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UNITED NATIONS CHILDREN'S FUND  
Programme Committee

Recommendation of the Executive Director for an Allocation  
MOROCCO  
Campaign against Trachoma and Associated Eye Diseases

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1. The Administration recommends an allocation to Morocco of \$124,000 to provide antibiotic ointment, sulfonamides, and transport to expand and continue for two years (1957 and 1958) the trachoma and seasonal conjunctivitis campaigns in Morocco for which the Board has previously approved allocations totalling \$225,800 (excluding freight).
2. The school campaign is to be extended in 1957 and 1958 with the object of completing eye examinations and providing treatment as necessary for all 316,500 children in primary schools throughout Morocco. A total of 190,000 school children not previously reached will be examined and treatment provided for those found to be infected. The mass campaign against conjunctivitis will be extended in 1957 to the only area not yet covered south of the Atlas (Agadir-Tiznit) and will be introduced into the Northern Zone of Morocco, previously the Spanish Protectorate. The campaign will be further extended in 1958 to another sector in the Northern Zone and to an area southwest of Marrakech. Some 150,000 persons will be examined by teams each year, of whom about 100,000 will be treated. A further 100,000 new treatments will be accomplished each year by supervised self-treatment "from the outset" (see Annex, para.13).
3. Government matching will include expenditures for personnel maintenance and operation of vehicles, and miscellaneous supplies. The Government's matching expenditure for the two-year period is estimated at Fr. Moroccan 280,278,000, equivalent to approximately US \$400,000.

/Recommendations

4. Recommendations previously submitted to the Board for aid to this programme (E/ICEF/R313, L.571 and L.742) have described the problem and what has been done to bring about generalized control of trachoma and related eye diseases in Morocco. The campaign is directed against the double problem of trachoma and seasonal epidemic conjunctivitis. Over wide stretches of the country, and particularly in the South, virtually the entire population contracts both of these diseases in early infancy. Epidemics of conjunctivitis recur annually, and trachoma, once acquired, may persist throughout life if untreated. Bacterial conjunctivitis, alone or in complicating trachoma, is the principal cause of total blindness. Trachoma itself is the greatest single cause of serious loss of vision, short of total blindness.

5. The nature of the campaign and its progress to date are further reviewed in the Annex to this paper.

Plan proposed for 1957 and 1958.

6. The plan proposed in this document covers a two-year period, 1957 and 1958, and follows the recommendations of the Second WHO Expert Committee on Trachoma (September 1955) and of the UNICEF/WHO Joint Health Policy Committee session held in May 1956. (E/ICEF/319).

The School Campaign (Winter and Spring 1957 and 1958)

7. The goal now set, - of ensuring supervision or treatment of all children in the primary schools of Morocco, - should be reached approximately by 1958. By June 1956, 125,000 had been examined, of whom approximately 50,000 were treated. Another 190,000 pupils will be examined, and treated as necessary, in 1957 and 1958. The total (316,500) corresponds approximately to the 1955 total estimate of primary school children. Whether the goal of examining all school children is actually reached in 1958 or only a year or two later will depend upon the volume of the influx of children attending school for the first time.

8. The plan for 1957 and 1958 is as follows:

	<u>No. of children to be examined</u>		<u>No. expected to require treatment</u>	
	<u>1957</u>	<u>1958</u>	<u>1957</u>	<u>1958</u>
"Initial" campaign in rural schools mainly in south	90,000	100,000	40,000	60,000
"Permanent" campaign throughout entire country	<u>120,000</u>	<u>200,000</u>	<u>30,000</u>	<u>60,000</u>
	210,000	300,000	70,000	120,000

9. The time schedule for the school campaign will be as follows:

Oct/Dec. 1956	Evaluation of 1956 campaign, plus plan for 1957 campaign
Jan/June 1957	Treatment - 1957 campaign
Oct/Dec. 1957	Evaluation of 1957 campaign, plus plan for 1958 campaign
Jan/June 1958	Treatment - 1958 campaign
Oct/Dec. 1958	Evaluation of 1958 campaign, plus plan for 1959 campaign

10. An "intermittent" schedule of treatment will be applied in all but the worst affected rural areas, where the original sixty-day schedule will be continued until the results of comparative trials are available (See Annex, para. 4). In schools where 70 per cent of the pupils are infected, treatment will be given to all children. Where the incidence is less, only cases diagnosed will be treated.

#### Mass Treatment Operations

11. In the summer and autumn of 1957, and again in 1958 mass treatment will be carried out, as follows:  
 a) Mass treatment by teams will be extended in 1957 to the last remaining area uncovered south of the Atlas (Agadir-Tiznit, at the Atlantic end), and introduced into the Northern Zone of Morocco, previously the Spanish Protectorate.

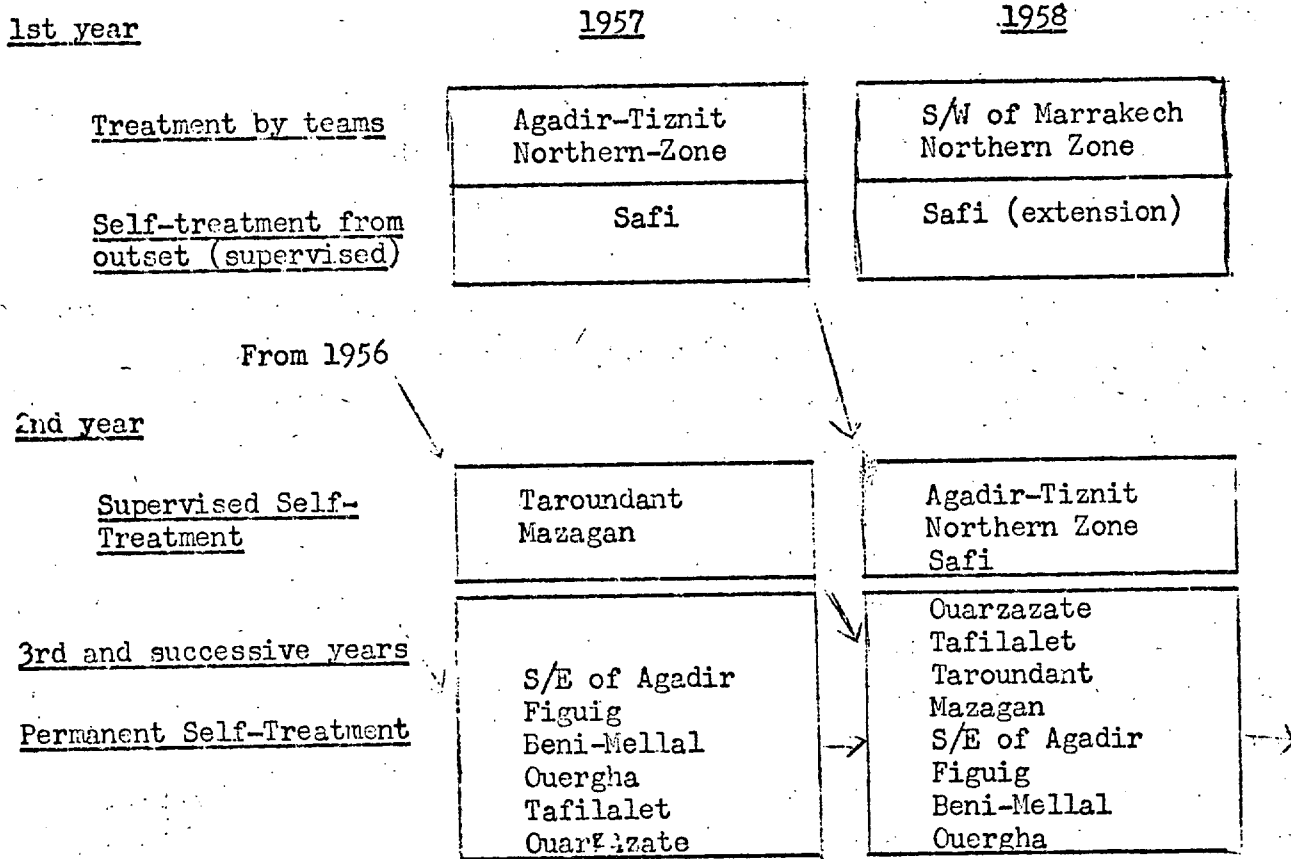
/In 1958

In 1958 a further sector in the Northern Zone and an area south-west of Marrakech have been selected. Mass treatment will be extended to an estimated 100,000 of the 150,000 to be examined by teams in 1957 and to an equal number in 1958. As in 1956, the emphasis will be on the child population. Among adults only those actually suffering from conjunctivitis will be treated.

- b) Self-treatment from the outset is also planned but experience has indicated that it should be introduced along lines similar to supervised self-treatment in its first and possibly second year, namely with the assistance of teams to acquaint the population thoroughly with the value and method of treatment. It is planned that 100,000 new cases should be reached each year in Safi.
- c) Supervised self-treatment operations will automatically be developed in all appropriate areas according to the "three stage" schedule explained in earlier documents.
- d) Permanent self-treatment. Following the first two years of treatment patients are encouraged to continue self-treatment, buying their own antibiotic ointment from the village stores, the Government subsidizing 25 per cent of the price. Where necessary, provision is made for free distribution. These phases of the campaign are described in greater detail in the Annex to this paper, paras.6-15.

/The plan...

12. The plan may be shown graphically as follows:



13. The number of persons to be treated in 1957 and in 1958 will be as follows:

<u>Type of Treatment</u>	<u>1957</u>	<u>1958</u>
First year	250,000*	250,000*
Second year	200,000	250,000
Third and subsequent years	550,000	750,000
	1,000,000	1,250,000

\*It is estimated that 50,000 of this total will be examined by teams but will not be treated because not infected. For comparison with numbers reached from 1953-56 see the Annex, paragraph 15.

Sanitation and health education

14. One of the consequences of the experimental project to assess the effects of fly control on ocular diseases is that the Government has requested assistance in planning an environmental sanitation programme,

/which will

which will seek to introduce safe water supplies and bring about the sanitary disposal of excreta, manure and refuse.

15. The development of environmental sanitation measures in conjunction with the control of eye diseases is in accordance with the recommendations of the UNICEF/WHO JCHP session last May in which sanitation was discussed as a collateral to treatment with antibiotics (E/ICEF/319, para. 23). The project envisages, as a first step, the training of a sufficient number of specialized personnel to staff a pilot project (1956-57), and as a second step, the implementation of a pilot scheme (1957-58). A third step would be the extension of sanitation work to other areas, with personnel trained in the pilot area. No UNICEF assistance is requested for this part of the programme.

16. Additional emphasis will be placed on health education in direct connexion with mass and self-treatment. The educational work will be focussed on the women since young children, the most infected of all age groups, are entirely dependant for care on their mothers and other women about the home. This activity will be entrusted to specially trained teams of female health educators, who have been operating in rural areas as part of the MCH service. These girls are already building up useful experience as to the best methods for carrying out the health education work, under the particular living conditions in the South. UNICEF may later be requested to contribute some light vehicles to facilitate this task.

#### Experimental programme

17. The experimental and analytical work initiated to date will be further developed. A sector will be selected in the Taroundant area to assess the effect of the 1956 mass-treatment operations. A careful study will be conducted of the different schedules of treatment of trachoma in rural schools involving a thousand pupils in the vicinity of Taroundant.

18. In view of the importance of determining the efficacy of "self-treatment from the outset", an area, yet to be established, will be put under special observation. The Sale-Rabat Ophthalmological and Trachoma Centre will continue its experimental work.

UNICEF commitments

19. UNICEF would provide the following supplies and equipment for the two-year period, 1957-58:

a) <u>Antibiotic ointment</u>	\$100,000
b) <u>Sulfonamides</u>	1,500
c) <u>Vehicles with spares</u> Partial replacement of transport in use in the South since 1953	11,500
Total supplies and equipment	<u>113,000</u>
d) Freight	<u>11,000</u>
Total recommended allocation	\$124,000

WHO approval and participation

20. The proposed two-year extension of this programme has the technical approval of WHO. The Government has requested WHO to provide the following under TA Priority I in 1957: a statistician as a consultant, a trachomatologist as a consultant, and a health educationist as a consultant; a consultant and fellowships have also been requested under Priority II.

Government commitments

21. The Government will continue to provide for the campaign, the personnel, supplies and equipment necessary for the execution of the project including costs of operating and maintaining the UNICEF vehicles and the purchase of aureomycin for the permanent self-treatment part of the campaign. The estimated total matching cost to the Government for 1957 and 1958 would be Fr. M. 280,278,000, equivalent to approximately US \$400,000.

ANNEX A

Morocco

Control of Trachoma and Related Eye Diseases  
Pattern of the Campaign and Its Progress to Date

1. The Moroccan campaign consists of three distinct activities:
  - a) School treatment of trachoma  
Systematic case-finding and collective treatment of children in the schools.
  - b) Mass treatment of conjunctivitis  
A field campaign during the summer and autumn epidemic period.
  - c) Research on the local bacteriology and epidemiology of these diseases, aimed at developing more effective and economic methods of control.

The organization and method employed in the campaign are described below.

Treatment of trachoma in the schools

2. This activity was commenced in the school year 1953/54 following the recommendations of the first WHO Expert Committee. By June 1956, 125,000 children had been examined and 50,000 treated in urban schools in thirty provincial towns. The school programme consists of two phases: an "initial" phase in which case-finding is carried out on all children in new groups of schools and all active cases of trachoma are treated collectively; and a "permanent" phase or "maintenance operation" in schools already treated under the "initial" operations. In the permanent phase re-treatment relapses or re-infections are treated again and there is an annual diagnosis to find and treat new trachomatous pupils entering school.

3. A meticulous evaluation has been carried out by the WHO project ophthalmologist and statistician in trials conducted over a period of eighteen months and involving 12,000 children in Marrakech and Maknes. The results, which are considered very satisfactory, vary between 80 per cent cures among children in the more prosperous communities to 55 per cent in the poorest districts. Re-treatment of the failures or "doubtful" cases with combined antibiotics and oral sulfonamides has led to more than 80 per cent cures in a second intensified course of treatment.

4. In urban schools "intermittent" treatment on three successive days monthly for a period of six months has given results comparable to the previously recommended "continuous" schedule of uninterrupted treatment for sixty to ninety days. With the "intermittent" treatment schedule an average saving of 75 per cent

/of ointment

of ointment can be expected in the urban school campaigns, with a corresponding saving in personnel and in disturbance of the school routine. The effectiveness of intermittent treatment in rural schools is not yet known, for the standard of hygiene is lower in rural areas and associated eye diseases are more prevalent. Limited trials were made in rural schools in the South in 1956 and a WHO ophthalmologist is now helping to assess the preliminary results. Those trials are discussed in a working paper presented to the last meeting of the UNICEF/WHO Joint Committee on Health Policy (JC9/UNICEF-WHO/4; Annex I). The 1957 school campaign, to be carried out mainly in rural villages, will be the first real large scale test of the more economic schedule which, if successful, could be applied in other school campaigns.

The field campaign against seasonal conjunctivitis.

5. Mass treatment operations. For practical reasons, mass applied treatment must be reduced to the minimum. After field trials in 1952 in an experimental sector, south of the Atlas mountains, the following course of treatment has been adopted: antibiotic ointment is applied twice daily to the eyes on three consecutive days, and this three-day cycle of treatment is repeated monthly throughout the epidemic period July-November.

6. Treatment by teams ("Operation Jour"): Due to the very high incidence of infections, treatment is given to the entire population which is assembled in groups of from 600 to 1,200 inhabitants. Treatment is administered by twenty special mobile teams of three persons each which remain in each locality during the three-day cycle. Pre-arranged time-tables allow each team to treat about 10,000 inhabitants each month.

7. This mass collective treatment has had a dramatic effect in suppressing the seasonal epidemics of conjunctivitis. It is effective in the great majority of acute cases and to a slightly less extent in sub-acute cases. It is less effective in many of the chronic mild cases and in sub-clinical carriers but problems of personnel and field organization make it unpractical to deal with these more thoroughly. This treatment has also had an important positive effect on trachoma (see para. 19 below). "Operation Jour" made progress during the second quarter of 1956 in the Taroudant area in the South where the Government has confirmed its decision to prosecute the campaign, notwithstanding the recently disturbed conditions in the region. Treatment is being afforded to all children and only to those adults suffering from conjunctivitis.

8. This type of mass treatment, applied throughout only one season, will not result in any permanent control of eye diseases. Nor is it feasible to continue mass treatment indefinitely by teams throughout wide areas of the country. Progressive self-treatment has therefore been introduced.

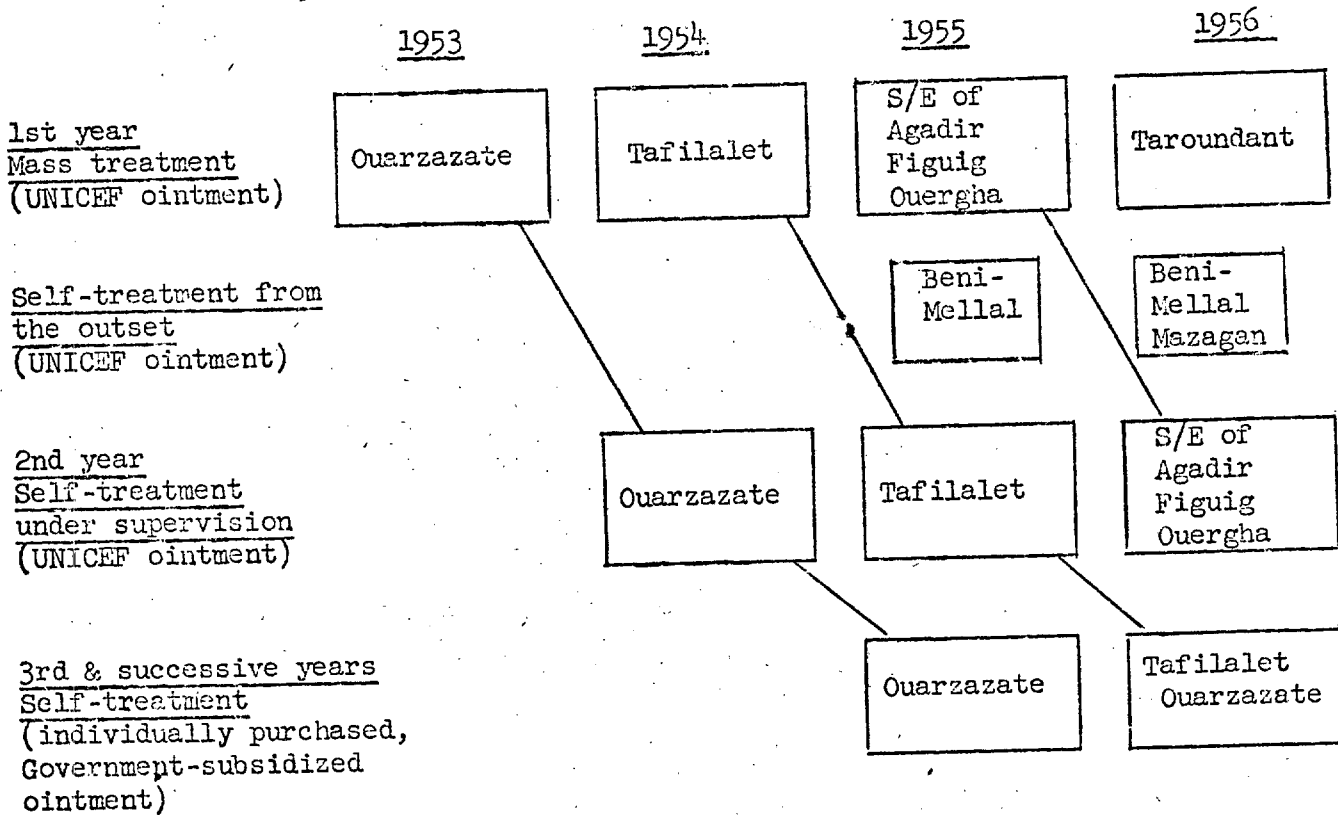
9. Self-treatment under supervision ("Auto-traitement, distribution") with free distribution of antibiotic ointment. After a first season of mass treatment, during which the inhabitants are made aware of the value of treatment, self-treatment under the supervision of three teams is introduced during the following epidemic season. The teams make single monthly visits to each community, distribute ointment to the head of each family, give instructions as to its use and talks on elementary health education and ocular hygiene.

/Self-treatment

10. Self-treatment on a permanent basis ("Auto-traitement, achat") (the inhabitants purchasing their own antibiotics). In the third year, the inhabitants are encouraged by the local medical officers and two mobile teams to continue self-treatment and to purchase the antibiotic ointment from the village stores where it is put on sale with a government subsidy. Provision is made for free distribution where necessary.
11. Self-treatment by purchase was conducted for the first time in the Ouazazate Territory in 1955. It resulted in a partial failure for the following reasons:
- a) The small tubes sold were too expensive and not familiar to the people acquainted with the larger tubes used by the teams. Only 17,440 tubes were bought.
  - b) The 22 tobacconist shops in the weekly market place, used as retail points, were insufficient. Furthermore, tobacco was subject to a political boycott at the time.
  - c) The purchasing power of the population was affected by severe floods and grasshopper invasions.
12. A more thorough organization of sales has been made for 1956. The permanent sales points will be established in each village and large tubes only will be sold for 30 francs (8.5 cents), the Government subsidizing 25 per cent of the price. This operation is also extended to the Tafilalet Territory this year.
13. Self-treatment from the outset ("Auto-traitement d'emblée) has also been instituted in areas where the intensity of the epidemics is less (north of the Atlas) and where the social and economic conditions of the population would allow the direct introduction of self-treatment, with a "briefing" of the heads of families by local medical officers and three teams as the only preparation.
14. Self-treatment along these lines was attempted in the agriculturally-developed Beni-Mellal area in 1955 but due to local disturbances treatment was irregular and only 40,000 persons really benefited out of the 100,000 envisaged. This operation is being repeated in 1956 with all 100,000 persons as its goal. A decision has been reached to convert what was originally planned for mass treatment by teams, "Opération Jour", in the more culturally and economically developed Mazagan area, into self-treatment "from the outset".

/The stages

15. The stages of progress toward self-treatment are best shown by the following diagram:



With the exception of Beni-Mellal, Mazagan and Ouergha, these regions form a continuous belt to the south of the Atlas.

The number of persons treated during the period 1953 to the end of 1956, including estimates for the last quarter of 1956, are as follows:

<u>Numbers treated</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>
Mass treatment	114,000	100,000	117,000 <sup>a/</sup>	60,000
Self treatment from the cutset			40,000	200,000
Self treatment under supervision		114,000	85,000	206,000
Self treatment with bought ointment			112,000 <sup>b/</sup>	240,000
	<u>114,000</u>	<u>214,000</u>	<u>354,000</u>	<u>706,000</u>

The above figures represent individuals treated. The entire population of the areas covered is indirectly protected by the treatment of the affected individuals. Hence the number of people benefiting from the campaign is two or three times the above. For example, in Ouarzazate 110,000 were treated out of a population of approximately 350,000.

16. Health Education. In addition to the simple campaign propaganda and practical instruction given by the teams, a programme of more comprehensive health education is being introduced by special teams already functioning in the MCH services.

#### Programme of research

17. In the experimental sector of Goulmima in 1954/55 field trials were carried out under the supervision of WHO, to determine the relative efficacy of the following operations, applied singly and in combination:

- a) Mass antibiotic treatment by teams during the epidemic season;
- b) Mass prophylactic treatment with sulfonamides given orally at the beginning of the epidemic season to reduce the number of carriers (effectively used in Egypt before the advent of aureomycin);
- c) Fly-control by chemical insecticides and sanitation.

<sup>a/</sup> Plus 85,000 irregularly treated  
<sup>b/</sup> Plus 57,000 irregularly treated

18. All measures were effective, without achieving complete control. Flies were shown to play a major role in the transmission of infection. Good results can be obtained experimentally by collective prophylactic treatment with sulfonamides, but the method is difficult to apply on a large scale. From a practical point of view repeated mass treatment with antibiotics during the epidemic season remains the method of choice. Some further research is nonetheless needed and is being carried out.

19. In the experimental sector of Skoura where mass treatment by teams was repeated during three successive seasons and the epidemics of bacterial conjunctivitis successfully controlled, the underlying trachoma in all age groups showed a very marked tendency to amelioration and nearly 50 per cent resulted in cure.

20. In 1955, in the experimental sector of Karia ben Mohamed, studies were continued into the bacteriological "curve of recovery" after treatment, in an attempt to improve the timing and efficacy of mass treatment, but the instability of the local situation and the shortage of laboratory staff did not allow conclusions to be drawn and studies are continuing in 1956.

Per caput cost of the campaign:

21. An analysis of the cost of the school and mass campaigns, including costs to the Government and to the participating international organizations, UNICEF and WHO, for equipment, miscellaneous services, drugs, transport (operation, maintenance and amortization over three years) and personnel, reveals the following:

Mass Campaign

Treatment by teams:

Ouarzazate, 1953

110,000 treated at an average cost per persons treated of 424.6 francs, equivalent to US \$1.21, of which the cost to UNICEF represents 61 francs or approximately US 17 1/2 cents.

Tafilalet, 1954

130,000 treated at an average cost per person treated of 473.6 francs, equivalent to US \$1.35, of which the cost to UNICEF represents 94 francs or US 27 cents.

/Supervised

Supervised self-treatment, free ointment

Ouarzazate, 1954      110,000 persons treated at an average cost per person treated of 142.3 francs, equivalent to U.S. 40 cents, of which the cost to UNICEF represents 49 francs or a little less than U.S. 14 cents.

The main reduction of cost compared to treatment by teams in 1954 was a reduction of the expenditure of the Health Department on personnel from 28,000,000 francs to 7,600,000 francs. There were also reductions on transport and equipment.

School Campaign

1953 - 1954

23,447 pupils treated at an average cost per pupil treated of 801.15 francs, equivalent to U.S. \$2.29, of which the cost to UNICEF represents 153 francs or a little over U.S. 44 cents.