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WORLD HEALTH
ORGANIZATIONORGANISATION MONDIALE
DE LA SANTÉWHO/Mal/83 ✓
27 February 1953

ORIGINAL: ENGLISH

The Secretary of the Expert Committee on Malaria
has the honour to communicate hereunder
the following note:

CYTOGENETIC METHODS IN THE SYSTEMATICS OF ANOPHELES.

by

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At the University of Pavia, Institute of Zoology, Centre of Genetics, the Director, Professor Carlo Jucci and Doctor Guido Frizzi, have been studying the cytogenetics of anopheline mosquitoes since 1949. The work has been aided by Rockefeller Foundation grants.

These unique studies of the salivary chromosomes of mosquito larvae were undertaken to determine if it would be possible to differentiate some closely related species of Anopheles on the basis of the patterns of the giant chromosomes of their fourth stage larvae. Numerous groups or complexes of both Anopheles and Culex mosquitoes appear to consist of species of which adults and larvae are so closely alike that they cannot be separated with certainty by gross appearances. They are presumed to be different because of behaviour characteristics or of egg patterns. Some, such as the maculipennis complex in Europe, the minimus complex in Asia, and the pseudo punctipennis complex in South America seem to contain both species that are malaria carriers and others that are harmless. It is, of course, a matter of importance to be able to tell them apart.

Doctor Frizzi, under Professor Jucci's direction, has discovered species differences in chromosomal patterns and he has been able to formulate a chromosome key to six species of the maculipennis complex. The chromosomal patterns are

highly correlated with egg characters, worked out some time ago by Missiroli and colleagues.

The technique of preparing chromosome slides is simple. The salivary glands of well-nourished fourth stage larvae are dissected in saline solution and gently pressed by a cover slip. Microscopic examination is made without staining and reveals characteristic striation in the chromosomal bands. The reading of these chromosomal patterns is difficult and requires long study. So this technique is a research tool not suitable for ordinary identification of species but rather for basic examination of the component species of confused complexes.

Frizzi's method appears to be suitable for world-wide use but before it can be extended it is necessary for entomologists or biologists who want to use it to go to Pavia for eight to twelve month's study with Professor Jucci and Doctor Frizzi.

One Rockefeller Foundation fellow from Brazil, Mr. Ivan Ricciardi, is already in Pavia for this purpose. It would be of great value if workers from Africa and Asia also could be trained. The men who take this special training should be prepared to spend several years on the project when they return to their own regions.

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