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JOINT MEETINGS  
OF THE COMMITTEE ON PROGRAMME AND BUDGET  
AND THE COMMITTEE ON ADMINISTRATION,  
FINANCE AND LEGAL MATTERS

PROVISIONAL MINUTES OF THE FIRST MEETING

Palais des Nations, Geneva  
Tuesday, 17 May 1960, at 9.30 a.m.

CHAIRMAN: Dr M. K. AFRIDI (Pakistan)

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Note: Corrections to these provisional minutes should reach the Chief Editor, Official Records, World Health Organization, Palais des Nations, Geneva Switzerland, before 1 July 1960.

1. REPORT ON DEVELOPMENT OF MALARIA ERADICATION PROGRAMME: Item 2.5 of the Agenda (Resolutions WHA12.49 and EB25.R21; Document A13/P&B/15 and A13/P&B/15 Annex)

The CHAIRMAN said that the joint meeting would start its proceedings with consideration of the report on the development of malaria eradication programme (document A13/P&B/15 and Annex). He invited the Assistant Director-General to introduce the report, before opening the discussion.

Dr KAUL, Assistant Director-General, Secretary of the Committee on Programme and Budget, stated that the information contained in the report was based mainly on the replies to a questionnaire which WHO had sent to governments at the end of 1959. The Director-General was well aware that the answering of questionnaires was a tiresome task and accordingly the one in question had been greatly simplified in form. Every endeavour was being made to request only such information as was essential to allow compliance with the provisions of resolution WHA10.32 which required the Director-General to obtain up-to-date relevant data on the development of national malaria eradication and control programmes for distribution to Member States.

In introducing the report, he wished to draw attention to certain aspects of the programme in its global context and would also make special reference to the African Region. As would be remembered, tropical Africa had been largely excluded from the immediate plans at the time the world-wide programme for malaria eradication had been adopted in 1955. It was accordingly encouraging to be able to report that the prospects in Africa now looked much more hopeful. The Director-General was

taking steps to have a special assessment made of the results of the pilot projects which had been operating in tropical Africa during the past few years. The preliminary findings would be considered in the near future by a group of experts whose task would be to advise the Director-General on future programme policy for dealing with the problem of malaria in tropical Africa.

It would be noted with satisfaction that most of the countries where malaria was endemic now had or were preparing to have a programme for eradication of the disease. Of the 133 countries or territories where malaria still persisted and in respect of which data were available, 62 had programmes in operation and a further 18 were engaged in active planning as a preliminary to starting programmes. The population of the malarious areas of those 80 countries or territories represented almost 80 per cent. of the total population in malarious areas of the world today.

Eradication programmes having now reached an almost global spread, what was needed was emphasis on quality or, in other words, more efficient planning, thorough operations, and accurate assessment of results, so that the ultimate objective might be attained within the shortest possible time.

Not all projects had given the results hoped for; sometimes it was the fault of inadequate planning, but administrative imperfections such as financial rigidity and cumbersome systems in allocating funds, as well as the poor pay, low status and doubtful security accorded to malaria staff, had also played a part. It was becoming ever more clear that an autonomous malaria eradication service was highly

desirable. Because it had to cover the whole country within a limited period of time, a malaria eradication programme must essentially be regarded as a national emergency. Any system of organization and administration which did not ensure direct and clearly defined lines of supervision, as well as real authority, would waste both time and money. WHO was always ready to help by providing expert advice, including advice on administration problems, but it could not take over responsibilities of a plainly national character.

Details of antimalaria legislation were to be found in document A13/P&B/15 - Annex, Table 9. Some countries had introduced new legislation or regulations during 1959 in support of their malaria eradication programmes; others, for one reason or another, had seemed reluctant to do so. Their reluctance might be due in some cases to an imperfect grasp of the true meaning of malaria eradication as opposed to malaria control. Legislation was the sole means whereby such essential operations as house-spraying, case detection, notification and treatment, and mass drug treatment could be made to approach the universal coverage needed in eradication work.

Because the operation had to be limited in time, the world attack on malaria might be more adversely affected by staff shortages than other public health activities. Whereas there were still over 1 000 000 000 people living in the malarious areas of 133 different countries or territories, the total number of national professional staff - medical officers, entomologists and engineers - fully employed in malaria programmes amounted to some 1500, which was not more than one to 700 000 of the population at risk. Details were given in the Annex to the document under discussion, Table 8. Doctors were scarce in nearly all countries outside continental Europe and parts of the region of the Americas. The most severe shortage, however, was in engineers and entomologists. Some countries were making good use of lay volunteers in case-detecting operations. In Mexico for example, voluntary workers

had proved so useful that it was proposed to increase their numbers as soon as enough regular staff were available to give the requisite training. The training of all grades of malaria staff was receiving high priority in every WHO region.

The need for very careful preliminary planning and geographical reconnaissance in order to complete a spray programme efficiently and within the specified time could not be over-emphasized. Growing appreciation of that fact had been reflected by a marked improvement in 1959 in the majority of the spraying operations carried out. Shortcomings that had been found had sometimes been due to imperfect supervision or the need for re-training; many programmes in the Americas now set aside regular periods for the re-training of spraying personnel. In Europe much of the supervision had had to be done by doctors owing to the lack of sanitary engineers.

Problems in reaching the work site were sometimes formidable; for example, in Sarawak and North Borneo as much as 60 per cent. of a spraying team's working day might be spent in travel. During 1959 at least 100 million houses had been sprayed, consuming some 50 000 tons of insecticides and using over 114 000 compression, stirrup-pump or knapsack sprayers; full details on spraying operations were given in Table 3 of the Annex. Some programmes were still being delayed by inadequate transport facilities, but on the whole the position had improved and more attention was now being given to vehicle maintenance.

The epidemiological evaluation of malaria programmes had been intensified during 1959. Although good progress had been made in what was still a new activity, it was too early to expect universal perfection. The effectiveness of case-finding and classification depended on well-trained microscopists and good reporting systems. Much attention had been given in 1959 to the standardization of reports. Information received on evaluation had been condensed and set out in Tables 4, 5 and 6 of the Annex.

The mass administration of antimalarial drugs was easily rendered useless by a failure to achieve regular total coverage. The cost of such operations might be prohibitive unless local volunteers were used to distribute the drugs. In certain cases, however, where it had been shown conclusively that residual spraying alone could not interrupt malaria transmission, mass drug administration was being attempted in pilot areas. The distribution of medicated salt (Pinotti's method) continued to produce favourable results in the Amazon valley. The method was now being utilized in a trial area in Netherlands New Guinea and further trials were being planned elsewhere.

Despite the shortage of trained entomological staff, a great many entomological observations had been made during the year, and knowledge of the vectors and of their various peculiarities had grown. Details would be found in chapter III of the report, and table III listed confirmed and suspected vectors. The same chapter also dealt with the resistance problem. The development of resistance to dieldrin usually meant that the insecticide should no longer be utilized. The same was not true of DDT; a high order of resistance to DDT was comparatively rare. Accordingly, it might be possible to continue its use and a decision to abandon it should not be taken solely on the basis of susceptibility tests. DDT was still being used in Greece, despite the fact that the vector there, A. sacharovi, had shown resistance to it since 1954.

A. gambiae was resistant to dieldrin in West Africa but not in other parts of the continent; that vector had a normal susceptibility to DDT. A widespread vector in India, A. culicifacies, had been found to be resistant to DDT in one state; the position was being watched. The results of susceptibility tests on vectors were tabulated in table II.

There were now some countries or territories in the maintenance phase of eradication operations in every part of the world. Chapter IV was devoted to consideration of the special problems of that phase. Seven countries had reported that they were undertaking special measures to control the importation of malaria by immigrants. Tables IV and V tabulated respectively the malaria cases found and the vigilance measures instituted in areas under maintenance phase.

The economic benefits resulting from malaria eradication campaigns were dealt with in chapter V. More than twenty countries had reported increased general prosperity as a sequel to campaigns. There had been new or greater settlement in formerly malarious areas, agricultural and industrial production had improved, and land values had appreciated. Better general health and reduced absenteeism from work were reported by several countries where the disease was receding.

Special research projects were described in chapter VI. The obstacles to malaria eradication fell into two main groups: (a) socio-economic problems and (b) technical problems. Answers to the former could not readily be found by conventional research methods but nevertheless it was of value to attempt some applied social research. That was now being done by WHO in the case of migratory habits and nomadism among populations. Table VI gave a list of the projects of technical research that had received WHO grants in the years 1958-1959.

A brief account was given in chapter VII of the role being played by WHO in discharging its specific responsibilities in regard to the malaria eradication programme. Considerable progress had been made in increasing the numbers of technical advisory personnel available to give assistance to the programme; the number had increased from 270 at the end of 1958 to 408 at the beginning of 1960. A tabulation of the various types of staff was given in Table VII.

Apart from providing staff, WHO had supplied equipment for international and regional training centres and had established and conducted operations in field training areas. Further help had been given through fellowships, exchange of scientific workers, organizing of conferences and seminars, appointing of evaluation teams, and co-ordinating of the work at the international, regional and country levels.

The basic principle of malaria eradication methodology, namely, attack on the adult vectors by residual spraying so as to interrupt transmission of the disease, remained unchanged. Where special problems had arisen, recourse to antimalarial drugs or the use of medicated salt had proved effective.

The report showed clearly that much progress had been made towards the goal of eradicating malaria from the world, that there were vital practical accomplishments on the credit side, that there were no insurmountable difficulties, and that the technical policies and methodology had now been tried out; it supported the firm conviction that malaria could be eradicated from the world. Global eradication, however, was dependent upon States and individuals co-operating to maintain the highest quality in the work and an uninterrupted and unflagging effort; and above all on adequate financial resources being made available in future years.

Professor CORRADETTI (Italy) congratulated the Director-General on the continuous progress that was being made in eradicating malaria throughout the world. The action of the Regional Committee for Europe in deciding that a plan should be drawn up to bring eradication to the consolidation phase by 1962 in all of the remaining malarious areas of continental Europe was most welcome. The liberation of that continent from malaria would be the first great achievement resulting from WHO's action in malaria eradication.

His delegation appreciated the clear account given in the report of the various difficulties that had been met with in some areas. For example, it was stated that the African malarious areas could be divided into: (a) areas where the eradication of malaria by residual spraying was known to be technically feasible, and (b) areas where it had not yet been shown to be technically feasible. The Amazon Valley was another area where residual spraying could not be employed and the main weapon to be used there was chloroquinized salt. It was fair to assume that many large areas of the world, including most of Africa and all the jungle areas of Asia and America, were still awaiting the development of adequate techniques to allow malaria eradication to be attempted with a reasonable hope of success.

While an active search for new means was being pursued in scientific institutes and industries throughout the world, WHO was making efforts to help nations in building up strong national organizations, capable of carrying out the task of eradicating malaria. In that connexion, it was noteworthy that a certain number of countries still needed to develop an adequate public health organization, with enough trained personnel to cover their needs. Experience gained in Italy,

one of the first countries to attain eradication of malaria, as well as elsewhere, had shown that the staff trained for work against malaria was fitted for subsequent employment in other public health fields. Accordingly, countries needing to expand their public health services could plan the training of most of the requisite personnel as part of the action for the eradication of malaria. WHO could help governments to plan on those lines.

The report pointed out that well-organized evaluation was of outstanding importance in every step of a malaria eradication campaign. In that connexion, the first point of importance was that world-wide eradication of malaria, to be successful, must be based on a clear knowledge of the conditions existing in every country undertaking such a programme. As co-ordination of activities was one of its functions, WHO must be fully informed of what was being done in every country; that was possible only if in the programme there was an adequate system of reporting and evaluation. From his own personal experience in the field, his impression was that those services were in general both insufficient and inadequate. A good evaluation system should be regarded as a means of following the progress of the programme step by step.

The importance of evaluation became evident when the moment arrived to begin the consolidation phase. The decision could be taken only on the basis of exact knowledge, and as much as a year might be lost in making the necessary investigations if the position had not been adequately assessed in the earlier stages. Surveillance was the essential feature of the consolidation phase. He, in common with many malariologists, was convinced that surveillance might usefully be started very early in the programme, possibly even in the first year of spraying

operations. At whatever time it was started, however, surveillance could not be carried out satisfactorily unless the national staff was large enough to cover every focus of infection throughout the country. There again, as the Director-General maintained, the problem was more economic than technical. The requisite economic effort would be much more easily elicited if the governments themselves could be convinced that most of the surveillance staff could later be usefully employed in the general health services; the increased expenditure could be regarded as an investment for the improvement of health work.

Step-by-step evaluation was of significance also in deciding whether the time had arrived for asking WHO to make an assessment of the position with a view to declaring that eradication had been achieved and starting maintenance. Venezuela, where eradication had been achieved in most of the country, had just asked WHO to send an evaluation team to assess the situation. That example might be regarded as sufficient to convince every other country of the need for such action. Obviously, WHO for its part should use highly qualified staff, including well-known malariologists, as consultants for carrying out that delicate task of judgment.

To sum up, the results of a malaria eradication campaign must be subject to continuous and adequate evaluation, so that measures needed might be taken at the right moment with a view to ensuring that eradication would be achieved in the shortest possible time. He could not over-emphasize the need for speed in achieving eradication, because of the growth of anopheline resistance to the chlorinated hydrocarbons. That problem was now becoming a serious one. In some countries resistance had spread among the vectors because in planning sufficient attention had not been paid to the maximum period of time in which eradication must be carried out, if failure of the insecticide used was to be avoided.

From the Director-General's account of the situation, it unfortunately emerged that some of the most active anopheline carriers of malaria showed resistance either to DDT or dieldrin, or both, in various degrees and in more or less limited areas. In that respect, the world situation in 1959 was much less favourable than in earlier years and it was to be expected that as time went on, the resistance of anopheline vectors to chlorinated hydrocarbons would become greater and more widespread. High hopes were being placed on the organophosphorus insecticides as substitutes for the chlorinated hydrocarbons against resistant anopheles. At an earlier meeting he had referred to the discouraging nature of the results of investigations made in Greece against the resistant A. sacharovi. The Assistant Director-General had then stated that it was premature to give results, and from that he inferred that the conclusion that the organophosphorus compounds were unsuitable and had little residual effect might be subject to revision after further investigation. He would look forward with great interest to more information on the subject at a later date, as the use of those compounds was likely to be of great importance in dealing with situations such as had occurred in the Adana area of Turkey, where the sudden appearance of resistance to DDT in A. sacharovi had produced a severe malaria epidemic two years previously. Dieldrin had then been locally used as a substitute for DDT, but the possibility was that the vector in question would begin to show resistance to both insecticides in the near future, in the same way as had occurred in Greece. Unlike the position in Greece, however, there was still a high incidence of parasites in the blood of the local population in the Adana area as a result of the epidemic. The possible appearance of double resistance might, therefore, give rise to a very difficult situation.

What was happening in the Adana area was but an example of the dangers arising out of anopheline resistance to insecticides. There was no evidence at the present moment for assuming that the organophosphorus compounds could be utilized in large-scale malaria eradication campaigns. Indeed, it was much safer to assume that the chlorinated hydrocarbons were the only weapon at hand for interrupting malaria transmission. On the other hand, as was generally known, the different species of anopheles showed resistance only after a number of years of residual spraying. Consequently, eradication campaigns must be conducted at a speed that would eliminate plasmodia from the population before resistance to chlorinated hydrocarbons spread among the local vectors. The experience of anopheline resistance already acquired might prove of great value in achieving that objective. Evaluation of the conditions that had given rise to the appearance of resistance in a given area could be most useful in determining how to conduct the eradication campaigns elsewhere before resistance set in.

Lastly, the Italian delegation was highly gratified at the attention being given by WHO to special research projects, both in the administrative and technical spheres. It was glad that the accent in technical matters was being placed on fundamental research and long-term investigations which would enlarge basic knowledge on the work still to be done.

Dr YEN (China) thanked the Director-General, the Director of the Division of Malaria Eradication and the Regional Director of the Western Pacific for the fine work that was being done on malaria eradication. The report under consideration was of great value for every country in the world.

The malaria eradication programme carried out in his own country was illustrative of such efforts. Prior to 1948 malaria had been highly prevalent there. A restricted survey carried out in 1948 had indicated that 1 200 000 at least clinical cases of the disease occurred each year. At that time, the Government, with help from the Rockefeller Foundation, had set up the independent Taiwan Malaria Research Institute. The Institute had been entirely supported by the Government since 1950.

The actual eradication programme had been divided into three four-year phases. The period 1948-1952 had covered the pre-attack phase - during which surveys and studies on vector biology had been carried out, the requisite data on residual spraying obtained, the malaria service organized, and training given to all categories of worker from malariologist to sprayman.

The attack phase had lasted from 1953-1957. Each year residual spraying operations had covered the homes of the whole population, totalling more than 8 000 000. That had brought down the incidence to fewer than 500 cases in 1959.

Surveillance and maintenance had started in 1958 and were to be continued throughout 1962. For the purposes of those operations the country was divided into areas based on the rate of incidence of the disease. Measures included the utilization of antimalarial drugs, house-to-house search for the detection of fever cases, the taking of blood smears, and so on.

The per capita cost of surveillance operations was approximately the same as for the earlier phases because more staff was needed at local levels. His Government was particularly indebted to WHO for the assistance it had given in the programme, as well as to the United States International Co-operation Administration, for its substantial technical and material support; without that aid it would have been difficult to achieve such a large measure of success.

From the experience gained in his country, he could affirm that malaria eradication services should be fully autonomous during the early stages of an eradication programme. Once the surveillance and maintenance phases had been reached however it had been found that, with the greater emphasis on case-finding, the work was more readily carried out under the local health services. Intensified efforts were being made to detect cases of the disease among the populations of mountainous areas and fishing villages, where routine checks did not always reach the whole population. A new problem had arisen through the importation of a few cases of malaria from neighbouring countries. Special quarantine measures were under consideration and, at the moment, selected groups of immigrants were given special screening. That problem was likely to assume greater magnitude as achievement of eradication approached.

The detection of chronic carriers also presented difficulties. In 1959, 600 cases had come to light through blood transfusion; blood smears taken earlier had failed to reveal the presence of the parasite. Because of the widespread infection in the country in the past, it was very important to be able to detect such chronic carriers of the disease. Further studies were being carried out on ways of doing so, but it would be premature to give any findings at the present time.

Enthusiasm among all grades of workers on malaria eradication must be maintained by appropriate propaganda. Once the disease was seen to be on the wane it was too often taken for granted that further measures were no longer needed.

Once eradication was achieved, the trained staff should not be dispersed, but should be given employment in the regular health services. The specialized knowledge and experience they had gained could be applied with benefit to work on other insect-borne diseases such as filariasis. The prospect of further employment would be an incentive in maintaining enthusiasm for the work on malaria.

He repeated his thanks to WHO and the United States International Co-operation Administration for the substantial support given to the programme in his country; his Government was looking forward to continuance of that aid. Lastly, he invited WHO to send an international team to Taiwan for the purpose of evaluating and assessing the work done.

Dr PETROVIC (Yugoslavia) said that the technical details of Yugoslavia's malaria eradication programme had been given by the Yugoslav delegation at the Twelfth World Health Assembly. The progress made since had been such that he was confident in stating that, thanks to WHO's assistance and the funds provided by the Federal, Republic and local authorities, by the end of 1962 there would not be a single domestic case of malaria in Yugoslavia; and, by the end of that year, the programme would enter its consolidation phase.

In view of that progress the Yugoslav authorities had been glad to agree to a proposal made by a WHO representative that an international malaria course should be arranged at the Yugoslav Federal Institute of Public Health.

In carrying out the malaria eradication programme, the Yugoslav health authorities had followed the principles and recommendations in the sixth and seventh reports of the WHO Expert Committee on Malaria.

They agreed that it was necessary for statistics relating to malaria work to be compiled uniformly, so that they could be compared internationally; but some flexibility was necessary since local conditions varied. A small amount of good and accurate statistics was preferable to a large amount of unreliable statistics.

His comments would serve to illustrate that, from the technical and organizational point of view, the programme could be completely successful. The technical men and the administrators could now say that success of the programme depended on a solution of the financial problem. For that reason he wholeheartedly supported the Director-General's view that the present discussion should be concerned mainly with the financial aspects of the world malaria eradication programme and on the funds which WHO needed in order to assist national programmes.

The Organization, realizing the value of having data regarding the amount of national funds available for malaria eradication work, had sent out a questionnaire to Member governments. Unfortunately few governments had replied. Nevertheless, these replies, and experience in general, showed that national appropriations for malaria eradication work were usually ten times as great as the international funds made available. When it was remembered that the countries where malaria was rife were mainly poor and under-developed countries (largely because of malaria), it was easy to understand the importance both of the national contribution and of the international assistance which stimulated countries to mobilize as much of their own resources as they could for malaria eradication. All countries with a malaria eradication programme should inform WHO how much of their national income they were devoting to that programme, and he would propose that such information should be reported to the Fourteenth World Health Assembly.

When the authorities of a country embarked on an eradication programme, yearly national appropriations were necessary for several years. In the first two or three years there was no difficulty, but when the number of cases of malaria in the country had fallen considerably, national services found some difficulty in justifying such high appropriations, since other urgent problems had a claim on them. For that reason the Malaria Eradication Special Account was as important in the later as in the earlier stages of a programme in mobilizing national resources. He would emphasize this fact, although he was aware it was already being taken into account in planning the programmes in the various countries.

Some of the economic advantages resulting from malaria eradication were mentioned in the documents before the Committee. He thought, however, that a more extensive study should be made of such advantages so as to draw attention to them.

His Government had contributed to WHO's Malaria Eradication Special Account, because it knew that if there were not sufficient money in that account, WHO would not be able to carry out its commitments in the task of eradicating a disease which affected millions of people throughout the world. He joined with the malarious countries in appealing for contributions so that, in his next report on the subject, the Director-General would no longer be constrained to add the proviso "if funds are available".

Dr ZAIROV (Union of Soviet Socialist Republics) said he greatly welcomed the progress reported in the Director-General's report on the development of WHO's malaria eradication programme and at the present meeting by the Assistant Director-General.

Malaria had been practically eradicated from the Soviet Union. In 1959 no one had suffered from the disease in 94.2 per cent. of the part of the Soviet Union which had previously been malarious. The eradication of malaria there had been verified by means of mass surveys by means of blood examinations. Five-and-a-half million persons had been examined, including more than 960 000 in the Azerbaidzhan Soviet Socialist Republic and more than 1 322 000 in Uzbekistan.

In the areas which were not completely free of the disease, vigorous measures had been taken in 1959. At least 150 million square metres of the wall surfaces of buildings had been sprayed with DDT and BHC. All malaria cases, and carriers, had been treated, and cases of tertian malaria had received quinocide to prevent any relapse. As a result of these measures, amongst the 214 million people living in the Soviet Union, there had been only 1466 cases of malaria in 1959. Of those cases, 59.2 per cent. had occurred in the Azerbaidzhan Soviet Socialist Republic. The mass surveys had revealed 1460 carriers, of whom 1352 were in Azerbaidzhan. The majority of the malaria cases which had occurred, and of the carriers, were relapses from 1958, and 158 of them had been infected abroad.

The extent of morbidity from malaria in Uzbekistan before 1917 was unknown. Irrigation works in large areas of the Republic, which was a very arid region, went back more than 2000 years and when they were built no precautions had been taken against the water stagnating and providing breeding grounds for millions of insect vectors of malaria, which had thrived in the warm climate. The extent of malaria became a national catastrophe, in epidemic years being as much as 17 per cent. of the population in the district of Tashkent. Systematic control of the disease had been impossible owing to economic backwardness and lack of facilities. Proper antimalaria measures had begun in 1922 and since then malaria work had been regarded as one of the most important of government tasks.

From 1934 onwards the Government had each year adopted a carefully developed plan of combined operations against malaria as part of the over-all economic plan. It had established 143 antimalaria centres, 474 antimalaria units and more than 250 mobile teams. The irrigation system had been greatly improved. As a result of the energetic measures taken malaria had been practically wiped out in a population of more than eight million. In 1953 there had been 19 512 cases of malaria, in 1959 only 45. There had been no cases of malaria in the Republic during the first four months of 1960.

The success was due to combined measures - an attack on the source of the infection, vector control and prophylaxis. The success of such combined measures had become apparent very early in the WHO eradication campaign. It was particularly true of areas where there were exophilic vectors or where much of the population was nomadic; in these areas WHO recommended a wise use of chemotherapy and chemoprophylaxis.

The Soviet Union delegation hoped that WHO would make more use of the experience gained in antimalaria work in the Soviet Union. It might well organize training courses for Asian and African countries in one of the malaria institutes of the Soviet Union - in Uzbekistan, Georgia or Moscow.

To eradicate malaria throughout the world as quickly as possible, and thus prevent the disease spreading from one country to another, equally vigorous measures against the disease should be taken in all countries where it existed. The Soviet Union authorities hoped that the campaigns against malaria being carried out with WHO assistance in Afghanistan and Iran in particular would be intensified, so as to achieve eradication in areas adjacent to the Soviet Union. For their part, they had instituted particularly stringent measures in the areas of the Soviet Union which bordered on other countries.

Dr MAGUREANU (Romania) said that all governments which undertook to eradicate malaria from their countries should carry out a malaria eradication programme in four phases, as recommended in the sixth and seventh reports of the Expert Committee on Malaria. Different tactics and also different methods of evaluating what had been achieved should be employed in each phase. Obviously the tactics and methods of evaluation which were best when a large percentage of a country's population suffered from malaria were not appropriate when there were only a few isolated cases of the disease in the country each year. When the latter stage was reached, it was necessary to have accurate statistics of the carriers of the parasite and careful observation was necessary to detect the isolated cases which occurred.

The discussions at the WHO malaria conference in Palermo had shown that the methods followed to detect isolated cases of malaria differed considerably from country to country because the basic requirements were not clearly understood. The fact that in some countries malaria case-finding operations were not adequate seemed to him to be largely due to a lack of adequate health services when work on the malaria eradication programme had been begun. The task of controlling small foci of malaria and of preventing the disease spreading from one country to another should be carried out by the general health services rather than by special malaria services.

Combined measures against malaria taken by the Romanian authorities had made it possible for them to proceed to the consolidation stage in an area of Romania consisting of 45 103 square kilometres with a population of 3 700 000, which had previously been part of the malarious territory of Romania. It was expected that the consolidation phase would have begun in all the remaining malarious areas of the country by the end of 1962.

The exchange of information at the regional malaria conferences held in Belgrade and Bucharest, and also at the conference held in Palermo, had provided the Romanian authorities with useful guidance for carrying out their malaria eradication programme. The agreement the Romanian Government had made with WHO in 1959 had also been of great help.

There still remained, however, a number of questions requiring solution: the question of how to effect a radical cure of malaria; the epidemiological significance of asymptomatic carriers; and how to prevent the disease from being carried from one country to another. To solve those questions further research work should be done and more information should be disseminated by means of exchanging documentation from time to time.

Research work that would be of decisive importance for malaria eradication was being carried out in Romania. By virtue of an agreement with WHO and bilateral agreements, Romania was exchanging information about malaria with neighbouring countries. The national health administration, the network of health centres, and the results achieved so far were a guarantee of the success of malaria eradication work in Romania.

Dr ALAN (Turkey) congratulated the Director-General and his staff on the excellent report. He had, however, some more recent information and would like to make a correction to Table 9 of the Annex to document A13/P&B/15 (page 63). In columns 3, 4, 5 and 6, "yes" should be inserted against Turkey.

The report gave a complete picture of the various malaria eradication programmes throughout the world and he would not, therefore, dwell in detail on the programme in his country. Malaria control in Turkey had been transformed into an eradication programme in 1957, following the decision taken at the Eighth World Health Assembly. In the early years of the programme various difficulties had arisen but they had been overcome thanks to the assistance of WHO and UNICEF. He very much appreciated the assistance given by those two organizations, and was grateful for the Director-General's efforts in promoting the success of the malaria eradication programme.

Mr PISTOLI (Albania) said that the eradication programme in his country was due to be completed in 1961. The number of cases in 1959 was 312. At present, after 58 000 blood examinations (more than 10 000 among children between 2 and 12) no trace of the parasite had been found. The spraying of premises by DDT had protected 690 000 of the population in 1959. So far, no trace of resistance had been found.

For the spraying, a solution of DDT in kerosene was used (2 grams per square metre in the plain, and 1.25 grams per square metre in the mountainous regions, where A. superpictus was more sensitive. It had been found that one spraying a year was sufficient. Treatment included the compulsory hospitalization of children. Chemoprophylaxis was used where it was the only method applicable.

In accordance with the WHO programme, his country was to receive assistance in 1960 and 1961 for malaria eradication. He was grateful for that assistance and thanked the Director-General and the Regional Director for Europe. His Government attached great importance to the malaria eradication programme and hoped that it would be completed successfully.

Dr MURRAY (Union of South Africa) wished to associate himself with previous speakers who had congratulated the Director-General on his comprehensive and useful report. He would not describe in detail the malaria control operations in his country since they were already dealt with in the document before the Committee. He wished, however, to express his appreciation of the way in which the health authorities of the neighbouring countries and territories had co-operated. The meetings held regularly to assess the problem and plan the future programme had proved most valuable.

He also appreciated the co-operation of the Regional Office, particularly with regard to the pre-eradication survey which had recently been organized.

Dr ALVAREZ FUERTES (Mexico) said that the eradication programme had started in his country in 1957 and the present phase was due to be completed in 1961. Spraying was being carried out with DDT and dieldrin, by 200 teams (motorized, cavalry, and

river); in 1957 3 000 000 houses had been sprayed, in 1959 3 500 000, and another 3 000 000 were to be sprayed in 1960. When dieldrin was used spraying was carried out once a year but with DDT it was done twice a year.

With regard to antimalaria drugs he suggested that WHO might consider using different colours or shapes for them so that illiterate populations would be able to differentiate between them.

Considerable progress had been made in his country and the mortality from malaria had been reduced from approximately 90 to 10 per 100 000 of the inhabitants.

He referred also to the training of personnel and gave details of the number of students who attended the various courses. Groups of observers and students also came from other countries to train in antimalaria measures.

In conclusion, he said that during 1960 spraying had been suspended in certain areas since the results already achieved had been highly satisfactory. He thanked the Director-General and the Regional Director for their assistance.

Dr ADIB (Iran) congratulated the Director-General and his staff on the report which presented a very clear picture of the situation. Malaria eradication was a matter of top priority in Iran. Control operations had begun in 1950 and in 1952 an institute had been set up to train personnel for a full antimalaria campaign. After the preparatory work, a five-year eradication programme had been initiated in 1957. He was grateful for the assistance given by WHO, UNICEF and the United States International Cooperation Administration. During the past three years, protection had been afforded to 11 500 of the inhabitants, and certain areas in the north of Iran had been completely freed from the disease.

The final success of the programme would depend on adequate financial support and his Government was prepared to continue its efforts until the goal had been achieved. The second important factor was the development of resistance to insecticides among the vectors. Some resistance to dieldrin had been found in southern sectors of the country but fortunately that had not been accompanied by resistance to DDT. He emphasized the importance of further research into the biology and ecology of the vectors. A third factor of the utmost importance was that the programme must be continually evaluated in the light of the results achieved.

He was most grateful to the Regional Director and to the Director of the Malaria Eradication Division for their assistance.

Dr EL-HAMAMI (Iraq) said that malaria had represented a great social problem in his country. Control operations had started in 1953 and had succeeded in reducing the incidence to one-third of the original figure by 1957. In that year, a full malaria eradication programme had been started with the co-operation of WHO and UNICEF. Three years of the campaign by means of residual spraying had practically eliminated the disease. He gave details of the programme in 1959, which had proved extremely successful. By the end of 1960 he hoped that the evaluation of the programme would reveal the exact location of the residual foci. The areas of the country where the programme was now in the attack phase should reach the consolidation phase by the end of the year and most of that now in the consolidation phase should reach the maintenance phase.

He was most grateful for the assistance received from WHO and UNICEF and he hoped that the assistance would be continued, particularly as the programme was proving such a success.

In conclusion he wished to make one correction to the report. The following sentence appeared on page 82: "In both Iraq and Iran A. stephensi is now listed as a confirmed vector of secondary or doubtful importance." That was not true, since A. stephensi was the main vector in southern Iraq. A consequential change should also be made in the entry for Iraq in Table III on page 86 where A. stephensi should be moved from the column entitled "secondary vectors" to the column entitled "confirmed vectors of primary importance".

Dr ROBERTSON (Ghana) wished to associate his delegation with the support expressed by previous speakers for the malaria eradication programme. He was glad that the prospects of eradication in Africa were good. The pre-eradication studies in his country included trials of the Pinotti method as well as residual spraying. It would be some time before the Government would be able to decide which method was most suitable.

His delegation supported further extension of research into problems of malaria eradication and considered that research should cover resistance to drugs if extensive use of the Pinotti method was to be advocated. He hoped that WHO and other agencies which could assist in carrying out research on resistance to insecticides and on chemotherapy would intensify their efforts.

His Government looked forward to embarking on the eradication phase. In his country, as in other parts of Africa, malaria was a problem not only from the point of view of health but also from the demographic and economic standpoints. Chemoprophylaxis and the use of insecticides had reduced the incidence of the disease

in certain classes of the population, but from the national point of view it was essential to find methods which were suited to large areas if not to the country as a whole.

He hoped that WHO would continue to give high priority to the programme for malaria control and eradication.

The meeting rose at 12 noon.