

SOME LESSONS FROM THE MALARIA ERADICATION CAMPAIGN

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Impact of Ross & Grassi's discoveries

- Field testing of control initiatives
 - Limitations of scale. Differences in suitability
 - Selective application: What? Where? When?
- Need to mobilise local resources
 - Central organisation without operational budget
 - Socioeconomic arguments centred on local impact
 - Emphasis on information and public education
- Controversy: campaign vs. development approaches
 - Successes in Panama Canal and *A. gambiae* in Brazil
 - Sustainability in endemic countries required continuity
- Network of antimalaria dispensaries: endemic countries

Functions of a malaria dispensary

- To provide microscopical diagnosis and appropriate treatment
- To organise information and educational activities
- To report cases and particularly abnormal situations
- To investigate clusters of cases
- To advise local authorities on control measures
- To request help from the central organisations when needed



Prophylaxie du paludisme. Protection mécanique de la gare de Bazagona, située dans le «Monte». A droite, une délégation des propriétaires demandent au professeur Pittaluga de créer de nouveaux dispensaires antipaludiques dans la région.

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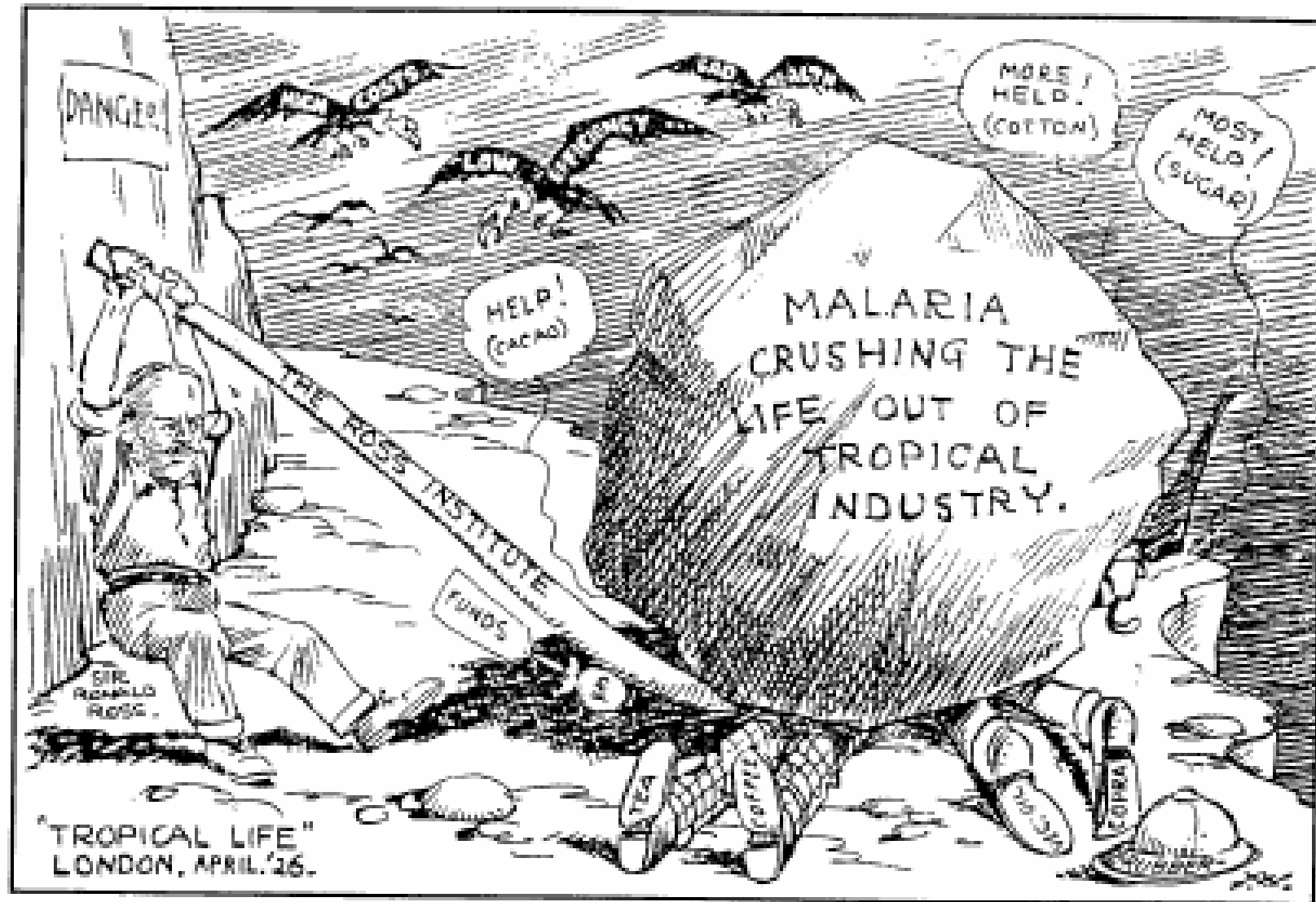
The socio-economic argument

Every year:
800,000 patients
6,000 deaths
16,000,000 work days lost
at a salary of 2 pesetas
32,000,000 pesetas of lost
working capacity



Poster Central Antimalaria Commission (Spain, 1926)

Fig. 18 "MONEY OR MALARIA"—DON'T CRY "HELP," SEND CASH.



Wanted—A Bigger Fulcrum. One Ten Times the Present Size Preferred.

Prevailing view before WWII

“malaria control should not be a campaign, it should be a policy, a long term program. It cannot be accomplished or maintained by spasmodic effort. It requires the adoption of a practicable program, the reasonable continuity of which will be sustained for a long term of years”

- Boyd, M.F. (1939) Malaria: Retrospect and prospect. *American Journal of Tropical Medicine*, 19: 1-6

RADICAL CHANGE AFTER WW II

- DDT appeared as a control measure
 - Effective everywhere, affordable and safe
 - Needing a strong central organisation, to handle massive supplies, transport & distribution networks
- Transmission interrupted in various trials, and no return of malaria if spraying stopped, Greece 1951
- Vector resistance (Greece, 1951), seen as stimulus
- Irresistible demand for eradication campaigns
 - PAHO 1950, 1954, Second Asian Malaria Conference, Baguio, 1954, UNICEF, 1955
 - World Health Assembly, 1955

International economic & political argument

- Such diseases as the tropical fevers, which handicap labourers, also increase the cost of rubber, coffee, minerals, certain fruits, assorted fibres, hardwoods, oils and waxes. ... **Added to them is the fact that malaria is a factor that, among others, helps to predispose a community to infection with political germs that can delay and destroy freedom**
- Paul F. Russell (1955) *Man's Mastery of Malaria*. Oxford University Press

Definition of malaria eradication

“the ending of the transmission of malaria and the elimination of the reservoir of infective cases in a campaign limited in time and carried to such a degree of perfection that when it comes to an end, there is no resumption of transmission”

WHO Malaria Expert Committee (6th report, Geneva, 1957)

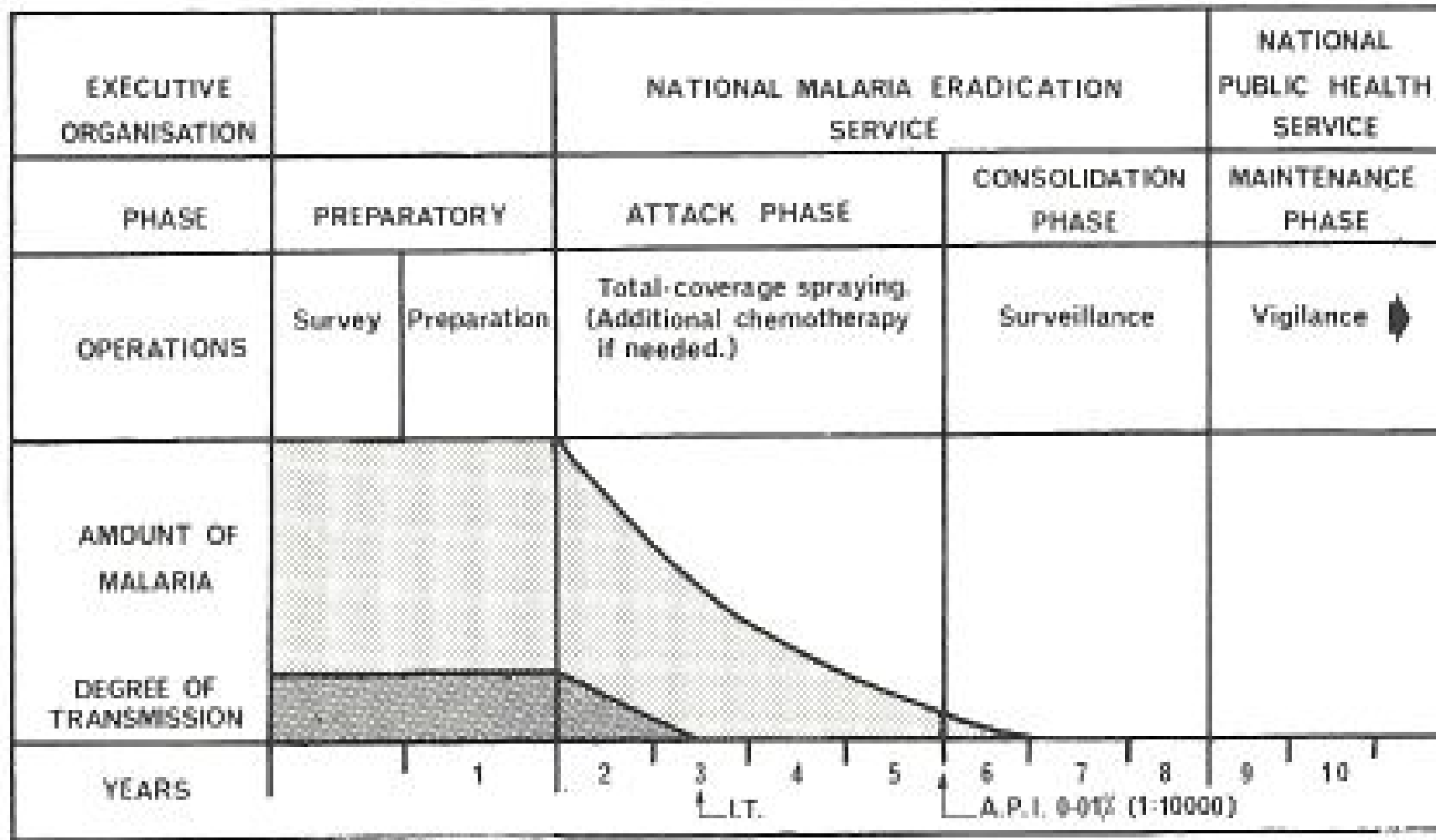


Fig. 11.1. Diagram of theoretical sequence of phases in malaria eradication programmes.

Source: WHO (1963) Terminology of Malaria and Malaria Eradication. Geneva

DECLARATION OF FAITH

- “Between malaria control and eradication there is as great a difference as between night and day. Control ... is a primitive technique. Now we know exactly ... the schedule of an eradication campaign which will last four or five years, followed by three years of consolidation”

UNICEF Regional Director for the Americas to the
Executive Board

Malaria eradication (World Health, 1960: Mar-Apr)



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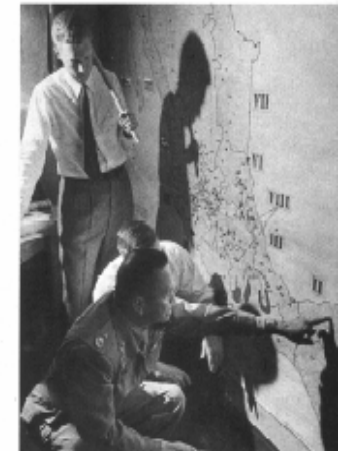
April 7th is World Health Day. The theme this year is "Malaria Eradication—a World Challenge". Four statements from the World Health Day message given by Dr M. G. Candau, Director-General of the World Health Organization, provide the plan for this special issue:

- In 1960, malaria remains a constant threat to more than 1000 million human beings.
- Malaria strikes first at a country's most precious resource—its young children.
- There must be no slackening of effort until the last remaining case has been tracked down and cured.
- The eradication of malaria is a challenge to all the world. In this age, when man thinks he is about to set foot on the moon, he should be capable of stamping out one of his worst enemies of his own planet.



INDIA has 390 malaria eradication units. One unit costs \$ 100,000 to set up and comprises 4 trucks, 2 jeeps, 2 pickups and 247 administrative and field workers. Our photo shows part of one eradication unit operating in the field area.

A GIGANTIC ENTERPRISE



MEXICO: The army takes part

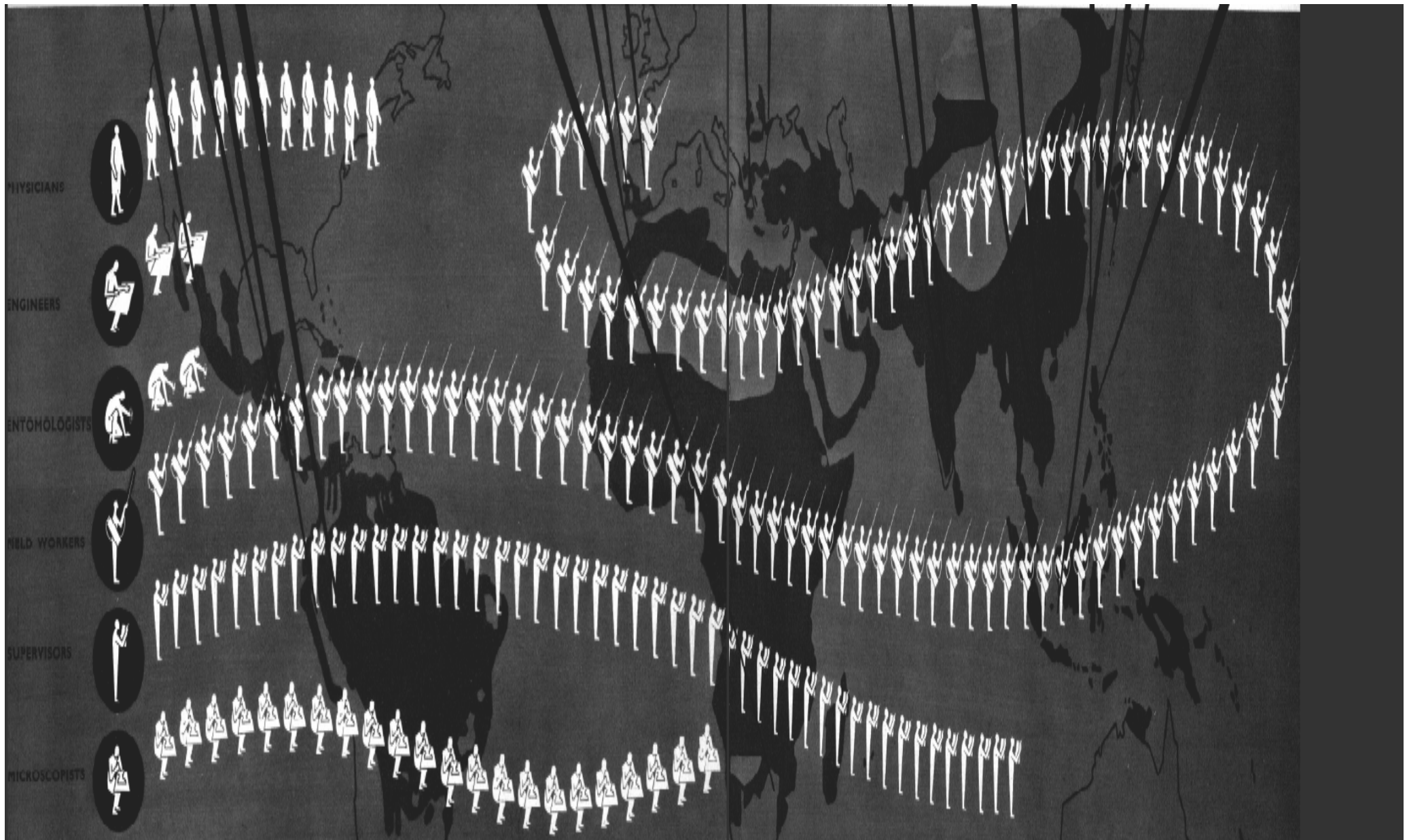
Thousands of teams, tens of thousands of vehicles, millions of tons of materials, hundreds of millions of houses to spray, hundreds of millions of blood samples to be examined, drugs to be transported by the ton, maps to be drawn up

India: 390 NMEP units, each with 4 trucks, 2 jeeps, 2 pickups, 247 administrative and field workers

The six main kinds of malaria workers

(physicians, engineers, entomologists, spraymen, supervisors, microscopists)

World Health, 1961, extra issue on Malaria



On retrospect it seems that malariologists traded power for leadership

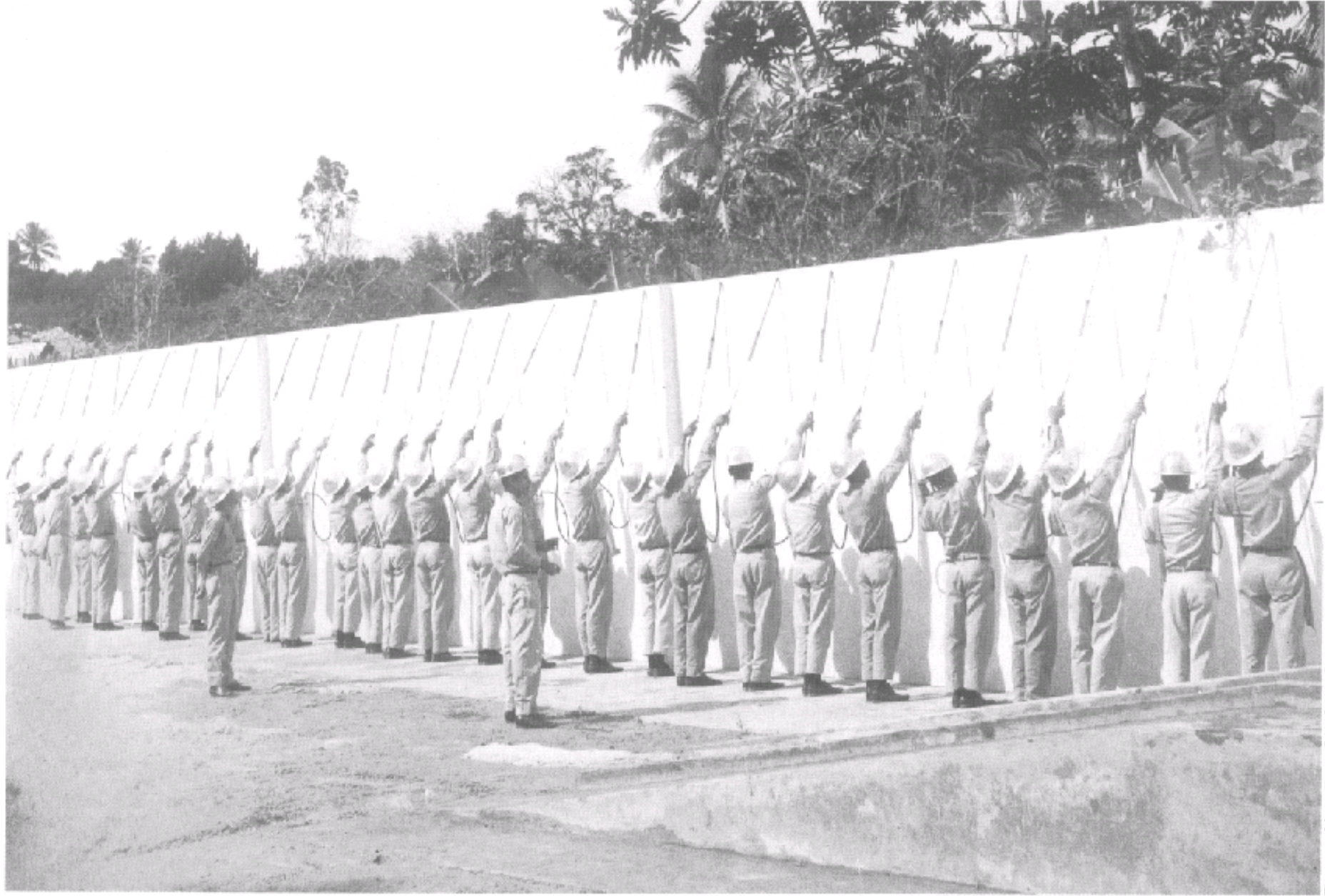


Photo: J. Mocu Ilaza, FAI IC/66-10



World Health, 1960 (Mar-Apr) Special issue on Malaria



World Health, 1960 (Mar-Apr) Special issue on Malaria



World Health, 1961, extra issue on Malaria





Figure 22. Reaching remote isolated houses required efforts and risks, which could be maintained only as long as the original élan persisted in the service and its appreciation in the communities (Photo: J. Moquillaza, PAHO/WHO).

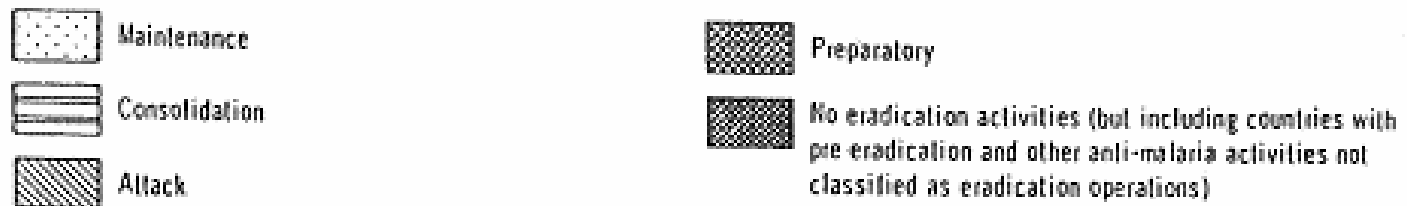
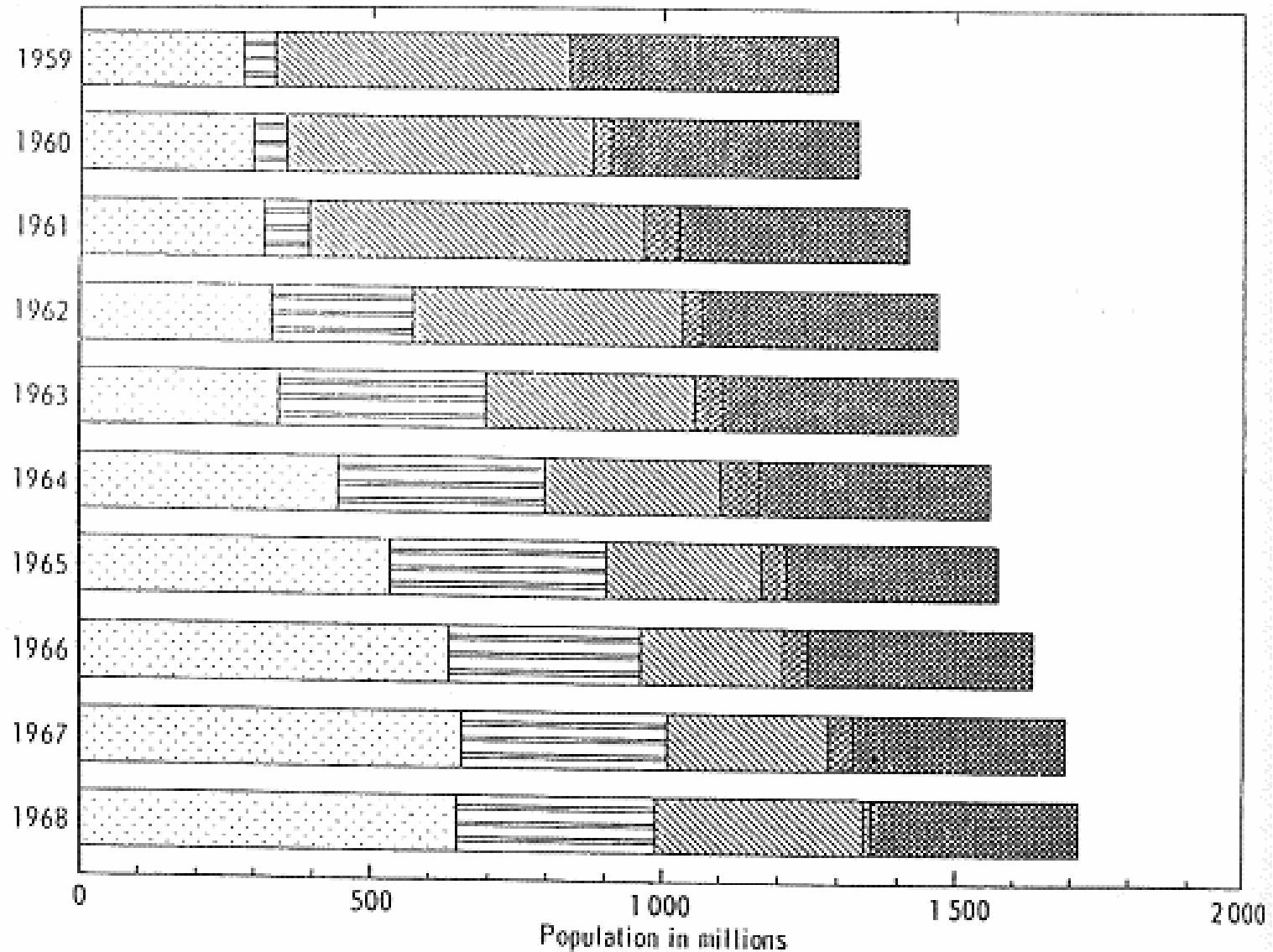
Achievements of the Global Eradication Campaign

- Important change in the global distribution of malaria
- First public health programme to aim at « total coverage »
- Set up contact with the community: voluntary collaborators
- Serious attempt to use maps throughout its activities
- Focussed the attention on the remaining problem vs. what had been achieved

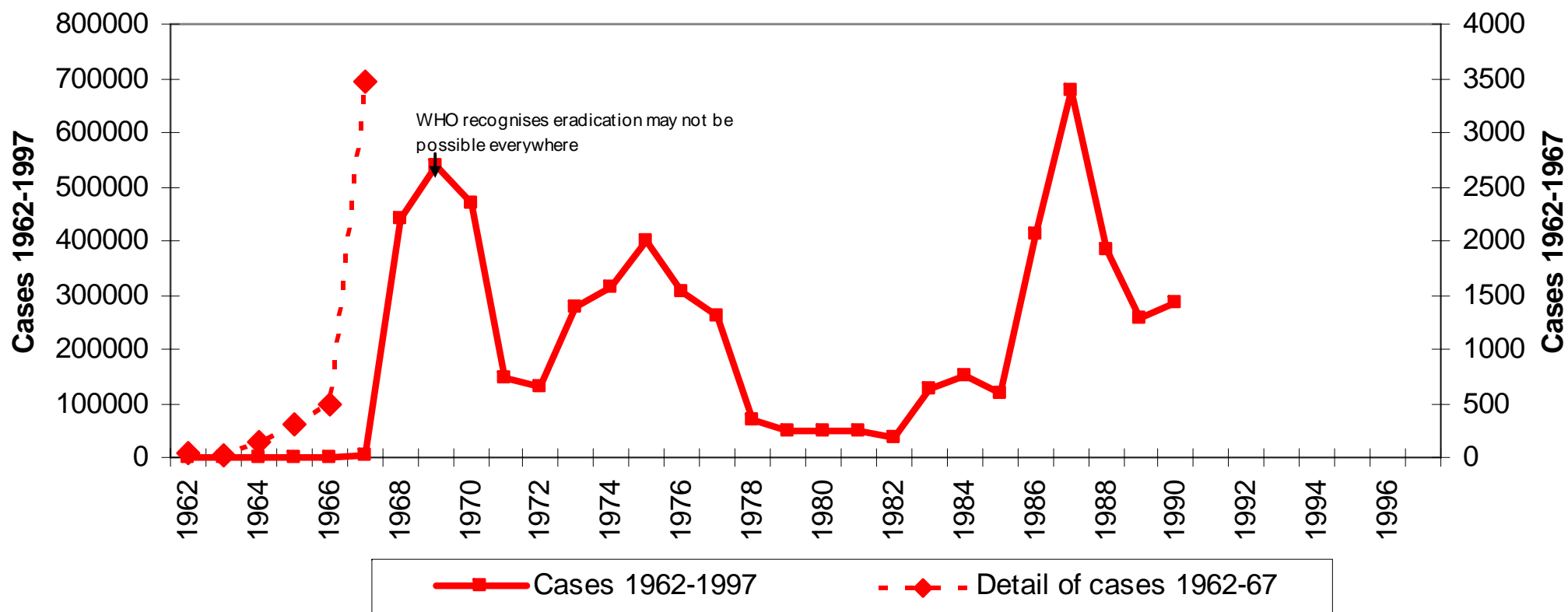
Some serious problems of the campaign

- Exaggerated confidence on existing knowledge and neglect of research
- Reliance on a single measure supposed to be « cheap, effective and safe » everywhere
- Assumption that a global campaign could start without knowing what to do in Africa
- Emphasis on discipline and prevention of local deviations
- Break with the past & the general health services
- Imposition of an untested system of surveillance
- Expectation that epidemic risk would not recur after elimination

Progreso de la Campaña Global de Erradicación (1959-1968)



MALARIA CASES REPORTED IN SRI LANKA (1962-1997) AND MAGNIFICATION OF RISE BETWEEN 1962 & 1967



Re-examination of the strategy (Boston, 1969)

- The 22nd World Health Assembly: “reaffirming that complete eradication of malaria from the world remains a primary task of national public health organizations, and that even in the regions where eradication does not yet seem feasible, control of malaria with the means available should be encouraged and may be regarded as a necessary and valid step towards the ultimate goal of eradication”.

WITHDRAWAL OF SUPPORT

- The acceptance of unlimited control was taken as a justification for withdrawal of support at international and national levels; later compounded with economic crises
- Programmes' serious difficulties to adapt to control:
 - Were overloaded with unskilled labour force
 - Lack of professional cadres capable to devise new strategy
 - Isolation from research institutions and inability to collaborate
 - Failure to integrate into general health services
 - Fire-fighting strategy, with poor and overcommitted resources
 - No capacity for coping with new development projects nor for early detection or forecasting epidemic risk

RECOGNITION OF THE NEED FOR RESEARCH

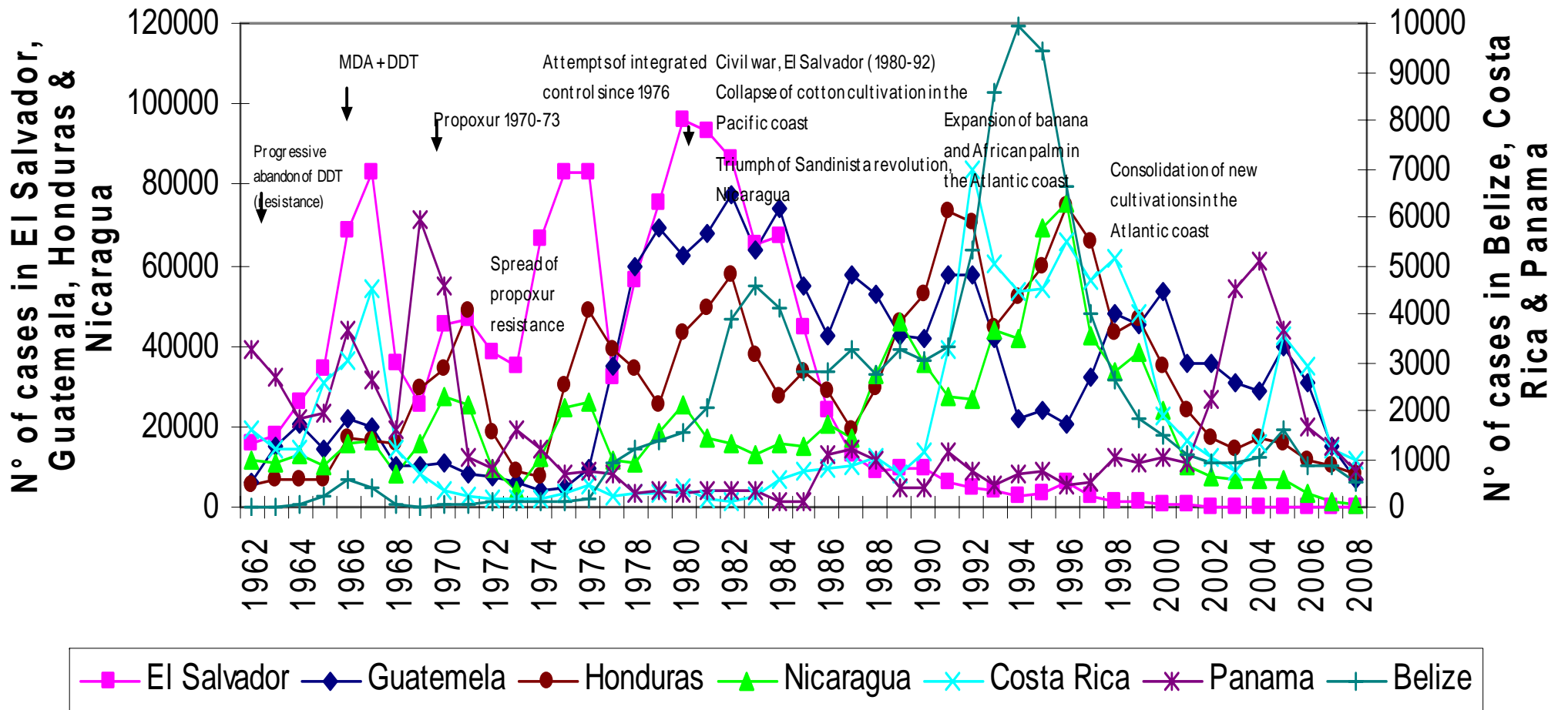
- Spread of drug resistance and support of US Army to research during Vietnam war
- Establishment of TDR
- Poor impact on field control programmes

In 1985, the “Evaluation of the Malaria Programme” in India, commented that the majority of research projects had no relation to the needs of the control programme and the latter lacked “the capacity either to carry out research, to guide it, to generate issues for research based on analysis of incoming information, or to translate into operational use research carried out by other institutions”

LESSONS LEARNED FROM OUR ERRORS BY THE SMALLPOX ERADICATION CAMPAIGN

- “The smallpox programme’s success derived, in part, from lessons learned from the preceding costly failure of the malaria eradication campaign”
Henderson, D.A. (1998) Eradication: lessons from the past. Bull. Wrlld. Hlth. Org. 76 (s. 2): 17-21
- Emphasise epidemiological analysis and coordination
- Encourage management flexibility
- Attract research for the solution of problems
- Stimulate staff to innovate and adapt
- Consider targets as indications of possibilities, but insisting on vigilance as the real evaluation
- Design a phased vigilance programme, through:
 - Morbidity indicators – Foci investigation – Individual cases

MALARIA CASES REPORTED FROM CENTRAL AMERICA, PANAMA AND BELIZE



Countries certified by WHO

- **With long history of control:**

- N. Venezuela, 1961 Hungary, 1964 Spain, 1964 Bulgaria, 1965
- Taiwan, 1965 Cyprus, 1967 Poland, 1967 Romania, 1967
- Netherlands, 1970 U. S. A., 1970 Puerto Rico, 1970 Italy, 1970
- Cuba, 1973 Portugal, 1973 Yugoslavia, 1973 Australia, 1980

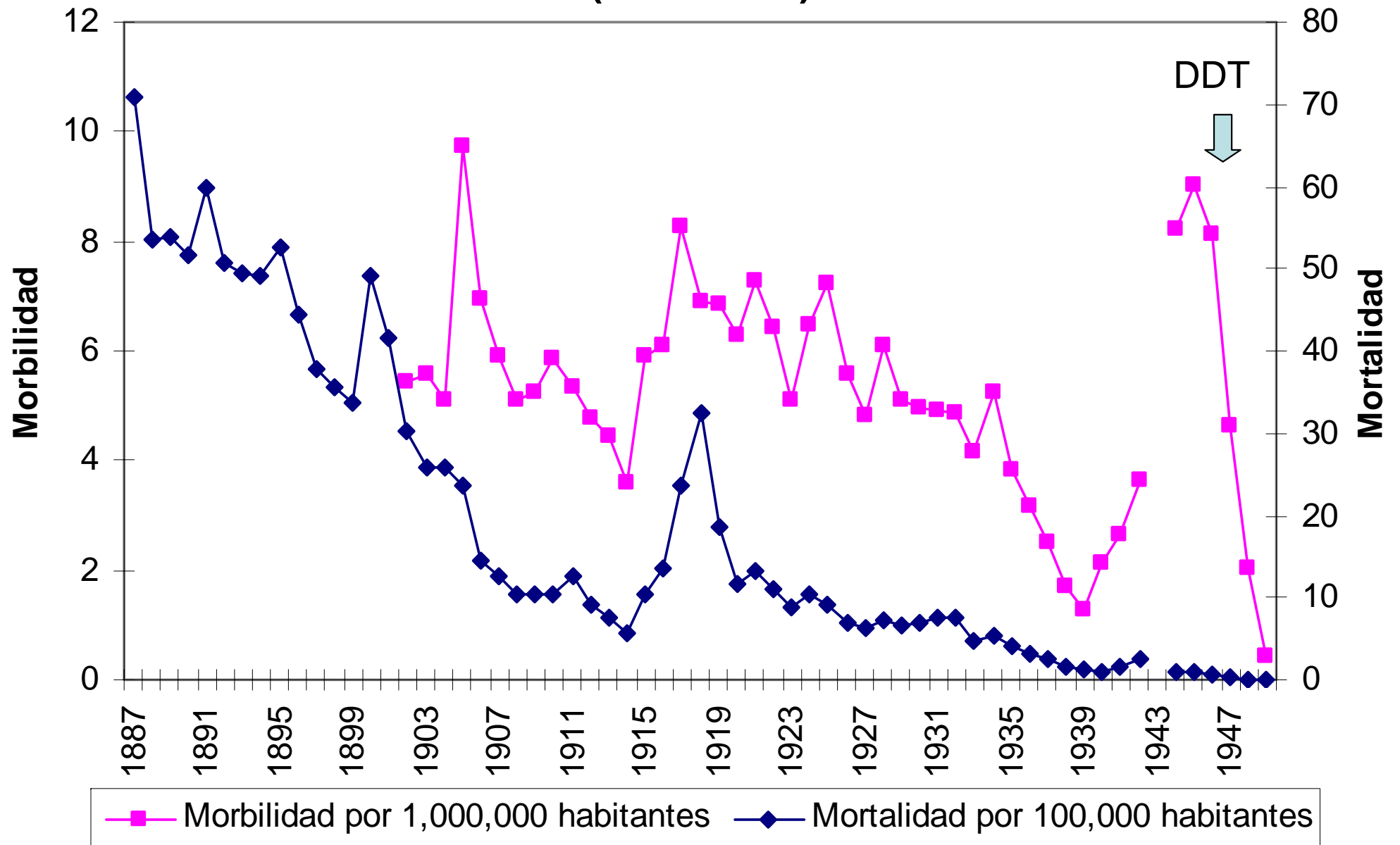
- **Islands with tourist oriented economy**

- Grenada & Ca., 1962 St. Lucia, 1962 Trinidad & T., 1965 Dominica, 1966
- Jamaica, 1966 Virgin Isls., 1970 Mauritius, 1973 Reunion, 1979

- **Other**

- Singapore, 1982 Brunei Dar., 1987

MORBILIDAD Y MORTALIDAD REGISTRADA EN ITALIA (1887-1949)



CASOS Y DEFUNCIONES POR MALARIA EN ESPAÑA (1901-1948)

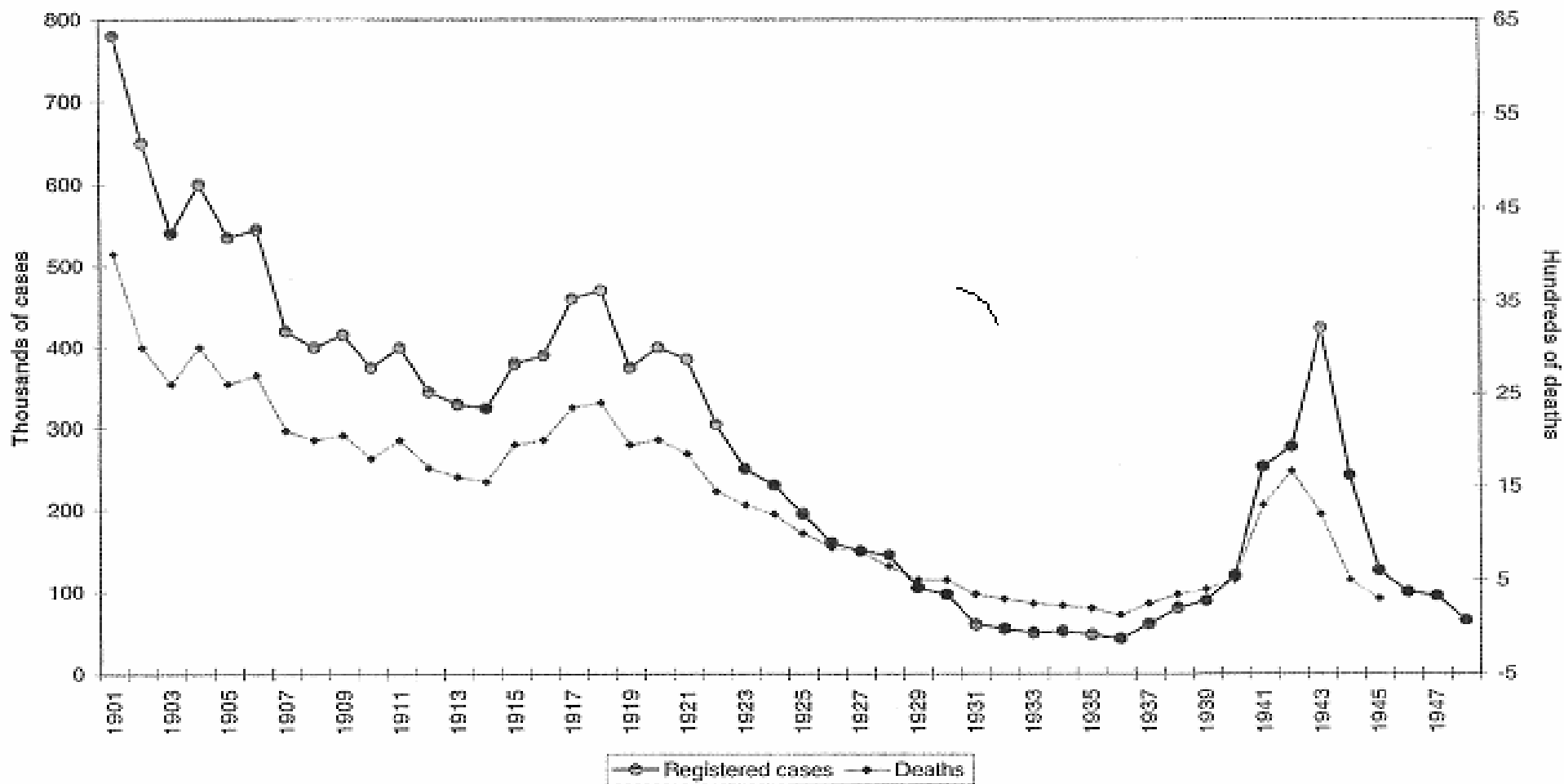


Figure 20.2. Registered malaria cases and deaths in Spain (1901-1948) (Rico-Avello y Rico, 1950).

In 1925 the number of dispensaries reached 250. In 1942 only 187 remained; in 1943 started the rehabilitation of dispensaries, which reached over 300 in 1950

Frequent failure in the consolidation phase

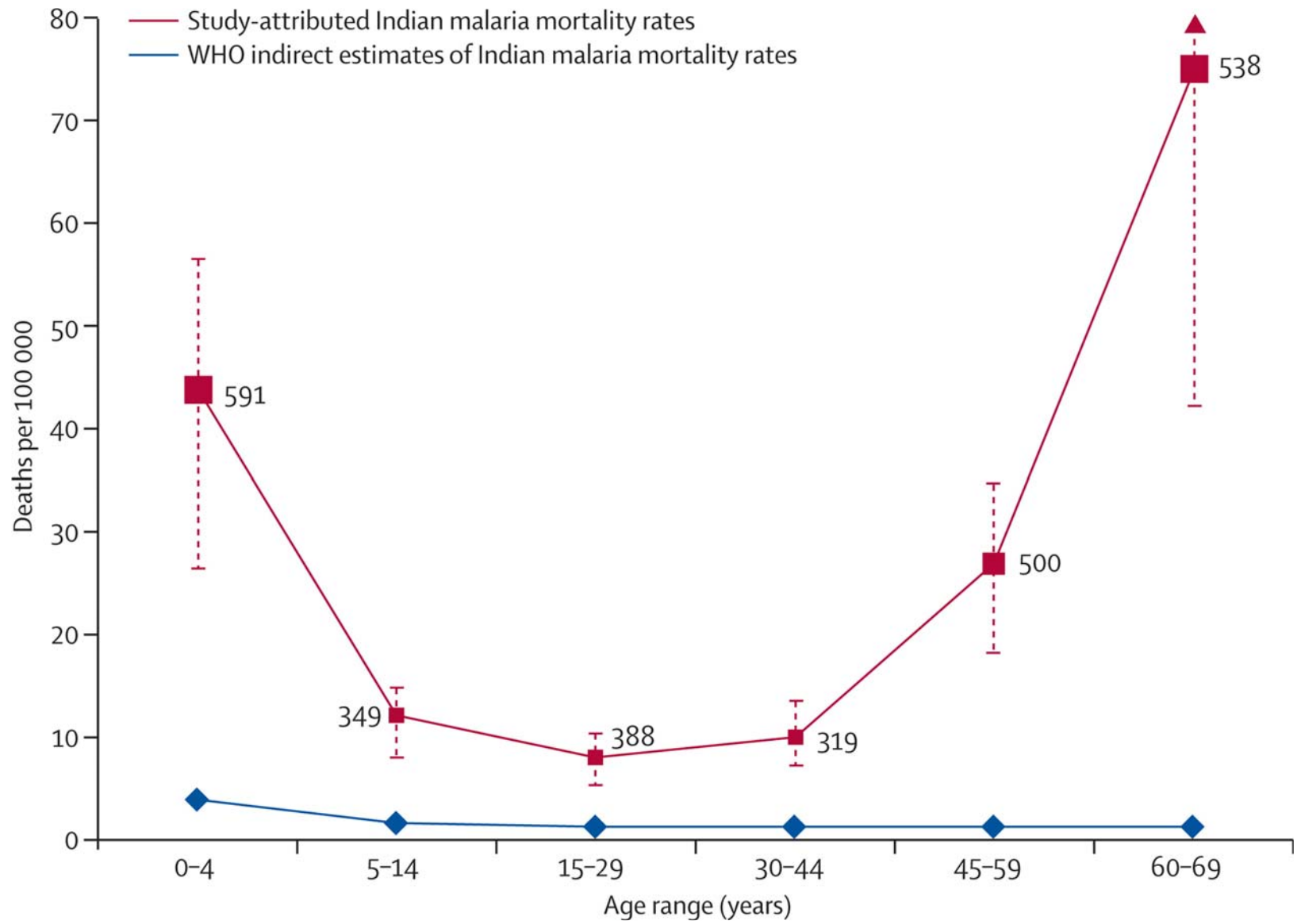
- Surveillance system rather theoretical
- Indicators merely quantitative (API, SPR, ABER)
- Objective: to show absence of autochthonous cases
- Abandonment of the use and actualisation of maps
- Lack of coordination between parasitology & entomology
- Poor implementation of concepts such as
 - Stratification
 - Eco-epidemiological typing

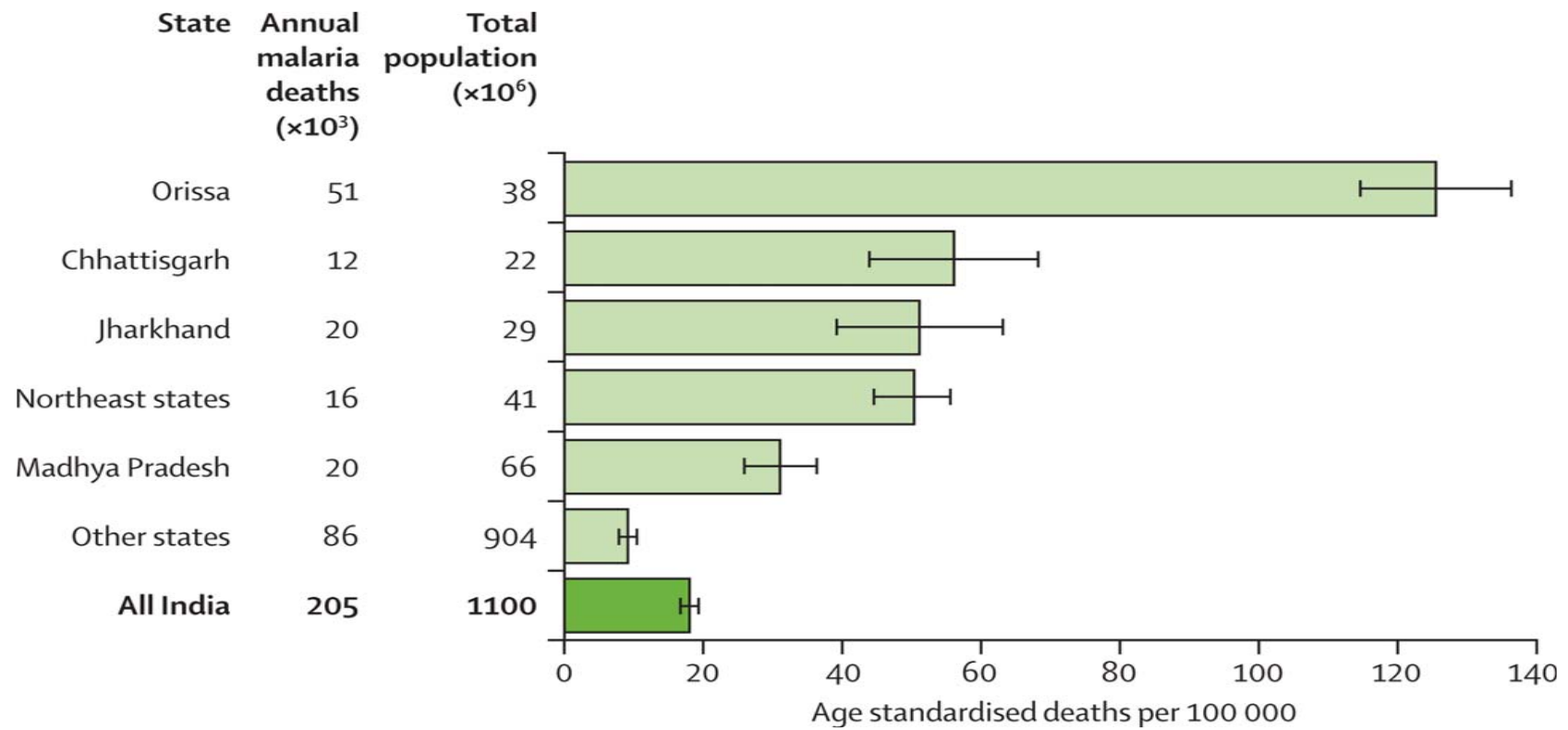
Future control for elimination should:

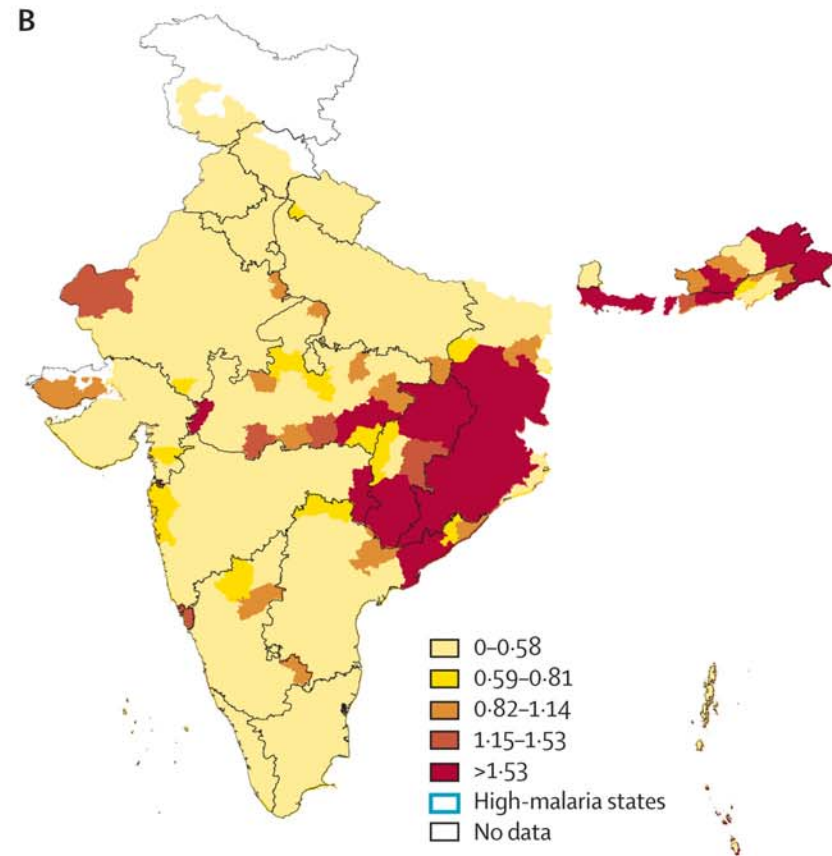
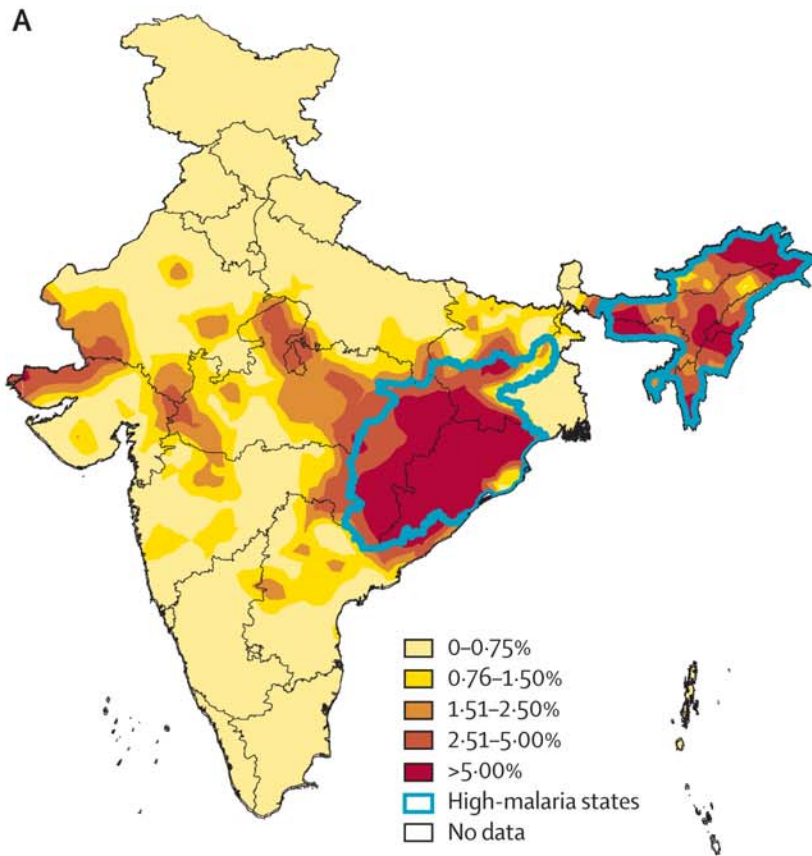
- Obtain & sustain real community involvement/ownership
- Strengthen/re-establish strong professional cadres at the directing level, capable of guiding flexible and adaptable action
 - Encourage innovation, field testing and exchange of experience
- Integrate into the health structure & develop true surveillance
 - Be careful in the use of indicators and understand real denominators
 - Study the history of problem areas & possible external causes
 - Work with research & other agencies in acquisition of knowledge
- Prioritise epidemiological investigation
 - General stratification
 - Identification and study of problem areas
 - New and residual foci
 - Individual cases

Terminology and prevailing concepts

- **Eradication campaign (military terms):**
 - Campaign, attack, strategy, tactics, brigades, armamentarium, logistics
- **Control programmes (police terms)**
 - Vigilance, surveillance, reporting, case detection, case investigation, alarm signals, permissible levels, foci elimination
- **Primary health care (national liberation movements)**
 - Community mobilisation, people's empowerment, information & education, institutional support, intersectoral collaboration







To-day's advantages

- Considerably improved communications for
 - transport
 - information, mapping, GIS
- Improved knowledge of control measures
- Resources

But it may be useful to remember Russell's advice:

Time more than ***Money*** and ***Continuity*** more than ***Perfection***, these must be the mottoes guiding malaria control in the tropics

Russell, P. (1936) Epidemiology of malaria in the Philippines.
Am. J. Trop. Med., 19, 1