

Fig. 4. Microscopie électronique. Immunomarquage ultrastructural des cellules extraites de la rate. Noter l'aspect rond du lymphocyte T (flèche creuse) et l'aspect contourné du lymphocyte B (flèche noire).  $\times 6400$ .

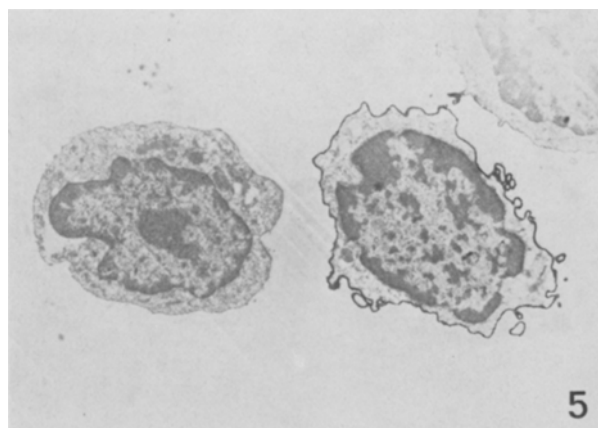


Fig. 5. Cellules extraites du thymus de souris. Noter la différence de morphologie entre la cellule B et la cellule T.  $\times 6400$ .

façon régulière. A partir des cellules extraites de la rate et du sang, nous avons retrouvé le marquage des lymphocytes, mais aussi de certains polynucléaires.

*Discussion.* Les marquages que nous avons obtenus par ces techniques sont analogues à ceux obtenus par GONATAS et al.<sup>1</sup>, LE BOUTELLER et al.<sup>2</sup>, TREBICHAUSKY et al.<sup>3</sup>. Chez l'homme, au niveau du sang, nos résultats sont analogues à ceux de REYES et al.<sup>4</sup>.

Le marquage a une grande spécificité. Elle peut être contrôlée par les mêmes recherches mais en immunofluorescence. Dans ce cas, les mêmes pourcentages sont obtenus. La technique sur frottis permet un résultat rapide et de plus, une approche numérique quantitative des phénomènes étudiés. La microscopie électronique doit être réservée à une étude cytologique fine mais peut difficilement être appliquée à grande échelle.

Nous appliquons actuellement ces techniques aux infiltrats cutanés, mais aussi au problème du déficit thymique dans le LEAD et chez les souris SWAN et NZB auto-immunes.

*Summary.* After extraction of tissues (spleen, thymus, blood) B cell bearing surface immunoglobulins were specifically labelled with Fab-peroxidase conjugate in light and electron microscopy. Positive and negative labelled lymphocyte were counted. This procedure allowed us to quantitate B and T cell in different diseases in peripheral blood and within lesions. It may represent a new immunopathological approach

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<sup>1</sup> N. K. GONATAS, J. C. ANTOINE et S. AVRAMEAS, *Lab. Invest.* 26, 253 (1972).

<sup>2</sup> P. LE BOUTELLER, N. VUJANOVIC, T. H. DUC, R. KINSKY et G. A. VOISIN, *Ann. Immun.* 125C, 445 (1974).

<sup>3</sup> I. TREBICHAUSKY, C. DONA, A. ANTEUNIS et R. ROBINEAUX, *Folia biol.* 18, 30 (1972).

<sup>4</sup> F. REYES, J. L. LEJONC, M. F. GOURDIN, P. MANNONI et B. DREYFUS, *C. r. Acad. Sci. Paris* 1974, 278.

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<sup>6</sup> Travail du Laboratoire de Recherche de la Clinique Dermatologique (Immunopathologie), Hôpital Edouard-Herriot. Réalisé grâce à la collaboration technique de Mlle DANIELE GERMAIN, l'aide de l'INSERM, Contrat No. 74.1.480.32.11, et de l'UER de Biologie humaine de l'Université de Lyon I.

## OECOLOGICA HUMANA

### A Plea for more Ecological Ethics in Development Aid

About 30 years ago, President HARRY S. TRUMAN (in 1949) inaugurated his program for development aid, designed to combat hunger in less advanced areas by improving their socio-economic status. This program, soon joined by most industrialized countries and subsidized by other organizations, was indeed an intention of deep and sincere humanity. A complex system of nutritional, financial, educational, industrial, and economic

measures was developed, thought to express the feelings of devotion of the rich nations.

Now, 25 years later, a feeling of deep disappointment overwhelms everybody who looks at the results and the success of this fine program. Although enormous amounts of food, money and technical equipment have been invested, and thousands of agricultural advisers, social workers and nutrition specialists have been sent to

developing countries, poverty and hunger have not disappeared or even diminished on our planet, but have even increased dramatically. The world food quantity available per capita which remained constant for about 25 years from 1936<sup>1</sup>, has steadily diminished during the last decade despite all plans for increased food production. The gap between the rich and the poor countries, instead of being narrowed, has widened disastrously. It is not only a gap between poverty and wealth, but still more a lack of mutual confidence and trustworthiness. An alarming atmosphere of suspicion and distrust has arisen between the underdeveloped countries (being often entangled in prejudices of racism and nationalism) and the industrialized nations (being accused of neo-colonialism and egoistic drive for self-enrichment and expansion).

The deterioration in the relationship of the donor to the receiver countries is increased by the steadily growing menace of human population growth. This has steepened dramatically since 1950, due almost exclusively to the explosive population dynamics of the Third World. Whereas the reproduction rate of industrialized nations is very low (in Western countries about 1%, in the USSR about 0.7%) or even zero, as in Germany, the developing nations of South Asia, Africa and Latin America show an average growth rate of 2.5%. That means, with an annual world population increase of 90 million people in 1974<sup>2</sup>, the absolute number of undernourished human beings, including children at the borderline of starvation, increases every day by about 140,000 individuals and thus aggravates the situation of the 2.3 billion inhabitants of underdeveloped areas in 1974. (These figures do not include the more than 910 million subjects of the People's Republic of China since their nutritional situation is not adequately known). Unfortunately, according to the higher birth rate of the poor nations, the proportion of the hungry to the satisfied humans increases exponentially. At the beginning of the next millennium, with a population of 8 billions, 90% of all human beings will form an overwhelming majority of underprivileged claiming their unalienable rights for food, welfare and survival. If nothing is done to stop this 'reduplication of misery' (SAUVY), we shall drift irrevocably into a catastrophe of the human race.

In view of the strict interdependence of hunger, poverty and population growth, it appears reasonable that experts in demography recommended birth control as the only effective means for improving socio-economic and food situation in the Third World. But (in spite of the suggestiveness of the catchword), the practical implementation of 'birth control' in areas where it would be necessary, is shown by recent experiences to be impossible. Family planning has been followed consequently and with success only in Japan, whereas in most developing countries birth control, if recommended, is not legally supervised and therefore inefficient, as in India, or is principally rejected with the argument that reduction of birth rate is a colonialistic invention to save expenses for development programs, and cannot be a substitute for them.

The resistance of developing countries against any limitation of fertility found its expression very clearly at the World Population Conference in Bucharest (August 1974). A Conference Report on 'Population, Resources and Environment' stated that optimal agricultural utilization of all arable territory would secure adequate nutrition for 38-48 billions of humans, thus rendering any birth control unnecessary. The outcome of the Bucharest Conference leaves no doubt of the fact that, in near future, family planning will not be accepted by the

most Third World nations as an indispensable weapon against hunger and misery.

It appears that all the conventional methods of development aid have not met with any permanent success. Obviously, the basic conception for a program determined to help underprivileged nations to improve their way of life must originate from another starting point. The donor nations seem to have forgotten the fact that assistance to developing countries is predominantly a challenge to humanity. Mankind must look upon itself as a community based on mutual obligation and on a feeling of moral values governing ecological problems. Only this ethical background would enable us to overcome the gulf between rich and poor, between satiated and hungry nations, as expressed in §7 of the 'Mount Carmel Declaration on Technological and Moral Responsibility', December 25, 1974, at the Congress on Ethic in an Age of Pervasive Technology in Haifa: 'The developed and developing nations have different priorities but an ultimate convergence of shared interests. For the developed nations: rejection of expansion at all costs and the selfish satisfaction of evermultiplying desires – and the adoption of policies of principled restraint, with unstinting assistance to the unfortunate and the underprivileged. For the developing nations: complementary but appropriately modified policies of principled restraint, especially in population growth, and a determination to avoid repeating the excesses and follies of the more developed economics. Absolute priority should be given to the relief of human misery, the eradication of hunger and disease, abolition of social injustice and the achievement of lasting peace.'

As expressed in the computer-simulated world model of FORRESTER and MEADOWS<sup>3</sup>, initiated by the Club of Rome and evaluated by the methods of systems analysis, the present unlimited rise of world population, energy consumption, environmental pollution and exhaustion of industrial raw material will ultimately produce a global crisis, with an explosive diminution of world population, unless the increase of these parameters is stopped in the near future. Also in an improved 'regionalized multilevel world model'<sup>4</sup> on the different rates of development within the single areas of the globe, the prophecy of a world-wide collapse of mankind is emphasized. But it adds that one factor that would essentially contribute to a survival of the human society would be the creation of an economic equilibrium of different levels of development which would produce an equalization of living conditions. Obviously, bridging the gap between rich and poor nations is the point where ethical motivation for a world-wide relief program meets with mathematical forecasts of world models.

What can be done to improve the efficiency of development aid programs? The most important reason for the failure of these programs as practiced hitherto was obviously the neglect of the humanitarian aspects of help for the poor, and a predominance of a purely mechanistic planning. Applied sciences and technology, though indispensable, are condemned to inefficiency if they are not offered with the feelings of fraternal sympathy and the respect for human dignity.

<sup>1</sup> M. GUERNIER, Perspectives alimentaires de l'an 2000, in *Menschheit am Wendepunkt* (Eds. M. MESAROVIC and E. PESTEL; DVA, Stuttgart 1974), p. 108.

<sup>2</sup> Neue Zürcher Zeitung 29. I. 1975.

<sup>3</sup> D. L. MEADOWS, *The Limits to Growth* (Universe Books, New York 1972).

It seems that moral creeds and ethical philosophies, accepted as guidelines of interhuman relations *within* civilized societies since the dawn of occidental culture, no longer govern the 'compass of our behaviour' (MISLIN) towards human beings *outside* of these societies. The awareness that mankind is a unity (and a brotherhood) whose members ought to be motivated by fundamental laws of ethics and humanity, seems to be almost lacking in industrialized nations dealing with world-wide ecological problems. The developing nations are very sensitive to this lack of 'ecological ethics'<sup>5,6</sup> on the part of their well-to-do-brothers. Apparently, a process of inner education is badly needed by the developed societies to create the feelings of sympathy for their fellow-humans in neglected areas – feelings which should not be confounded with offending charity or humiliating compassion. But this is obviously an enormous task to be solved only if everyone of us considers himself fully responsible for this educational process. Its difficulties should not be underestimated. There are considerable intellectual forces in the western world which ignore, more or less wilfully, the problems of the third world. They represent one of the 'two cultures' dominating our present age<sup>7</sup>. Language and mentality of modern novelists, poets and artists are usually not adapted for discussion of the complex problems of hunger and backwardness in other parts of the world.

In contrast, the scientists (including sociologists and behaviourists) being mostly open-minded to the evolutions and the dangers of present and future, may become advisers on inter-human good-will and teachers of a new ecological ethic.

There is no time to lose. World population rises at a breathtaking pace, and the army of the hungry increases every year by about 60 millions. The huge majority of people living in the developing countries will not ultima-

tely be ready to dispense with the improvements made possible by progress in science and technology. But this requires enormous financial means.

According to a working paper presented to the World Population Conference at Bucharest, investment of between 500 and 1,000 billions dollars is needed to secure agricultural and energy production to nourish 40–45 billions human beings expected to live in the year 2025. The later the industrialized countries begin their financial help, the larger is the necessary sum. The same result in socio-economic and nutritional improvement will be attained, whether \$ 2,600 millions are given within 25 years or \$ 7,300 millions within 50 years. In any case, the sacrifices to be made by the rich countries are considerable and will increase exponentially with delay.

The greatest mistake which can be committed today is to 'wait and see', and the greatest danger is indolence and 'idleness of heart'. Let us overcome these vices by fostering in ourselves the ideals of global ethics to minimize the socio-economic inequalities on our planet.

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(German Federal Republic, BRD). 11 April 1975.*

<sup>4</sup> Seminar, International Institute for Applied Systems Analysis, Laxenburg, Austria, 29.4.–3.5.1974.

<sup>5</sup> H. MISLIN, *Experientia* 25, 224 (1969).

<sup>6</sup> H. MISLIN, *Experientia* 30, 1495 (1974).

<sup>7</sup> C. P. SNOW, *The Two Cultures, and a Second Look* 2nd edn. (Cambridge University Press, London 1963).

## CONGRESSUS

### German Federal Republic 3rd International Symposium on Bioelectrochemistry

*in Jülich, 27–31 October 1975*

The Symposium is devoted to the progress and status of Bioelectrochemistry in the sections of electrochemistry of substances of biological interests, electrochemical phenomena and processes at biological membranes, bioelectrochemical actions in the function of muscles, nerves, in vision and in the respiratory chain. Further in the section of electrochemical stimulation of tissue growth and repair and in vivo electrochemical processings and measurements.

The Proceedings of the Symposium will be published in 'Bioelectrochemistry and Bioenergetics' and a limited number of papers will be accepted. Applications for attendance, as well as papers together with a brief abstract (200–250 words) should be sent to the organizer as early as possible, but until 1 May 1975 at the latest.

Further information will be obtained from: Prof. Dr. H. W. Nürnberg, Nuclear Research Centre, D-517 Jülich (German Federal Republic).

### Switzerland International Symposium on Enzymes and Proteins from Thermophilic Microorganisms

*in Zürich, 28 July–1 August 1975*

Topics: Thermophilic enzymes (proteins): Isolation, characterization and general properties. Structural basis of 'thermophilic' properties of enzymes and proteins (thermostability, specific activity). Structure function relationships. Enzymes in thermophilic metabolism. Temperature adaptation. General aspects of the thermophily problem.

Information and registration: Prof. Dr. H. Zuber, Institut für Molekularbiologie und Biophysik, Eidgenössische Technische Hochschule, CH-8049 Zürich, Switzerland.