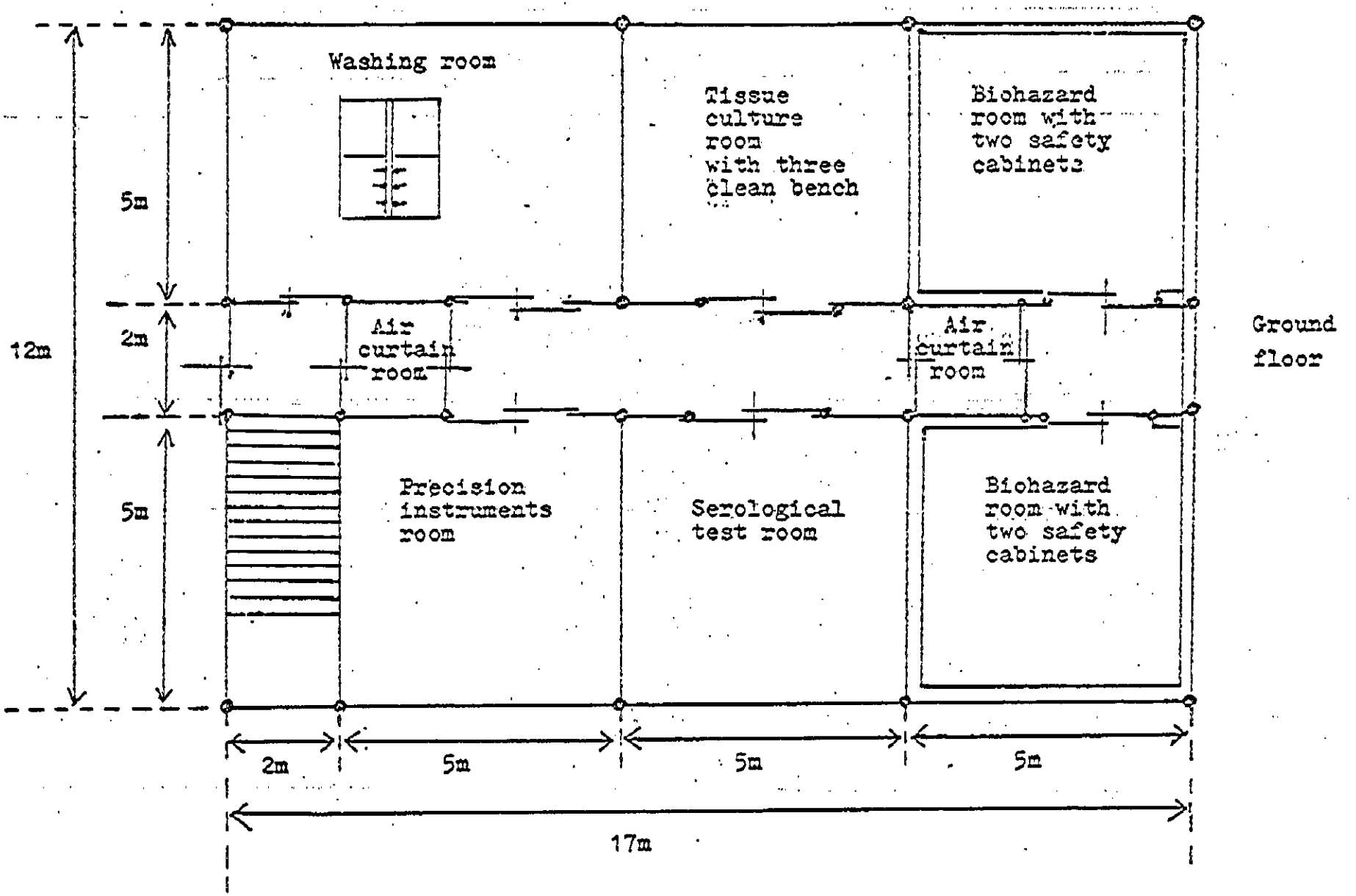
VII. The plan for the donation of equipments

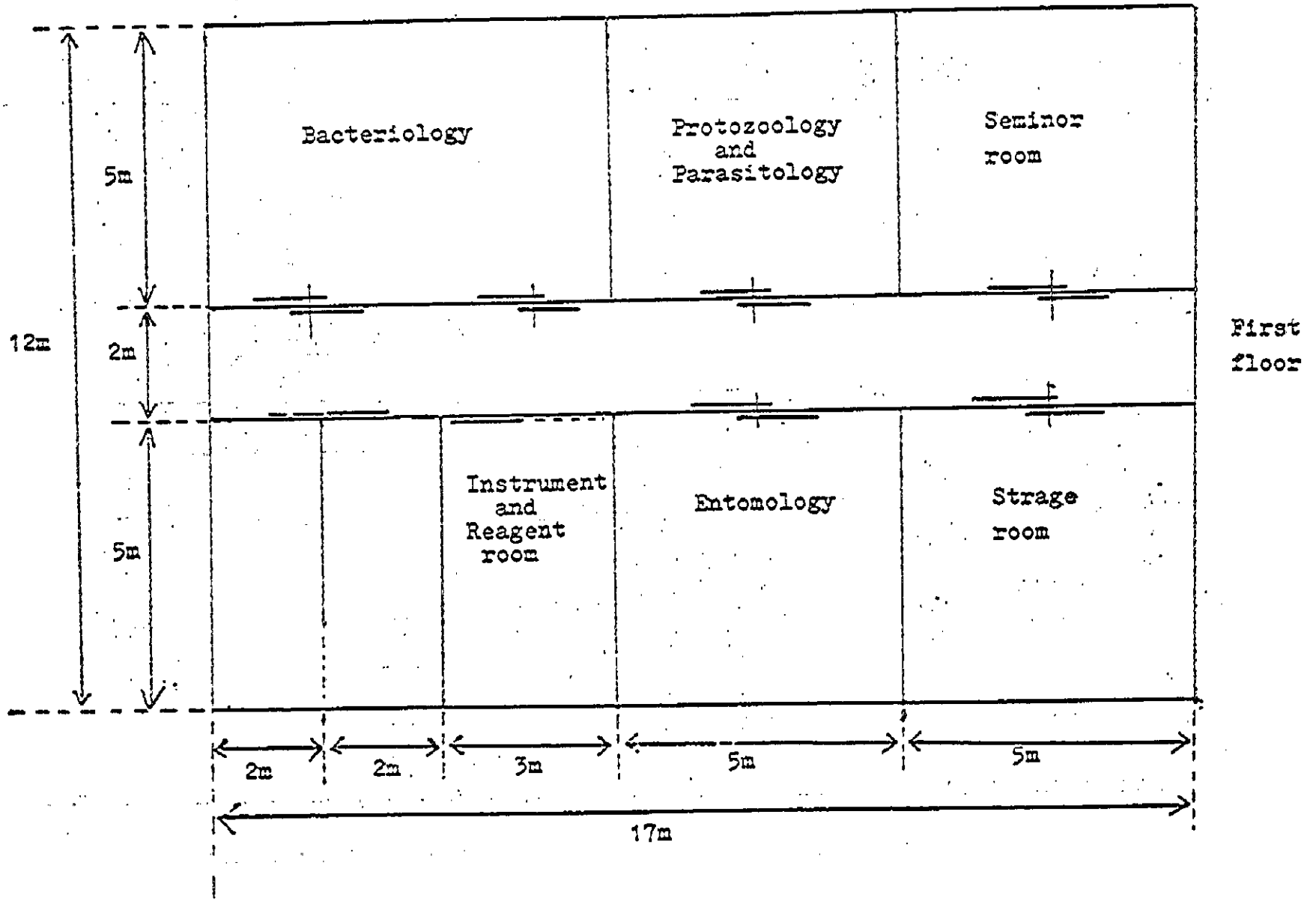
The equipments requested in 1979 have arrived. These equipments, reagents and glasswares are arranged in the Virus diagnostic laboratory (VRC), the Bacterial section in NPHLS and the Helminthic laboratory (DVBD). The equipments for the 1980 budget are proposed. Since the year of 1981 to 1983, the amount of the requested equipments is shown in the following Table.

The plan for the donation of the equipments

1979		1980		1981		1982		1983		1984
Mar. Apr.		Mar. Apr.		Mar. Apr.		Mar. Apr.		Mar. Apr.		Mar.
	1		2		3		4		5	
Fluorescent Microscope Biological Microscope Deep Freezer Super purity water still Biohazard Safty Cabinet CO_2 incubator Incubator Refrigerated Centrifuge etc. Glass wares Reagents Sera etc. Vehicla etc.		Biohazard Safty Cabinet Clean Bench Ultracentrifuge Biological Microscope Fluorescent Microscope Reflactometer Electrophoresis Apparatus Ionmeter Deap Freezer Autostill Freeze-Drying Apparatus Glasswares Reagents Sera Special Vechicles Vehiclos Prefabricated Laboratory etc.		Biohazard Safty Cabinets Clean Bench Autostill Electron Microscopy and its accessories Vaccum Evaporator Ultramicrotom Glass wares Reagents Sera Equipments for model area etc.		Freeze-Drying Apparatus Deep Freezer Glass wares Reagents Sera etc.		Glass wares Reagents Sera etc.		
¥50,000,000/= (Sh. 1,670,000/=)		¥73,000,000/= ¥25,000,000/= (Sh. 3,267,000/=)		¥150,000,000/= (Sh. 50,000,000/=)		¥50,000,000/= (Sh. 1,670,000/=)		¥50,000,000/= (Sh. 1,670,000/=)		

The plan for the construction of the prefabricated laboratory




Bacteriology
Protozoology and Parasitology
Seminor room
First floor
Instrument and Reagent room
Entomology
Strage room
12m
5m
2m
5m
2m
2m
3m
5m
5m
17m

Equipments for the bacteriological section (Room 42, NPHLS) (requested in 1979)

1. Super widefield research microscope
2. Autoclave
3. Hot air sterilizer
4. Incubator
5. Time shaker
6. Magnetic stirrer
7. pH meter
8. Electronic control water bath
9. Electronic reading balance
10. Direct reading balance
11. Continuous injector
12. Mini-vac pressure pump
13. Ultrasonic washing unit
14. Pipet washing basket
15. Reagent grade water system "Baenstead" (Pure water apparatus)

Equipments for the virus diagnostic laboratory (requested in 1979)

1. Fluorescent microscope
2. Inverted microscope
3. Freezer (-20 C)
4. Deep freezer (-100 C)
5. Refrigerated centrifuge
6. Incubator
7. CO_2 incubator
8. Auto-ice maker
9. Biohazard safety cabinet
10. Slabgel electrophoresis apparatus
11. Automatic current voltage regulator
12. Pipette washer apparatus
13. Homogenizer
14. Magnetic stirrer
15. Mixer
16. Mini-vac pressure instrument
17. CO_2 gas bomb
18. Membrane filter apparatus and filter

Equipments for protozoological works (Room 53,D.V.B.D.)
(requested in 1979)

1. Super Widefield Research Microscope
"OLYMPUS" Model BHA-534-SW for 240V. 50Hz. AC.
Complete with standard accessaries
------ 1 set ------

2. Swing Type Centrifuge "TOMY" Model CD-50SR
For 240V. 50Hz. AC.
Complete with standard accessaries and special
accessaries;
50cc glass tube 20 pcs.
15cc glass tube 96 "
------ 1 set ------

3. "TE-HER" Time Shaker Model SH-S1 Piston Motion Type
with optional accessaries;
Universal Shaking Plate (SH-A) --- 1
Separatory Funnel Shaking Plate (SH-D) --- 1
Horizontal Stand for SH-D (SH-S9) --- 1
------ 1 set ------

VIII. Despatch of the experts or the trainers for five years

Japanese experts and Kenyan scientists or technologists will despatch under the following schedule.

1. Japanese experts

Team Leader	
Coordinator	
Virologists	Clinical virology
	General virology
	Arbovirology
	Viral hepatitis
Bacteriologists	General bacteriology
	Reference bacteriology
Parasitologists	Protozoology
	General parasitology
Vaccine specialists	
	Viral vaccine
	Bacterial vaccine

The experts for the immunology, epidemiology, entomology and electron microscopy will be attached at any requested time during the progress of the project.

2. Kenyan scientists or technologists

Despatch of the high class scientists in 1979

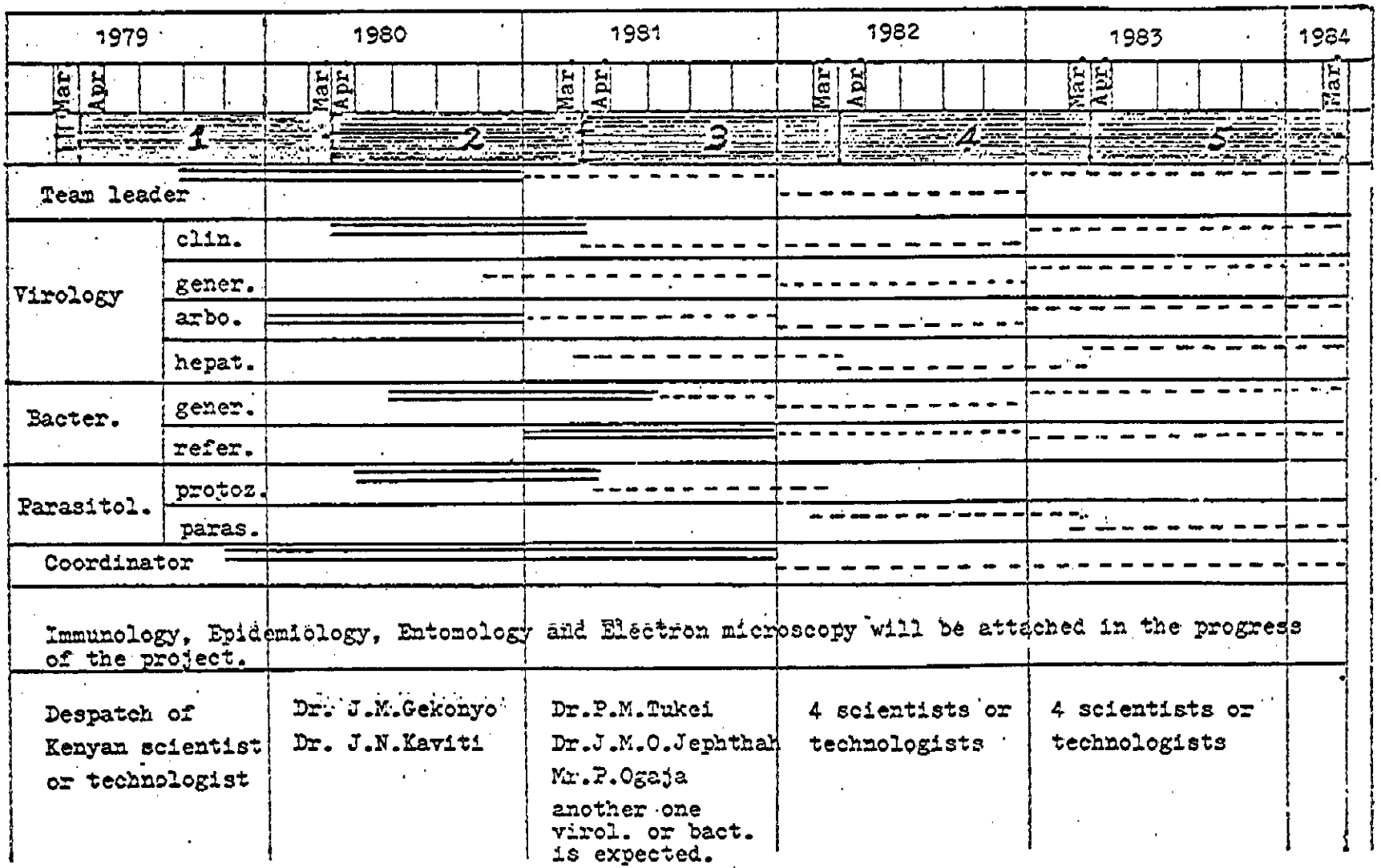
Dr. J. M. Gekonyo
Dr. J. N. Kaviti

Despatch in 1980

Dr. P. M. Tukei
Dr. Jessica M. O. Jephthah
Mr. P. Ogaja
One virologist or bacteriologist is expected

From 1981 to 1983, four scientists or technologists are expected in every year.

The plan for the despatch of the experts



1981年8月　　日

帰国報告書

林　　薫
ケニア国伝染病対策プロジェクト
チームリーダー

1. プロジェクトのあゆみと今後の方針
   (1) 準備期　1979年3月～1980年10月
   (2) 第1期活動　1980年11月～1981年4月
   (3) 第2期活動　1981年5月～1981年8月
   (4) 第3期活動　1981年9月～1982年8月
   (5) 第4期活動　1982年9月～1983年8月
   (6) まとめと対策　1983年9月～1984年3月
2. 派遣専門家
3. カウンターパート
4. 肝炎及びワクチン問題の取扱い
5. 研究棟の建設

1. プロジェクトのあゆみと進め方

1979年3月R/Dに基いてケニア国伝染病対策プロジェクトが発足して以来，1981年8月現在まで，各分野の作業を通じ，また専門家各位と討議を重ねた経過を総合し，プロジェクトのあゆみと進め方の段階として次のように要約することが出来る。この間，下痢症の解析を主体としてきたが，1981年6月から，新たに住血吸虫症の疫学に関する分野を追加した。1981年9月以降は各分野とも病原体の分析のほか調査対象を都市から村落へと指向し，環境因子の分析及び基礎実験を加えた新たな観点に立ってプロジェクトの進展を計る方針である。

(1) 準備期（1979年3月～1980年10月）

1979年8月チームリーダー，同年11月コオーディネーター，1980年3月ウイルス分野1名，同年4月原虫寄生分野1名，同年6月及び11月細菌分野それぞれ1名計2名の各専門家が到着した。1980年6月に1979年度供与機材を受領し，実験室の整備にとりかかった。各実験室はそれぞれの関連機関で開放準備されたが，ほとんど白紙の状態であった。ウイルス分野はナイロビ大Microbiologyに一家を借用したDiagnostic Labortory 及びVirus Research Canter（VRC）に一部，細菌分野はNational Public Health Laborafory Sevices（NPHLS）の食品細菌検査部の一室，原虫寄生虫分野はNPHLSと同居しているDivision of VectonBorn Disease（DVBD）に一室をそれぞれ開放されたので器材の据付，整備を行った。

1980年9月にはほぼ実動出来る態勢となった。そして1980年10月，モデル地区の一つ高地帯セントラル州ニエリ，1981年4月，今一つのモデル地区低地帯コースト州モンバサで州衛生部長，病院長，病院ン

側スタッフをまじえて，我方のプロジェクトの性格，目的，具体的作業について続議した。
両地区とも州立病院側で開放された実験室に若干の器材を搬入して準備を行い実働に入った。

(2) 第1期活動（1980年11月～1981年4月）

1980年11月から1981年3月の間，モデル地区高地帯ニエリではセントラル州立病院の外来，入院患者を対象として下痢症の調査を各分野の協同作業で開始した。この際，非下痢症の調査も背景の試料として取扱った。この調査の時期は乾期に相当する季節である。調査の結果は大要次のようであった。細菌性赤痢は下痢症の約1/3を占め，かつ同数に近い保菌者の常在が重視されねばならない状況である。恐らくは地域によって大小の流行の繰返えしを推定させるものがある。一方，赤痢アメーバーの浸淫も著しく検査対象の20%を越える原虫保有率は非下痢症でも認められることから実際の下痢症発現との関連は部族関関係，生活様式など環境要因とのからみを追究しはじめて分析出来るものではないかとの考えに到達する現状である。ウイルス分野はこの間，組織培養系の樹立に追われ検体採取に終った。しかし，その後の追跡調査では乾期（12月－3月）には気道系疾患の山が先行し，雨期（4月－6月）に下痢症が後続して多発する。1981年2月の小児下痢症の糞便検体からロタウイルス抗原の証明例やCPEagentの分離例が認められ，恐らく乾期，雨期を通じてウイルスに起因する小児下痢症は警戒すべきものであろうと考えられる。1981年4月2日，調査結果をまとめ，セントラル州立病院で病院側スタッフとの討議の機会をもった。残念ながら，州衛生部長，病院長にややともすると積極性に欠けるところがあって，当日の討議は不在であった。しかし，副院長（小児科）や検査技師には，こうした系統立った調査は始めてのことであったようであり，かつ調査結果が公開され，短期間といえども多少の技術移転が行われたことに対する刺激はプロジェクト実動の先き行きを考えさせられた。セントラル州立病院の検査室は誠に狭隘で，プロジェクトのために準備された狭小の実験室とも離れていて共同作業が困難なため，病院側医師との接触や検査業務を担当している関係者への技術移転に支障があったことは否めない。目下，検査棟を含めて病床等の増築工事が進められていて，本年末完成といわれる。完成後はプロジェクトとして作業室の整備を考慮しているので，効果を期待している。

(3) 第2期活動（1981年5月～1981年8月）

第2期活動はナイロビ市内ケニヤッタ国立病院における外来，入院患者を対象とした調査と今一つのモデル地区低地帯モンバサにおけるコースト州立病院での調査が含まれる。ナイロビ及びモンバサはケニア国における二大都市である。両地区での調査結果は高地帯ニエリ地区より細菌性赤痢や赤痢アメーバー保有状況は低率ではあるが，常在していて，依然として警戒すべき疾患であることに変りはない。特に赤痢アメーバーの保有は地方からの持込みとして定着することによるものと考えられ，村落から都市への人，物の流入という都市環境に基因するものであろう。同時期における小児の下痢症からロタウイルス抗原の証明や組織培養での細胞変性病原体（エンテロウイルス，その他）の分離は今後の同定を待って解析すべき問題として注目される。

一方，1961年5月に始まったコレラの流行は毎年雨期になると繰返えし発生しているが，1980年も5月から7月にかけてケニア国北部ツルカナ地方及びキスム地方，中央部のナイロビ更らに南部クワレ地方

に流行があった。1981年でも同様の流行をみた。いずれの年でも乾期には消退している。プロジェクトの細菌分野では当初からコレラ流行の生起消退に注目し，先ず流行株の特性を調査してきた。プロジェクトの進展に伴いケニア国におけるコレラの疫学の解明は環境要因の調査を含めて主たる調査目標となるであろう。

第1期及び第2期活動から得られたことは州立病院の入院，外来患者を対象とする限り，疾病の流行要因の実情把握は勿論，効果的予防策の樹立のための資料を得るには不充分であること，従って都市から村落へと調査対象を移行し，環境要因の分析を併行する必要があるという考えに至った。

先ずコースト州における関係者の熱意と協力はプロジェクトを進展させるための有力な背景となった。コースト州南部のクワレ地区は下痢症多発地帯，コレラ発生地，ビルハルツ住血吸虫症浸淫地帯という現状である。州衛生部長，地区病院長の提案と案内でクワレ地区全域を検分し，モンバサに近接する特定の末端医療施設であるヘルスセンターに前進基地を移し若干の器材の搬入と共に，新たな角度から活動を開始する方針をとった。一方，高地帯モデル地区セントラル州でも同様のことが考えられ，同州東南部ケラゴヤ地区を検分した。

第2期活動のしめくくりとして，8月21日，モンバサにおいて，州征生部長，病院長をはじめコースト州医療関係者，特にナイロビからは寄生虫分野での共同研究者の参加と我方チーム全員とによる合同会議を開いた。本席で相互の学門的，技術的，公衆衛生的見地からの活発な討議はプロジェクトの次の進展段階をも暗示するものであって，会議は極めて重要な意義をもっていた。

(4) 第3期及び第4期活動（1981年9月－1983年8月）

コレラの疫学を含めた下痢症の解明を目標とする細菌分野及び新たに住血吸虫症の疫学を指向する寄生虫（原虫）分野の機動性は州立病院からヘルスセンターへ基地を前進し，村落形態及び環境要因の調査，分析をそれぞれの特性の下に行うことによって，新たな角度からプロジェクトの進展を期するものである。一方，ウイルス分野は州立病院を中心とし関連の小児施設において小児を対象とするエンテロウイルス，特にロタウイルスの動きをとらえ，その疾病像と環境因子との関連について分析してゆくほか，細菌及び寄生虫分野の前進基地ヘルスセンターでの試料について若年令層を対象とした調査を行い比較検討すべきである。

以上の調査活動の作業量は第3期及び第4期に亘るものであって，かつ両期の調査によって始めて通年の実態をとらえることが出来，そして総合的に解析し得る資料が集積されるものである。

また，全活動期を通じ，プロジェクトにおいて最も留意すべきは，ケニア側との共同作業においての技術移転と研究者の育成であることは論を俟たない。

(5) まとめと対策（1983年9月－1984年3月）

プロジェクトの最終段階では，集積された全資料について綿密に分析作業を行い，未解決の分野と対策可能な分野との区分を行う必要がある。前者については，将来問題についての方向ずけと具体的作業計画をケニア側行政機関及び研究者に提案，明示する一方，後者については，その具体策を提示し，それらの実施について協議の態勢を備えるべきである。

2. 派遣専門家

準備期，第1期及び第2期活動における専門家の努力によって現地に則したプロジェクトの方向ずけと軌道性は正確なあゆみとして進展し，今，正に第3期，第4期の最盛期に入らんとしている。残された期間の第3期以降における活動による資料の集積はプロジェクトの成否を左右するものと考える。従って，この期間の派遣専門家には特に，積極性と語学能力が要求される。ただ，語学は不充分であっても次第に修得されるものであるが，それは積極性によってカバー出来ることを認識し，特にプロジェクトの中の責任分野では人選に当って，今後，これらの点を充分に留意する必要がある。なお，外地において作業経験のない研究者は赴任前，必ずＪＩＣＡＨＱでの語学研修を受講する必要がある。

3. カウンターパート

プロジェクトに固定したカウンターパートはケニア側でもその配慮の意企はあっても必ずしも実施されない現情にある。今後特に第3期以降の作業を通じての技術移転を考慮し，努力する必要を痛感している。一方，医学部，理学部出身者の中からプロジェクト側で人選し，プロジェクトＰＰＩ Committeeを通して，我国への研修派遣を行い，研修終了後，プロジェクトに固定し技術移転と共にこの国の次代層としての研究者育成を行う方途も効果的である。この点に関する努力も必要であると考える。

4. 肝炎及びワクチン問題の取扱い

肝炎問題に関する取扱いは1980年3月20日の国内委員会でプロジェクトとして実施の方向性が示され，更らに1981年1月20日の国内委員会で正式にプロジェクト作業の一環として広義の下痢性疾患として進めてゆく方針が確認された。従って，1981年1月27日，ケニア側と協議のうえ，プロジェクト課題として採択が決められた。しかしながら，今日まで，この分野の日本側専門家の不在のまま器材の配置のみが終っている現状である。従って国内的に更らに本項を審議の上，早急に実施の可否の解決を行う必要がある。

ワクチン問題に関しては1981年1月20日の国内委員会で暫定措置について協議されたが結論を得てない。従って本項に関してはケニア側との協議は今日まで行われていないのが実情である。

8月16日，計画打合調査団の来訪に当り両問題については再度，ケニア側との討議の上で結論が得られるものと考える。

5. 研究棟の建設

1980年12月，研究棟建設の可否検討の日本側調査団が来訪し，その結果が答申された。建設に関連した幾多の困難な問題が生じたが，我国外務省経済協力局関係部門，国際協力事業団各位の深い理解と支援はケニア保健省の要請に応え，研究棟の建設となった。

プロジェクトの進展に伴って，一般実験室では行い得ない作業が次第に増している現状である。ウイルス，細菌，寄生虫の各分野とも診断用抗原の作成過程における抗原の精製や免疫学的手法による分析

は既にプロジェクト運営のための要求段階であった。特にウイルス分野では基本となる組織培養系の樹立は2m×3mの狭溢なかつ通風のない仮の部屋でガス充満の恐れと無菌操作も出来ない現状であった。また，ウイルス，細菌，分野での感染防御面は全く無防備で実験者の感染防止は勿論，ケニア側研究者，技術者への技術移転にさえ問題があった。

1981年6月から基礎工事が行われ，急速に工事が進められていて，12月完成ということであるが，完成後は小規模とはいえ，プロジェクト推進の本拠として重要な役割を果すものである。研究棟の管理運営はプロジェクト側で充分な配慮の下に行い，特に将来に亘る考慮からカウンターパートへの技術移転は細心に行うことが肝要と考えている。

伝染病研究対策プロジェクト計画打合せ

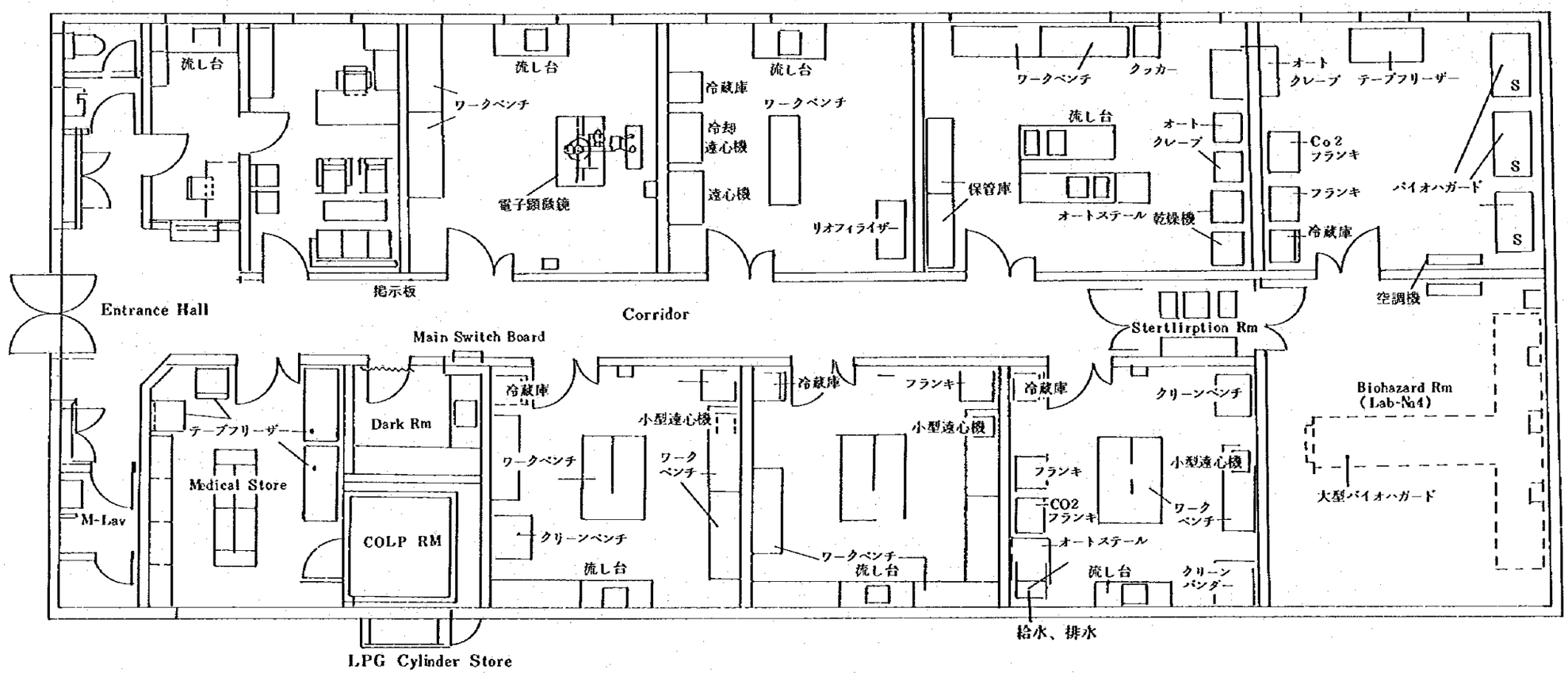
56.9.11

調 査 団 報 告　　56.9.14

1. 調査団の編成（川名林治，板倉英世，原稔，平良専純）
2. 調査団の目的
   (1) R/Dマスタープランに沿った研究協力の実績の確認
      ① 現状把握のための日本人専門家団との意見交換
      ② モデルエリア視察
      ③ カウンターパートの事情聴取
   (2) 今後の協力方針の打ち合せ
      ケニア側首脳部との打ち合せ
3. 調査団の日程と行動　　（別表）

参考　日本人専門家団・林教授チーム・リーダー
　　細　　菌；岩永，森　（宇都宮）
　　ウイルス；牧野，松本
　　寄 生 虫；青木，鳴田
　　ＪＩＣＡ；小野田；（所長）
　　ケニア側；Dr. Gekonyo，Dr. Kaviti，Dr. Tukei，Dr. Siongok et al

4. 調査のまとめと考察
   (1) 研究等のプロジェクトの努力と成果
   (2) 今後の問題点および将来計画，研究棟，KMRI，ワクチン，肝炎，器材
   (3) 国内委員会
   (4) その他


流し台
流し台
ワークベンチ
冷蔵庫
冷却
遠心機
遠心機
流し台
ワークベンチ
ワークベンチ
クッカー
流し台
オート
クレーブ
テーブフリーザー
S
S
S
電子顕微鏡
保管庫
オート
クレーブ
Co2
フランキ
フランキ
冷蔵庫
パイオハガード
リオフィライザー
オートステール
乾燥機
掲示板
Entrance Hall
Corridor
Stertlirption Rm
空調機
Main Switch Board
冷蔵庫
冷蔵庫
フランキ
冷蔵庫
クリーンベンチ
Biohazard Rm
(Lab-№4)
テーブフリーザー
Dark Rm
小型遠心機
小型遠心機
ワークベンチ
ワーク
ベンチ
フランキ
小型遠心機
Medical Store
CO2
フランキ
ワーク
ベンチ
大型バイオハガード
M-Lav
COLP RM
クリーンベンチ
オートステール
ワークベンチ
流し台
流し台
クリーン
バンダー
給水、排水
LPG Cylinder Store

（専門家派遣予定リスト）

（56．9.1.現在）

年度 / 部門	56 年 度	57 年 度	58 年 度
チームリーダー	林チームリーダー 8/31 11/中旬 内藤リーダー 11/中旬 11/上旬 3/8		
ウイルス部門	4/24 牧野専門家 4/23 5/29 松本専門家 5/23		
細菌部門	岩永専門家 8/31 8/21 宇都宮専門家 8/20 森専門家 11/20 11/中旬 林(敏)専門家 11/中旬		
寄生虫部門	5/22 青木専門家 11/22 7/10 嶋田専門家 7/9 10/23 平田専門家 10/22 11/中旬 野島専門家 11/中旬		

（専門家派遣実績）

（56. 8. 1　現在）

	54 年 度	55 年 度	56 年 度	専門家氏名　（所属先）
プロジェクトリーダー	8/25		8/31	林　　薫　（長崎大学熱帯医学研究所）
調 整 員	11/1		10/31	小野田 勝 次　（ＪＩＣＡ）
ウイルス学	3/27	3/26		明 石 光 伸　（北松中央病院）
原虫寄生虫学		4/28	4/27	井 関 基 弘　（大阪市大医学部）
細 菌 学		6/12	8/31	岩 永 正 明　（長崎大学熱帯医学研究所）
細 菌 学		11/21	11/20	森　　賢 治
ウイルス学		11/28 12/23		清 水 文 七　（国立予防衛生研究所）
ウイルス学		11/28 12/23		五十嵐　章　（長崎大学熱帯医学研究所）
研究棟建築		12/5 12/28		泉　　宏 佳　（建設省）
〃		12/5 12/28		中 里 政 春　（ 〃 ）
〃		12/5 12/28		長谷川 直 男　（ 〃 ）
ウイルス学			4/24 57.4/23	牧 野 芳 大　（長崎大学熱帯医学研究所）
ウイルス学			5/29 57.5/28	松 本 一 郎　（岩手医大医学部）
寄生虫学			5/22 11/22	青 木 克 己　（長崎大学熱帯医学研究所）
寄生虫学			7/10 57.7/9	嶋 田 雅 暁　（　〃　）
細 菌 学			8/21 57.8/20	宇都宮 明 剛　（　〃　）

（研修員受入実績）

（56. 8. 1　現在）

	54　年　度	55　年　度	56　年　度	研　修　員　氏　名　（所属先）
視察研修	7/3 — 7/14			J. M. Gekonyo　（保健省次官補，医学研究所長）
〃	7/3 — 7/14			J. S. Kaniti　（ＮＰＨＬＳ所長）
免疫学		4/5 — 10/21		J. M. O. Jephtbah
視察研修		5/31 — 6/14		P. M. Tukei　（ウイルス研究所長）
電子顕微鏡		8/6 —	2/6	P. O. Ogaja

（機材供与実績）

（56. 8. 1　現在）

年度	54	55	56	57
	購入費　46,276,205 円 輸送費　4,669,000 円 計　50,445,205 円	購入費　72,500,000 円 輸送費　4,738,911 円 計　77,238,911 円	購入費　32,000,000 円 輸送費　3,000,000 円 計　35,000,000 円	
機材供与事業	超広視野顕微鏡 蛍光顕微鏡 倒立顕微鏡 冷蔵庫 フリーザー ディープフリーザー 冷却遠心機 ＲＩ測定器 高圧滅菌機 卓上遠心器 ふ卵器 炭酸ガス培養器 乾熱滅菌器 自動製氷器 超純水製造装置 ＰＨメーター 電気恒温水槽 直示上皿天秤 バイオハザード用セフティキャビネット 超音波洗滌装置 その他，ガラス器具，薬品類 （車両） ニッサンパトロール１台	バイオハザード用セフティキャビネット クリーンベンチ CO_2 インキュベーター ふ卵器 純水製造装置 恒温水槽 高速真空凍結乾燥機 冷凍遠心機 遠心機 分離用超遠心機 双眼実習用生物顕微鏡 落射蛍光顕微鏡 倒立培養顕微鏡 ズーム式双眼実体顕微鏡 アッベ屈折計 免疫電気泳動装置 イオンメーター ディープフリーザー 高圧滅菌器 ＰＨメーター（ガラス電極法） その他，薬品類 （車両）ステーションワゴン１台 冷凍庫積載車　１台 マイクロバス　１台	（予定） フラクションコレクター ＥＬＩＳＡ用光度計 分光光度計 密度勾配作成装置 超低温槽 メデイカルフリーザー 超音波洗滌器 蛋白測定屈折計 流水計ピペット洗滌器 インキュベーター ザウダー上皿直示天秤 顕微鏡 遠心機 恒温水槽 ふ卵器 乾熱滅菌器 高圧滅菌器 直示天秤 自動純水装置 ヘマトクリット遠心機 ＰＨメーター その他，ガラス器具，薬品類	

（現地示達分）　50,400,000 円（研究棟分）

JICA