INDIA AND WORLD HEALTH

Bv

Dr. K. N. RAO, M. D., D. G. O., F. A. M. S.



UNIVERSITY OF MADRAS 1968 © University of Madras, September, 1968

Price Rs. 10.75

INDIA AND WORLD $\underline{\mathbf{HEALTH}}$

CONTENTS

Part-I

	age	140
Introduction:		
The need for World Health World Health Situation:	•••	-
Geography and Population		4
Mantle of disease	•••	5
Population	•••	7
Developing countries and Developed countries	s	9
State of Public Health		10
Trends in World Health during the last decade:		
General	•••	11
Control of communicable diseases: Malaria, Tuberculosis, Leprosy, Yaws, Bilharziosis, Filariasis, Trypanosomiasis, Virus diseases, Influenza, Poliomyelitis, etc.	}	11
Chronic and degenerative diseases—Cardio- vascular diseases and Cancer	• • • •	18
Mental Health	• • • •	19
Accidents	•••	20
Health protection and promotion	•••	21
(i) Environmental Sanitation		21
(ii) Urbanization and Health		23
(iii) Housing	•••	23
Nutrition—Freedom from hunger campaign and World Food Programme		24
Medical Care	•••	26
Health Services and Regionalisation	•••	27
Health Man Power	· · ·	28
Planning for Health Services	• • •	29

		Page
World Health Organization's Work	•••	30
Health in Asia	•••	34
Health Situation in India Organisation of Health Services	•••	35
Major Social, Cultural and Economic Deve- lopments	•••	37
Nation Health Planning	•••	40
Control of Communicable Diseases Education and Training of Medical and		41
Allied Personnel	•••	43
Medical and Public Health Research	•••	44
Major Public Health Problems	•••	46
International Collaboration in Health Work	•••	47
India's Contribution to World Health	•••	48
Conclusion	•••	50ŧ
HEALTH PLANNING		
Part II		
Introduction		63
General Principles of Health Planning	• • • •	64
Planning Process and Methodology		64
Planning Problems in Health Field	• • •	71
Definition and reduction of Resources to a common		
Denominator Pelotionship between 1 in its	•••	73
Relationship between objectives and resources	• • •	<i>73</i> :
Time, Space and Planning	•••	74
Programme for United Nations Development Decade		
Planning in India	• • •	75
	•••	79 ·
Basic ideas in the First and Second Five Year Plans	•••	80
Health targets for development Procedure followed:	• • •	77
Procedure followed in the Third Five Year Plan		81

		Pago
First Five Year Plan	••	. 82
Second Five Year Plan	••	. 83
Third Five Year Plan		. 84
Fourth Five Year Plan	H.	. 85
Appraisal of the Health Plans		. 87
Long term Health Planning (Dr. Mudaliar Committee Report)	's 	. 90
General	••	. 90
Medical Care	• • •	. 92
Public Health	• • •	. 93
Communicable Diseases		93
Professional Education	•••	94
Medical Research	•••	95
Population problem	• • •	95
Drugs and Medical Supplies	•••	95
Administrative Organisation		96
Evaluation	•••	96
MEDICAL EDUCATION		
Part III		
Introduction		99
History of Medical Education in the World and the International Trends	•••	100
History	•••	104
Medical Education in U.K.	•••	104
Medical Education in United States	•••	106
Medical Education in U.S.S.R.	٠,,	111
Medical Education in China	•••	113
Medical Education in the European Continent	•••	114
International Trends in Medical Education	• • •	115

		Page
Trends in India	•••	118
Medical Council of India		118
Medical Education Conferences, Govt. of India		120
Health Survey & Planning Committee (Dr. Mudaliar Committee)		121
Indian Association for the Advancement of Medi- cal Education		123
Third World Medical Education Conference		123
Present Position of Medical Education in India		124
General		124
Undergraduate Medical Education		124
Postgraduate Medical Education		126
Trends in U.K., U.S.A., U.S.S.R. and Australia Postgraduate Medical Education		131
Suggested Pattern of Organisation for India		134
National Committee		137
National Examinations		140
Thoughts for the future		140
Some problems of Medical Education in a Developing Society	•••	140
Experiments in Medical Education for a Deve-		
loping Society	•••	144
Research	•••	146
Conclusion	• • •	146

FOREWORD

Dr. K. N. Rao, Director General of Health Services in India at present is an able and dynamic administrator, and painstaking scholar. He has made a deep study of medical education. He takes the trouble to go deep into the problems of Health, Medical Education, Research and development of every country that he visits, (and he has visited many) besides keeping himself in touch with the literature on the subject. The result is that his knowledge is wide and based on first hand experience, tested on the touch-stone of application in the field, which always necessitates revision of theories and ideas and ideals. has tried to put his vast experience in a very readable form in the course of his 3 lectures at the Madras University. Dr. Sir Lakshmanaswami Mudaliar Endowment Lectures in Medicine in March 1966. I am glad these lectures are being printed under the title of "India and World Health" so that many more people than were able to attend the lectures can derive benefit from them.

Dr. K. N Rao in his first lecture has traced the history of World Health Movement. He has narrated the pattern of health and disease in different parts of the world, which is closely related to the socio-economic situation and the population pressures. In discussing the morbidity pattern, he has rightly emphasised the role of under and mal-nutrition as a causal factor of ill-health. In India we have given a good deal of thought to communicable disease control and eradication but not enough attention has been paid to the environmental sanitation, adequate housing disposal of wastes, supply of safe drinking water, and provision of enough wholesome food each one of which is a powerful tool to fight disease.

Perhaps the medical authorities have felt that it is the iob of the economists and administrators. But medicine is a combination of science, art, and economics and medical

men and women must give due emphasis to these factors if disease is to be prevented and promotion of health achieved.

In the second lecture, Dr. Rao has concentrated his attention on planning and has given us a glimpse of India's overall Plans and has then gone on to the process and methodology of Health Planning The resources for Health Plans have been far too inadequate in the First, Second and Third Plans, and the same is feared for the Fourth Plan. As against the requirement of Rs. 2728 crores required to reach the modest target of 1 bed per 1000 population besides meeting urgent needs of drinking water supply, communicable disease control, and making a beginning with giving requisite attention to positive health by attending to the Health requirements of school children. mental health, nutrition of the pre-school child and other vulnerable groups, a sum of Rs. 950 crores has been indicated, the value of which for certain requirements has greatly depreciated with the devaluation of the rupee. It is, therefore, most urgent that some new methods of enhancing availability of funds for the Health requirements be explored in the interests of the health of our people and the development of our country. Dr. Rao has very rightly deprecated the practice of considering Health expenditure as non-productive. Health of the people is not only the key to greater production, but also of better all round development, including better use of educational facilities made available, and better defence of our borders. Not only our troops must enjoy good health themselves, but to relieve their minds of anxiety about their families, we must see that their wives and children are healthy, which really means provision of better preventive and curative services all over the country. Development and Defence of the country are not possible without the development of human resources for which health is the first essential. I feel strongly that if one whole plan was

to be devoted to the development of human resources, Health, Education, Housing, I ood, Roard, etc., the take off-stage for our economy will come much quicker than by continuous emphasis on steel plants, and heavy industry which have cosumed the lion's share in every Plants of far.

In his third lecture, Dr Rao has traced the history of medical education, giving us a bird's eye-view of the present position in different parts of the world and has described in detail the efforts that are being made to expand and improve the medical and para-medical education and training in India. It is obvious that we have not only to increase the number of medical graduates, but also in prove the quality and ensure the availability of the services of these trained men and women to the common man all over the country especially in the rural areas. I feel that medical education in India must become still more service and community oriented. The preparation of the young student to enter medical studies has not had enough thought from educationists and specialists. In most places in India, this portion of the medical students training rests with the University who have not been able to give enough attention to the requirements of the student aspiring to be a doctor, as against an average first year B.Sc. student. A few Univesities have included the pre-medical studies along with the medical curriculum. This has the advantage of the student being exposed to the medical atmosphere for a longer period, but denies him access to the general university atmosphere even for a year or two. This results in his losing a valuable opportunity of general development, which association with other disciplines in the University can and should provide. I find that the medical colleges that have taken over the pre-medical training, have not been able to do a better job of preparing the student for medicine any more that the other Universities have been doing. In order to

provide the students capable science teachers, and give them lessons in psychology, sociology, economies, mathematics etc., the medical colleges not only do not have the money to employ the personnel, but even if they did, the really talented teachers are not readily available. The best teachers would rather prefer to in the University which offers more avenues of promotion and more intellectual stimulation in their own fields, than a medical college can. It is, therefore, desirable that the Universities should continue to give pre-medical training but they must give more thought to the needs of the pre-medical student and evolve a suitable curriculum for the purpose which includes science subjects as well as humanities.

Dr. Rao has rightly emphasized the need for postgraduate education, not only to prepare specialists, but also for the general practitioner. We are admitting about 12,000 medical students in medical colleges every year now and by the end of the Fouth Plan, their numbers may well go up to 20,000. In order to provide internship facilities to them all, we must use the district hospitals and the primary health centres so that these young people have an opportunity to work with responsibility as doctors are not to be treated as glorified clerks as happens in the medical college hospitals now-a-days. The district hospital should have specialists to guide them and if the teachers from the medical colleges also visit these peripheral institutions at certain regular intervals on fixed days and at fixed timings, they will be able to give much of the necessary guidance to the young and not so young doctors at the periphery. It will also give to the teachers the opportunity to be in touch with the field conditions and become aware of the requirements of preventive and social medicine. It is not enough to have a department of Preventive and Social Medicine in every medical college, every teacher must keep in mind and put into practice preventive and social aspects so that young student gets imbued with the idea that his or her job is to

keep the individual, the family and the community healthy and free from disease, and when one has to treat the sick, one must do it well, but there is nothing so glamorous about it. Sickness is the result of failure somewhere in preserving and promoting health. In Puerto Rico I am told the medical college is using all the health centres etc. as teaching aids as much as the hospital. It is necessary for all developing countries to do so. This will result in improving the standards of medical care as well as giving better education and training to the medical students.

I do not think it is right to have separate groups for work in the rural areas and bigger hospitals. I think everyone should take a turn to work in the rural areas. Similarly, I do not think it is possible or desirable to pick up students to become specialists and teachers at an early date. I think the methods followed by some of the East European countries are more suitable. There, every doctor has to practise in the rural areas or wherever they may be posted for three years and then only they are eligible for specialisation and higher training. I feel we shall have to adopt this system ultimately and the sooner we can do it, the better it will be from all aspects.

For the training of the general practitioner, apart from bringing him to a Central Institution for a certain period to undergo properly planned training courses in different subjects, I think we should have peripatetic teams, going out and holding seminars in different areas concentrating on the problems of that area. There may well be week-end training courses to meet the requirements of the general practitioners.

The publication of this series of Sir Lakshmanaswami Mudaliar Endowment Lectures will, I am sure, serve a very useful purpose. I hope the book "India and World Health" by Dr. K. N. Rao will stimulate further thinking and discussions, so that we can improve our teaching and training and at the same time make it a means of providing better service to our people all over the country.

New Delhi July 7, 1966 SUSHILA NAYAR MINISTER FOR HEALTH INDIA



PREFACE

Health like peace is indivisible. World health involves the health of all the peoples of the world rich and poor in whatever stage of development. The affluent nations have reached the status of health in which the communicable diseases and nutritional disorders are overcome but degenerative diseases, cardiovascular diseases, malignant diseases and mental ill health still require great attention. India is a developing country with much poverty, ignorance and disease and a great mortality due to communicable diseases and nutritional disorders. 50% of the mortality is under the age of 14 and 50% of this is under the age of one. are largely preventible. The developing countries have an advantage, in that the technical know-how is readily available and it only requires the application of the modern knowledge to achieve better health, if there are trained personnel and financial resources. Not only a social policy is required for building up of the health services but also the National endeavours that impinge on agriculture, labour, education, insurance etc. We owe to the World Health Organisation for doing so much to so many with so few workers in health development and the conquest of disease. India is on the threshold of a great adventure for the attainment of economic and social development for the health and happiness of her people. In this book the reader may find some glimpses of Indian achievements and the adverse effects of population pressure and the need for a population policy and intensification of Family Planning Programmes. Equally, India has a great role to play in the elimination of disease within and beyond its frontiers to give a helping hand to the less developed countries in Asia, Africa etc. in the shape of men, money and material for better world health.

This book on "INDIA AND WORLD HEALTH" published through the courtesy of the University of Madfas is based on Dr. A. L. Mudaliar Endowment Lectures on "INDIA AND WORLD HEALTH", "HEALTH PLANNING" and "MEDICAL EDUCATION", the areas in which Dr. A. L. Mudaliar has made a great contribution. In this, an attempt is made to give a bird's eye view of the present developments and the trends in India in the background of world health progress. If this book serves as an introduction to the study of World Health and is useful to all those who desire to pursue the subject in depth, the purpose of the publication would be more than achieved.

I am indeed grateful to Dr. Sushila Nayar, Union Minister for Health and Family Planning for her thoughtful foreword to this book and for the encouragement and guidance she has always given to me in this field. I am indebted to the Madras University for inviting me to deliver "Dr. A. L. Mudaliar Endowment Lectures" (1965-66) and for kindly publishing the same.

Acknowledgement is due to the Editor of the "JOURNAL OF MEDICAL EDUCATION" of the Association of American Medical Colleges for permission to reproduce some very useful illustrations and photographs.

I am thankful to Dr. D. J. Reddy, Principal, Jawaharlal Institute of Post-Graduate Medical Education & Research, Pondicherry, for all the assistance he has given so generously and for the time he has spared in the preparation of illustrations, tapes and photographs.

New Delhi July, 13, 1966

INDIA AND WORLD HEALTH

INTRODUCTION

I am grateful to the Vice-Chancellor and the Syndicate of the Madras University for inviting me to deliver "Dr. Lakshmanaswami Mudaliar Endowment Lectures" for this year. I consider this a rare privilege indeed to have an opportunity to pay my tribute to Dr. Mudaliar, a great obstetrician, a remarkable teacher, a distinguished medical Ambassador and a great world citizen. His contributions to the field of obstetrics and gynaecology, medical education and World Health are so varied and distinguished that one has to wonder in which field he had made a greater contribution. For me one of his old students, who has learnt the science and art of obstetrics and gynaecology, principles of medicine and has been the recipient of much kindness, love and encouragement from him, this is a unique honour for which I am deeply indebted to the University of Madras.

Among the various subjects Dr. Mudaliar is interested in, India and World Health, Health Planning, and Medical Education are the three areas that are dear to him in which he made great contributions for posterity to remember.

The Social and Economic Council in 1946 under the distinguished Chairmanship of Dr. A. R. Mudaliar suggested the formation of an international organisation for Health and the further development of the organisation was not a little due to Dr. A L. Mudaliar. He was President of the World Health Assembly when it was held in India in 1961 and it is no exaggeration to say that he has held every office of the World Health Assembly and its Committees. He was a member of the Bhore Committee and the Chairman of the Medical Education Sub-Committee. He was the Chairman of the Health Survey and Planning Committee of the Government of

India (1959-61) and its report is one of the most remarkable documents in the History of Public Health in India and also in the world, and it is used as a reference book for planning health services in developing countries. Dr. Mudaliar's contribution to World Medical Education by his participation in the First and Second World Medical Education Conferences held in London in 1953 and Chicago in 1959 respectively is commendable and this country is proud that he has been elected as the President of the Third Conference to be held in Delhi in November this year, which will discuss Medical Education: A factor in Socio-economic development. He is the Founder President of the Indian Association for the Advancement of Medical Education and has done yeoman's service to the cause of medical education in India

1. Need for World Health:

I wish to remind members of this august audience the famous words of Abraham Lincoln before I begin my talk on the philosophy on trends in World Health this evening. This is what he said: "If we could first know WHERE we are and WHITHER we are tending, we could then better judge WHAT to do, and HOW to do it".

1. 1 For the first time in human history, international collaboration started in the field of Health for fear of epidemic spread. Pan American Sanitary Bureau was formed in 1902 at Washington. The International Office of Public Health was formed in 1903 at Paris. The Health Organisation of the League of Nations was created in 1923 with the following terms of reference under the Covenant of the League of Nations, article 23(f), to "endeavour to take steps in matters of international concern for the prevention and control of diseases" with headquarters at Geneva. During the Second World War it was practically extinct. In 1944 UNRRA (United

Nations Relief and Rehabilitation Administration) was created to help the devastated world and this organisation functioned as the International Health Organisation. In the Charter of the U.N. signed in San Francisco in 1945, the word "Health" was introduced, suggesting that a conference be held. This was adopted by the Economic and Social Council on 15th February 1946. The draft Constitution was adopted by 51 nations at the International conference at New York and an Interim Commission of eighteen States was formed to bridge the gap until the constitution of a World Health Organisation could be ratified. The Interim Commission functioned under the Chairmanship of Dr. Krottor and succeeded by Professor Stampar till the WHO was inaugurated on 7th April 1948. India has played a great part in the Economic and Social Council; in the functioning of the Interim Commission and in the birth of the World Health Organisation and the names of Sir A. R. Mudaliar. Sir A. L. Mudaliar and Dr. C. Mani are to be remembered. The World Health Organisation located at Geneva operates as one of the organisations active in the Economic and Social sphere known as the specialised agencies of the United Nations.

1. 2 The objective of the WHO is "The attainment by all peoples of the highest possible level of Health" which is "one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition." "All governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures." The need for World Health and World Unity and the movement towards World Health need not be gone into further. The World Health situation today and India's contribution towards it has to be considered.

2. World Health Situation:

2. 1 Geography and Population: Over seven tenths` of the world is covered with water and a part of the remainder is covered with snow or ice. If Antarctic and Greenland are excluded, the earth's land surface is about one quarter of the total surface area. North America. Latin America and the U.S.S.R. each accounts for slightly less than one sixth of this; and Africa and Australia together cover more than one quarter. Europe and Asia excluding Russia occupy the remainder, but together contain more than two thirds of total world population which has reached over three thousand million or three billion. It is customary to distinguish four zones of the earth's surface, temperate, southern, mediterranean, and tropical. The temperate zone has 750 million population and stretches across North America and Europe to Japan and includes Australia and New Zealand. The Southern Zone (80 million) is the lowerh alf of South America and the lower segments of Africa. The mediterranean zone (370 million) includes the countries surrounding mediterranean basin and the near East running to Siberia, Manchuria and North-West China. The Tropical Zone (1200 million) includes the South of North America, Central America, Northern 2/3 of South America, Central Africa, South East Asia, India and the rest of China. (Fig 1). Climate and disease have a close relationship and climatic factors and geographic factors have to be kept in view when the Health Map is drawn. With increase of scientific knowledge and the use of science and technology, life can be made safe in any adverse climate but the way is long.

Environmental factors such as housing, water supplies, sewerage system have an influence on the health of the area. The relation of better health to improved environment has been well established. In South and South East Asia, the environmental factors are complicated by the phenomenal growth of population.

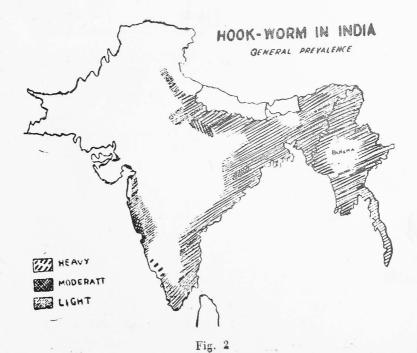






World population.

Fig. 1



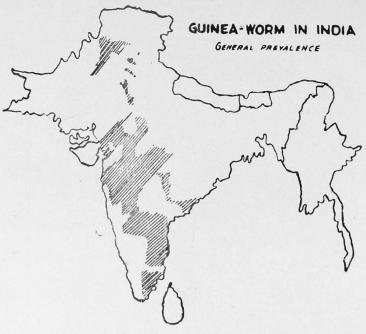


Fig. 3

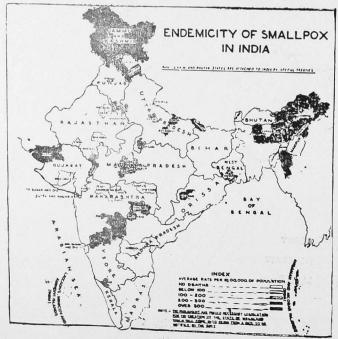


Fig. 4

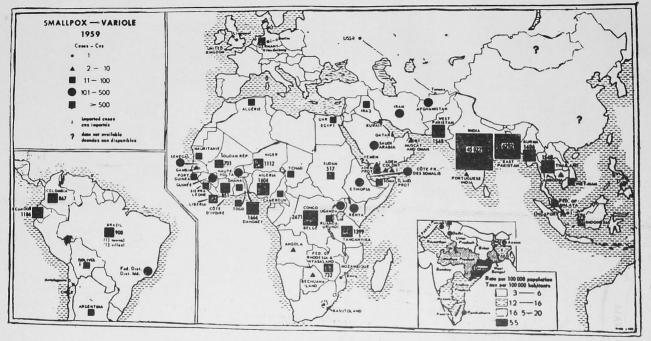


Fig. 5 Notification of cases of small-pox in 1959.

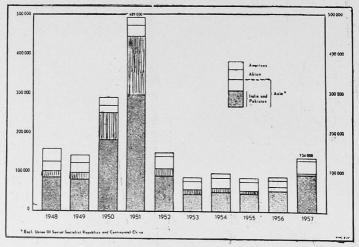


Fig. 6
Notification of small-pox cases by Continents, 1948—57.

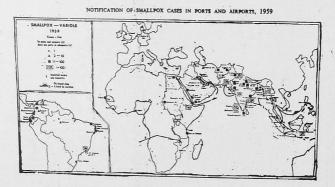


Fig. 7

There are other general influences that affect Health such as social, educational and cultural background of the people. Social conditions should be judged whether there is an agricultural or industrial background, rural or urban conditions. The great hindrances to social progress are disease, ignorance and poverty. Cultural effects based on traditions, beliefs, customs, manners, also retard considerably the health of the people. Adjustment to the machine and atomic age is a long process of social education. The rural and industrial communities have different standards of living. There is a direct relationship between health and standard of living. The effect of social change and the rapidity with which it is effected on the mind and the incidence of mental ill-health have to be appreciated.

2. 2 Mantle of Disease:

Disease and ill-health fall into six categories: congenital, traumatic, infectious, nutritional, degenerative and mental. The first two causes are, however, excluded from further discussion though preventive measures could be extended in a small way.

Infections: The main infectious disorders - parasitic, bacterial and viral - have been categorized by country and region so that their distribution and epidemiology is reasonably well-known. (Figs. 2&3). Specific infections are on the whole more frequent and more severe as we progress from temperate through mediterranean to tropical zone, though diseases like small-pox or typhoid, if not prevented, would occur everywhere. Tuberculosis thrives wherever there is over-crowding but the developed countries have almost controlled it. (Figs 4, 5, 6, 7, & 8)

Degenerative Diseases: Cardiovascular diseases and cancer occur along with the aging process and are universal. Where there is greater expectation of life, the prevalence of these diseases occurs. The control and prevention of diseases are of universal importance.

Nutritional: It is estimated that more than two thirds of the world population are suffering from undernourishment and have less than 2,000 calories of diet. (Figs 9 & 10). The areas of great deficiency are Central America, most of Asia and some parts of South America, Africa and Middle East. A diet of 2,700 calories appears to be limited to the Western world, the new world, U.S.S.R. and some countries of South America. According to social class, the dietetic pattern varies and the nutritional standards vary. Among the most serious deficiency states now prevailing in many areas in the world is Kwashiorkar, a syndrome associated with low protein consumption. Associated with parasiticism the incidence is higher. Among the rice-eating populations in the world - in China, Malaya, Java, Japan and India, there is wide-spread disease due to lack of vitamin 'B'. and epidemiologically this affects half of the world's total population. Poor nutrition predisposes to infections, particularly Tuberculosis. Malnutrition is perhaps the chief cause of high death rates from preventible diseases, low expectation of life, high mortality infancy and childhood and disorders in child birth which afflict the majority of human race particularly living in the mediterranean and tropical zones. (Fig.11).

In the western world, with the increase in expectation of life consequent on conquest of infectious and nutritional disorders, and rise of standard of living, diabetes and degenerative diseases of the vascular system are on the increase.

Mental ill-health: The extent of mental diseases occurring in different zones is under study. The figures of temperate zone are noteworthy. In U.S.A., 550,000 persons are in hospitals for mental diseases, 130,000 mental defectives are in institutions and a further 800,000 are under supervision making a rate of 5.2 per 1000 population. In U.K. the figures are 5.6 per 1000. If senile psychosis, psychoneurosis are added, the

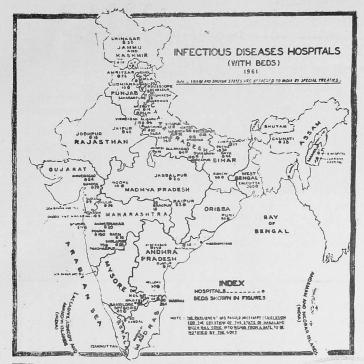
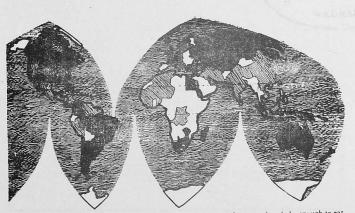


Fig. 8



Nutrition by Nations. Only the inhabitants of the areas shown black have, on the whole, enough to eat (though the diet of the poor in these lands may be deficient in vitamins and salts) Nutrition in China is, however, rapidly improving

Fig. 9

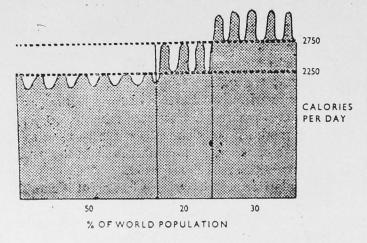


Fig. 10

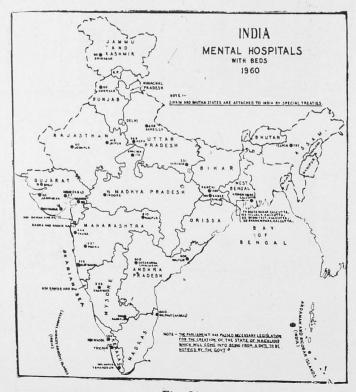
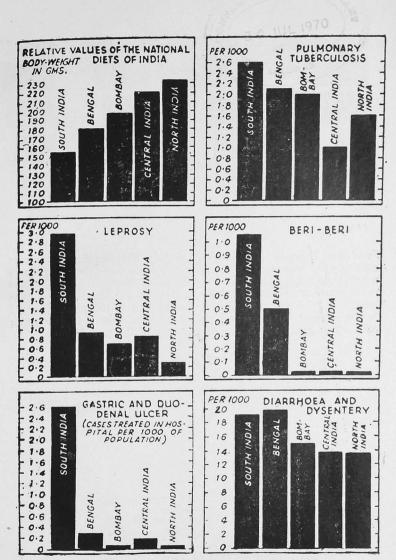
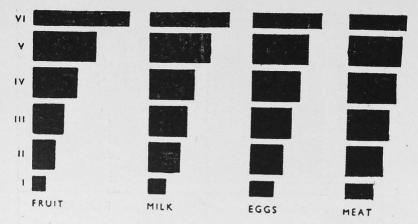


Fig. 12
Map of India showing the Mental Hospitals with beds 1960,



DIET AND THE INCIDENCE OF SOME DISEASES

Nutritive values of diets in common use in the five main divisions of India, as determined by feeding experiments on rats, compared with the frequency distribution of certain diseases per 1000 of sick persons in these divisions.



Food and Income. Estimates of weekly consumption of certain nutritionally important (and expensive) foods from Orr's survey of nutrition in England in 1935. They illustrate the relationship between income and nutrition, and help to account for the lower average height and inferior physique of the children of the poor. Group I is the poorest 10 per cent, group VI the richest 10 per cent; each other group represents 20 per cent of the population.

Fig. 13

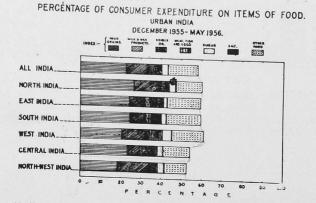
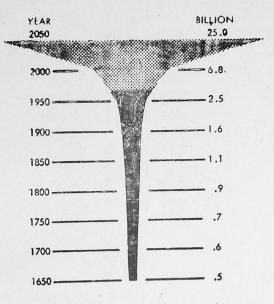


Fig. 14



Projected World Population Growth

Fig. 15

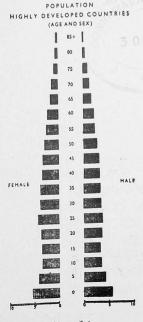


Fig. 16

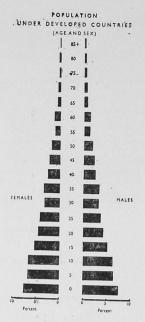


Fig. 17

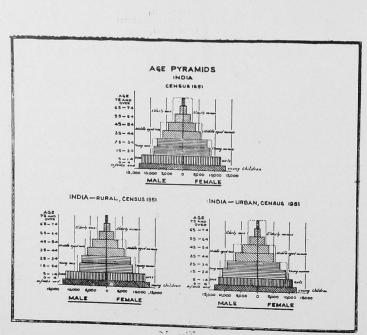


Fig. 18

prevalence is arresting and requires further attention for prevention and control. The disease would be on the increase with social development and rapid social change due to industrialisation and urbanisation. Epidemiological research appears to be necessary. (Fig.12).

2. 3 Population: The importance of population to Health is vital. Health in any social group depends upon the dynamic relationship between numbers and the space they occupy and the skills they have acquired to provide for their needs. Public Health is vitally concerned with population, their numbers, distribution, age structure movements, birth and death rates in specific age groups. Over-population affects the health of the community physically and mentally. Population, food and nutrition are inter-related and nearly all the problems of the world are related to population pressure. (Figs. 13&14). World Health has to take into consideration the effect of population pressure on Health. With "annihilation" of distance, no one can live in isolation and the entire world gets involved whatever happens in the rest of the world.

Today the population of the world is about three billion, and it is increasing at the rate of 2.1 per cent annually. The rate of growth varies with each country. Developing countries show 2.5% increase which means that the population in these countries will double within 25 years. If the population increase is 3% it will double in 20 years. (Figs. 15, 16, 17, 18 & 19).

Areas and population are also factors in Health development. The following table gives the area and population in order of importance.

	world a	rea		total (1960)		
1.	U.S.S.R.	16.3	1.	China	23.0	
2.	Canada	7.4	2.	India	13.5	
3.	China	7.3	3.	U.S.S.R.	7.1	
4.	Brazil	6.3	4.	U.S.A.	6.0	
5.	U.S.A.	5.8	5.	Japan	3.1	
6.	Australia	5.7	6.	Indonesia	3.0	
7.	India	2.4	7.	Pakistan	2.9	
8.	Argentina	2.1	8.	Brazil	2.2,	
9.	Sudan	1.9	9.	West Germany		
10.	Congo (Leopold- ville)	1.7	10.	U.K.	1.7	

Area % of total

Population % of World

Only U.S.S.R., U.S.A., China, India, Brazil, appear in both Area and Population columns. (Fig. 20).

If population growth and food output are compared for each region, there is a critical situation. The food output is not proportionate to the population growth in all developing countries. A study of demographic cycle indicates that populations go through. five cycles In the first stage, death rates and birth rates are high (High Stationary). In the second stage of evolution, death rates decline but birth rates continue to be high (early expanding) The third is that in which birth rates begin to decline and death rates also continue to decline (late expanding). In the fourth stage, the population becomes stationary with low birth rate and low mortality (low stationary). In the fifth stage, population tends to decline because the births are fewer than deaths (decline). With the advent of the modern public health movement and prevention of communicable diseases and nutritional disorders, the population growth is high and many developing countries are in the second or third stage becoming a public health problem. Development including indus-

AGE PYRAMIDS

According to the 1951 Census population age returns, the percentage of males and females in different age-groups in India as well as in urban and rural areas separately was as follows. Similar data for 1961 census are not yet available.

_						Percentage	to total popu	lation
	Age-group					Total	Rural	Urban
_	0 to 4		,	,		13.5	13.7	12.9
	5 to 15					24.5	25 · 1	23 - 2
	15 to 34			-		33.0	32.3	.36.5
	35 to 54					20-4	20-4	20 · 1
		,	,			8.3	8.5	7.3

Source : Census Report, 1951.

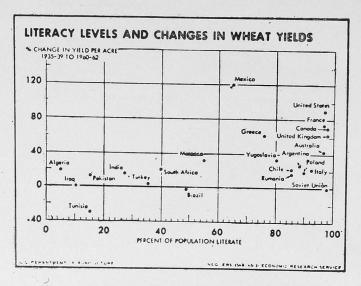
Fig. 19

	STEEL	LATION	AREA
USA.			
U 5 S.R.			
U.K	盘	60	-
WEST GERMANY	4	00	-
FRANCE			-
BENELUX	83		
ITALY	CID		-
JAPAN	8	8	-
CHINA	0		de la
AIOM	0	曲	8
CANADA	003	0	a
BRAZIL	-	00	H
AUST RALIA	0	-	#

^{41.} World powers. Each square represents 1 per cent of the world total. A dash means less than 0-5 per cent.

NOTE 1 Steel output is average 1952-4. 2. U.S.A. includes Alaska.

3. France includes Saûr.



Relationship between Literacy Levels and Yield-raising Capabilities

Fig. 21

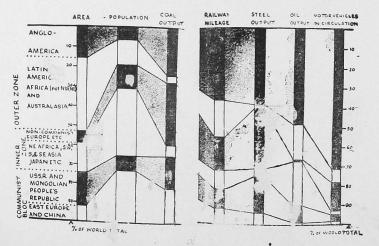
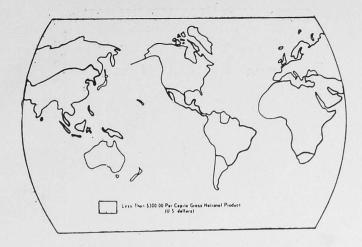


Fig. 22



Areas where the per capita Gross National Product is less than \$300.

Fig. 23

AVERAGE DEATH RATES FROM CHOLERA

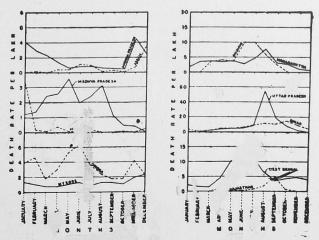


Fig. 24

EXPECTATION OF LIFE AT BIRTH FOR EACH SEX IN DIFFERENT COUNTRIES

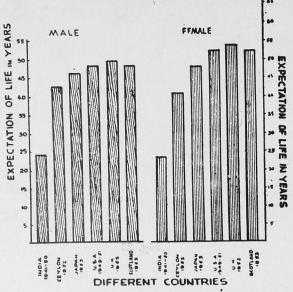


Fig. 25

Percentage agricul	of active ture by contine		employed in		
	Total population (millions)	Active population (millions)	population employed i agriculture (percentage	n	
AFRICA North Africa	65	24	73		
Tropical and South Africa	132 197	65 89	76 75		
Total AMERICA		66	13		
North America Middle America	166 51	18	62 55		
South America Total	110 327	125	34		
ASIA South West	41	13	70 74		
South Central South East	460 170	173	78		
East Total	698 1369	277 528	71 73 :	mon	
EUROPE North and West	198	90	20	90	h
Central Southern	88 128	42 58	47 58		1)
Total OCEANIA	414 13	190 5	38 17		
U.S.S.R.	195	88 1025	45 59		
WORLD	2515	1025	"		

Fig. 26

trialization, rising income and consumption, improving education, emancipation of women and their employment, increase of physical and social mobility secularization of cultural values and institutions tend to decline birth rate. But the time factor is important. The hope of finding a solution to the world popula-tion rests on the development of social movements which enthrone the ideal of smaller planned family. Consequently, the means of fertility control should be made available to the people. The most natural vehicle for new teaching is public health which not only regards the family as one of its mainstays but also sees in over-population the seeds of so many of its disorders. The WHO has taken up the question of Health Aspects of Population and by its resolution in 1965 would give technical assistance not operational to member countries besides encouraging Research in Fertility Control.

2. 4 Developing countries:

Development affects health and disease both favourably and unfavourably. Favourably by changes in living standards, in diet, habits, housing, communication, literacy, social development and improvement of public health (Figs 21 & 22) Unfavourably by changes in age structure, adverse aspects of industrialisation and urbanisation.

Developing countries have three characteristics. First, production, income and consumption per capita are low in comparison with the more highly advanced countries. Second, while production, income, consumption may increase in all countries, the process of growth is combined with a profound change of political social and economic structure. Third, the concept of economically less developed suggests that the countries have an economic potential which is not fully realised (Figs. 23, 24, 25, 26, 27, & 28). The application of

science and technology has been slow. The peoples of these countries are subject to poverty and privation, disease and malnutrition, high birth rates and high death rates, high infant and child mortality with low expectation of life. The standard of medical care is low. In the developed countries in contrast the standard of living is high, birth rate is low, general mortality rates low, the effects of industrialisation and urbanisation where high standards of medical and public health are seen (Figs. 29, 30, 31 32, 33 & 34).

2. 5 State of Public Health.

Measurement of Health: Health statistics are grouped as under:—

- (1) Those associated with Health Statistics of persons and population belonging to a given area;
- (2) those relating to physical and environmental conditions having a more or less direct bearing on the health status of the area;
- (3) those concerned with health services and activities directed to the improvement of health conditions. Indicators for each could be given but the following are used:—
 - (1) Percentage of deaths of persons of 50 years and over in relation to total deaths.
 - (2) Expectation of Life.
 - (3) Crude death rate.
 - (4) Infant Mortality.
 - (5) Maternal Mortality.

The statistical information is obtained through

- (1) Registration
- (2) Notification of diseases
- (3) Surveys
- (4) Hospital Morbidity and Mortality Records.

	U.S.A.	Argentina	India
Food: calories consumed per day pe	r e		
inhabitañt	3200	2800	1800
Rooms per 10 inhabitants	10	4*	2*
Kilograms of cotton yarn per inhab	itant]		i
per year	10	4	2
Doctors per 100,000 inhabitants	120	70	20
Dontists per 100,000 inhabitants	50	20	2
Percentage of population over 10 year	rs of		ł
age literate	Almost 100	87	18
Students enrolled in higher educat establishments per 10,000 inhabita		40	12
Copies of daily newspapers published	1 per 340	155	8
Radio receiving sets per 1000 inhabi	tants 750	140	2
Motor vehicles per 1000 inhabitants	390	33	1

• Very approximate figure.
NOTE: The figures can only be compared in a horizontal direction.

10,000-	Anglo- and Latin America	Non-Commu- nist Europe and all Africa	Communist Bloc	Rest of Asia and Australasia
	U.S.A. 8250 Canada 7570			
5000-		Norway 5340 1		
4000-		Sweden 4150		1
3000-		BelgLux. 4100 W. Germ. 3350	Czecho, 3760 E. Germ, 3530	Australia 3660
		Switz. 2870 France 2440	Poland 2650	N. Zealand 2750
2000	Venezuela 2030			
	Chile 1020	Italy 1050		Israel 1050

Fig. 27

Political, Social and Economic structure of the developed and developing countries

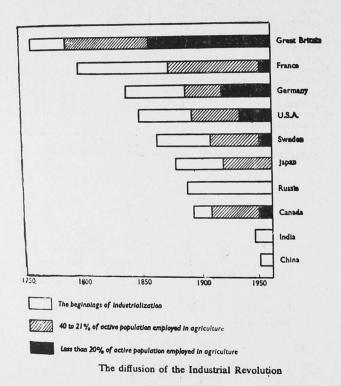


Fig. 28

DEATHS BY AGE AND SEX

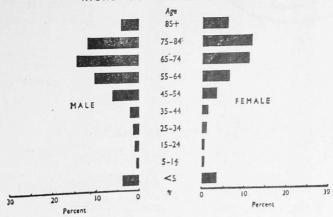


Fig. 29

DEATHS BY AGE AND SEX UNDER DEVELOPED COUNTRIES

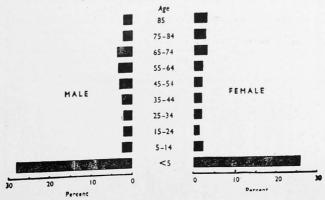


Fig. 30

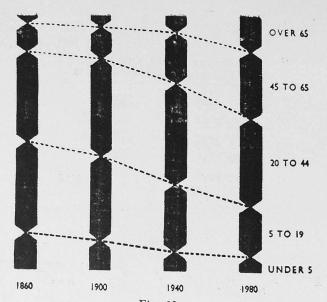


Fig. 31

Ageing Population. The effect of the decline in birth and death rates on the proportion of people in different age groups in the U.S.A. The figures of 1980 are estimates from trends in the 1940s.

ESTIMATED BIRTH AND DEATH RATES IN INDIA 1881-1961

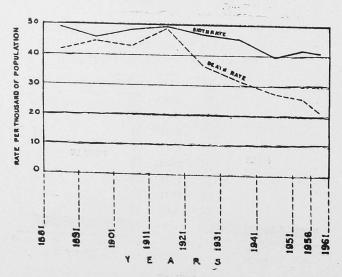


Fig. 32

LIVE BIRTHS BY MATERNAL AGE

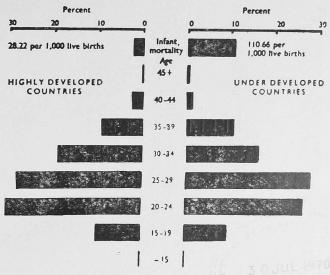


Fig. 33

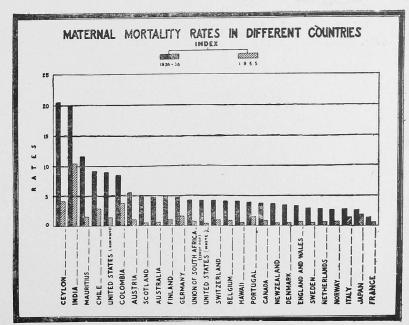
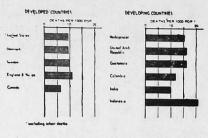


Fig. 34

٠



GENERAL MORTALITY

Fig. 35

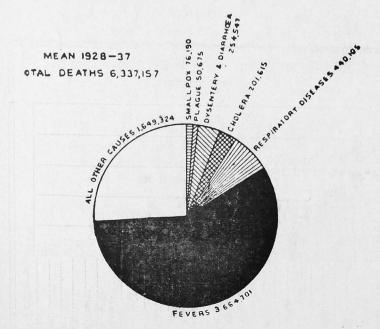


Fig. 36 Factors in Indian Mortality

3. Trends in World Health during the decade.

3. I General.

Great advances have taken place in the field of virology, in cardiovascular surgery and chemotherapy. The decade also saw the launching of mass campaigns against malaria, yaws, smallpox and tuberculosis and the reinforcement of efforts to reduce maternal and child mortality.

Many of the most recent advances in medical technique are not yet available to all and it is only limited to a few countries. High costs, shortages in personnel and the limitations of the administrative machinery have determined the pachiness of their distribution. There is a great gap between knowledge that is available and its application.

3. L. 2 The General State of Health.

The crude annual death rate is the most widely available indicator of the level of health. The economically under-developed countries are having declining mortality, but increase of population (Figs. 35, 36 & 37). This shows that there is a great advance made in disease prevention and cure (Fig. 38).

Together with the crude death rate, the infant mortality (deaths under one year of age per 1,000 live births) is also falling which is another indicator of the level of health, but it is not available with any degree of accuracy in many parts of the world (Fig. 39). Reduced mortality in this age range is becoming more and more evident in the less developed countries. In countries which have reduced their infant mortality rate to between 200 and 24, the main target for further reduction lies in the first four weeks of life and in the ante-natal period itself, where the causes of death which have to be dealt with tend to be less tractable.

Indices of development

- (1) Literacy
- (2) Potable water
- (3) Animal proteins in diet.
- (4) Per capita income
- (5) Organised Health Services.

3 1.3 Expectation of Life at birth:

It is necessary for the Indians to know that in 1950, the expectation of life of a child at birth was 32, in 1960 it is 42 and is likely to be 46 in 1965. This not only promises long life, but is a symbol of the significant change which has occurred in the morbidity and mortality experience of the sub-continent (Figs. 40, 41% 42).

3. 1. 4 Infectious and parasitic diseases:

Classification of deaths by cause is a good indicator of the control of communicable diseases, improvement of environmental sanitation, etc.

The facts of mortality are the record of disease and accident in curtailing human life. They enable us to discern trends and movements. They do not enable us to know the precise causes of death, or their respective share in the total mortality. There are other casual factors, including heredity, environment, occupation, social maladjustment on the part of the individual and economic stress (Fig. 43)

3. 1. 5 Prevalence, Control and Prevention of the Major Diseases:

It is necessary to look at certain main causes of mortality with greater care.

3. 1. 6 The Major epidemic diseases:

Pestilential diseases are smallpox, plague, cholera, yellow fever, typhus and relapsing fever.

BIRTH, DEATH AND INFANT MORTALITY RATES IN INDIA

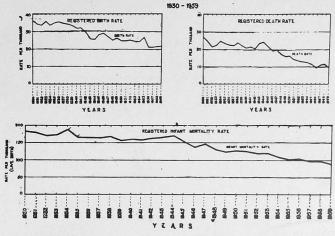


Fig. 37

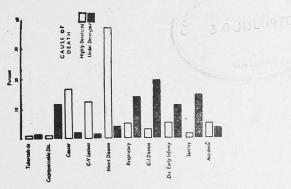
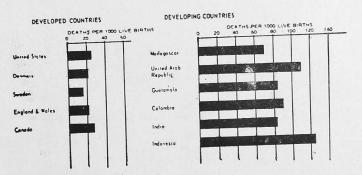


Fig. 38 Cause of death.



INFANT MORTALITY

Fig. 39

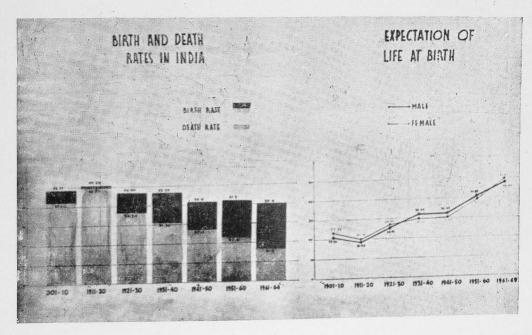


Fig. 40

India Pakistan Ceylon Burma	1 Area 1265 365 25 262	11 Pop'n 382 82 .9	111 Dens. 302 219 320 72	1V Energy 120 50 100 30	V Steel 7 4 6	VI Newsp. 7 9 36 8	7100 13,000 5300 8400
Indonesia	575	82	143	100	3	7	71,000
Philippines	115	22	191	150	13	19	8500
Viet Nam	127	26	204	40	3	?	61,000
Thailand	198	20	101	40	9	4	6800
Malaya	50	6	120	390	36	15	8000
Formosa	14	9	640	460	15	33	2400
Korea	85	28	300	150	?	?	4200*
Japan	143	89	602	990	82	397	1000
U.K. (for comparison)	94	51	543	4870	367	-570	1100

* South Korea only.

- 1. Area in thousands of sq. mls.
- 11. Population in millions in 1955.
- 111. Density of population in persons per sq. ml.
- Estimated consumption of commercial sources of energy expressed in terms of coal, kilograms per inhabitant in 1955.
- v. Apparent consumption of steel, expressed in terms of crude steel, kilograms per inhabitant in 1955.
- Number of copies of daily newspapers in circulation per thousand inhabitants.
- vii. Number of inhabitants per doctor.

Fig. 41

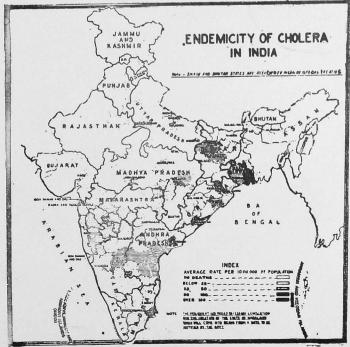


Fig. 44

EXPECTATION OF LIFE AT 10 YEARS' AGE FOR EACH SEX IN DIFFERENT COUNTRIES FEMALE MALE 60 50 IN YEARS EXPECTATION OF LIFE 30 10 0 CEVLON JAPAL. NON S C.5.X EVLOU Fe F1 JAPAN 1963 3-876

Fig. 42

COUNTRIES

- 11 THE

DIFFERENT

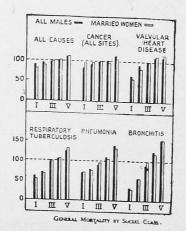


Fig. 43

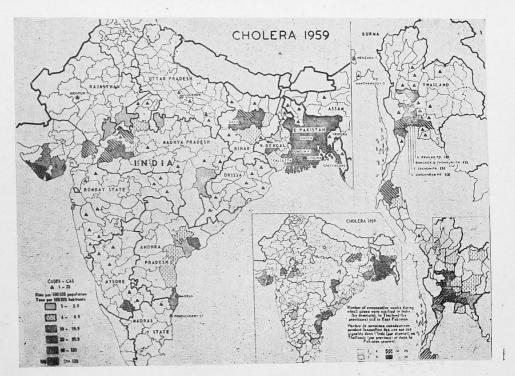


Fig. 45

Per capita product (1950) and consumption of energy (1952) in selected countries

	Per co	luct	Fnergy consumption per capita (megawatt-hours)		
	A	B			
U.S.A.	1810	1810	62-1		
U.K.	1136	954	36.6		
U.S.S.R.	1070	_	21.0		
France	968	764	18.8		
Italy	548	394	5.5		
India	_	_	2.7		

Per capita products in column A are valued by U.S.A. prices and in column B by European relative prices. Figures on energy consumption include firewood and oil shale consumption.

Fig. 46

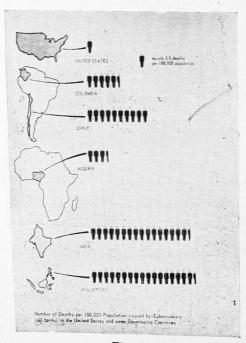


Fig. 47

India and Pakistan are the two most important endemic areas of cholera. One disturbing feature of cholera like diseases is due to a special micro-organism, the EL-Tor Vibriois whose existence has been known for over 60 years. Several species of Rickettisial organisms, normally conveyed from one host to another by lice, fleas, ticks and mites, cause various types of typhus fever. They are probably the most easily controlled diseases by modern insecticides (Figs. 44, 45 & 46).

3. 2. 1 Control of communicable diseases:

Malaria: India has taken up the eradication programme, which is a global programme, started by the World Health Organisation. Apart, altogether, from the specific results of malaria eradication operations, which can be seen in increased work output, improved agricultural achievement, lengthened expectation of life and higher rates of population increase. There is one noteworthy outcome of these activities. Very often the administrative machinery which has been devised, and the manpower recruited for the purpose are available for other public health purposes, such as smallpox vaccination, local censuses and health education. These can thus become the constituents, of a very comprehensive public health service.

3. 2. 2 Tuberculosis: Tuberculosis, which so recently was numbered amongst the captains of the men of death, has shown a declining trend in mortality throughout the past decade. The average death rate from tuberculosis from all countries whose records are available to the World Health Organisation was about 58 per 100,000 in 1950 and had fallen to 19 in 1958 which is due to advances in the general standard of nutrition, housing, sanitation and economic status as well as the beneficial results of the earlier ascertainment of cases of the disease and their organised institutional treatment (Fig. 47). The

Madras Chemotherapy Centre has shown the value of the domiciliary treatment. More than 90% of advanced cases of the disease living under socio-economic conditions which are far from favourable, are being treated at a small fraction of the cost of maintaining them in hospitals. (Fig 48)

In certain countries, however, it continues to be a major cause of death. The morbidity data indicated a declining trend, which may be attributable to the efficiency of the case-finding, the success of chemotherapy and protective and prophylactic value of vaccination with BCG. Under these circumstances, it is necessary to obtain information about the prevalence of tuberculosis in the community by local epidemiological studies. On the basis of these data, control policies will have to be formulated.

The triumphs of modern medicine appear likely to facilitate the treatment of certain conditions in the patient's home. Tuberculosis is one of the conditions which can be dealt with in this way.

The eradication of tuberculosis in contradistinction of its control, has recently been advocated in certain quarters. Nevertheless, tuberculosis in a community can be highly pervasive and persistent infection and therefore, not easy to track down and eliminate. But a progressive reduction of the disease can be expected over the next decade.

3. 2. 3 Leprosy: The number of persons suffering from Leprosy throughout the world was placed at between 10 to 12 million. Leprosy is still a universal disease and perhaps only 20% of its victims are receiving treatment, despite the fact that treatment with sulphones has been available since 1945. The new policy advocated by WHO Expert Committee in 1953 involves a more intensive programme of case-finding, leading to early diagnosis,

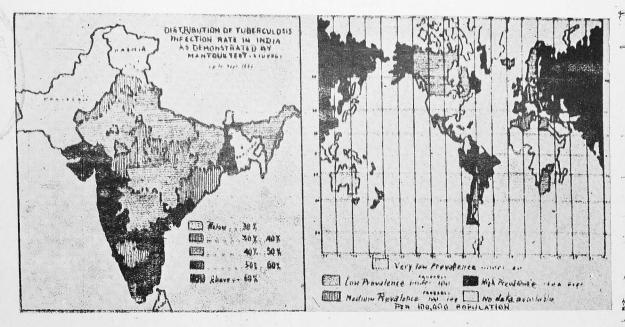


Fig. 48
Distribution of Tuberculosis in India and its prevalence throught the World.

INCIDENCE OF LEPROSY (1958)

In 1955, the Government of India appointed a Committee to study Leprosy problem in the country. The Committee estimated the incidence of Leprosy in the country with the help of the reports on Leprosy surveys conducted from time to time in different parts and also from personal knowledge of prominent workers in the field. This map is based on the estimates of that Committee. The estimates are given on district or regional basis, but it has been revealed by the subsequent surveys conducted as a part of the Leprosy Control Programme that there are smaller pockets where there is very high incidence of the disease. The estimates given by the Committee were as follows:

Şi	totes								No. of estimated cases of Leprosy	Estimated rate of prevalence per 100,000 of population	
l. Aı	ndhra Prado	esh			•	•			83,259	460	_
2. As	ssam	•			٠				39,540	440	
3 Bi	har .		•		٠				122,788	300	
4. Bo	ombay								104,415	330	
5. H	yderabad								93,326	500	
6. M	adhya Prad	esh							84,722	300	
7. M	adras								295,410	840	
8. M	ysore								1,700	17	
9. 0	rissa			•					80,984	750	
10. Pu	unjab								1,451	in .	
11. U	ttar Prades	h							80,030	140	
32 V	Vest Benga)							341,885	1.410	
13. M	lanıpur								+	+	
14. Ti	ravancore-(Coch	ın						35,000	*	
(15 T	ripura								2,000	310	
16. D	elhi .							•	+	+	
17. R	ajasthan								+	+	
18. Ja	ımmu & K	ashm	ir						.· +	+	
19. H	limachal Pr	ades	h	•	•		•	•	7,300	780	

Note: - + Information not available.

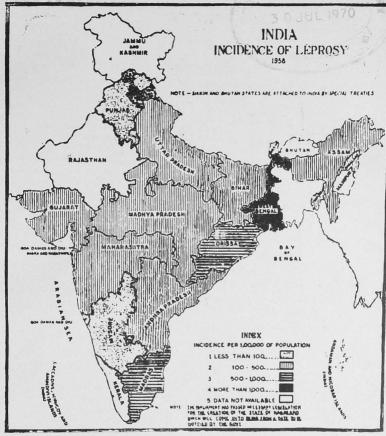


Fig. 50

MORTALITY FROM CARDIOVASCULAR DISEASES, PER 100 000 POPULATION

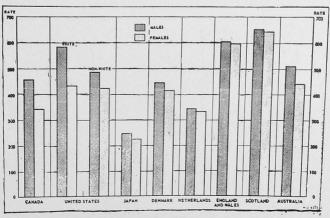


Fig. 51

the registration of cases and mass treatment with sulphones. Selective and temporary segregation is only required for infectious cases. The control of leprosy will continue to require the expenditure of much time and money, and the date of its eradication as a disease is still remote (Figs. 49 & 50).

Certain potentially useful administrative tendencies are to be seen in the integration of leprosy campaigns in the general health services, and in the special interest in the protection of child contacts with Chemoprophylaxis. Eradication of deformities characteristic of the disease being attended to and also rehabilitation of patients is also being taken up on a wide scale. These efforts, however, should not take precedence over intensive case finding and early treatment, which are ultimately the most effective means of obtaining both clinical and social improvement.

These three diseases - malaria, tuberculosis and leprosy - have all been and are the objective of mass campaigns directed at their control or eradication. The social benefits of the control or eradication of the disease are beginning to accrue. In the field of public health practice, the campaigns are promoting an association, if not integration, of preventive and curative medicine.

3. 2. 4 Other communicable diseases:

Yaws: This is a disease highly amenable to organised mass campaign. In the world some 200 million are exposed to the risk of infection with endemic treponematoses, particularly yaws, and there are about 50 million active cases in the world at the time and many more domiciliary and other contacts susceptible to infection. The disappearance of yaws in such communities has not only improved the health of the people, but also added to their well-being, increased their productive potential and has often established their faith in the efficacy of the health services and led to enthusiastic participation in the extension of these services.

Venereal diseases: The incidence of syphilitic and gonococcal infections reached a post-war peak in most of the world in 1946-1948. Since then the disease is on the decline. Again there is a great rise in recent years due to its high incidence and use of oral contraceptives.

Trachoma: Trachoma is one of the most universal diseases and no continent is exempt from its ravages. 1/6th of the world population or approximately 500 million persons are its victims, and the socio-economic consequences of its prevalence are enormous. In some countries, 1% of the total adult population are totally blind, more than 10% so blind that they are incapable of any work for which sight is required and another 10% have serious impairment of vision. Many countries have taken up this trachoma control programme. Control programme must therefore take into account not only ascertainment and treatment. but also the general sanitary situation, which is often reflected in the size and vigour of the insect population, the socio-economic and educational level of the community and the availability of good maternal and child health services. A concentration of effort upon the pre-school child is probably the most rewarding approach to the solution of the problem. Trachoma is one of the diseases in which child care, education and insistence on the elementary principles of hygiene can yield most gratifying results.

Bilharziosis: It is widely distributed throughout Africa, the Caribbean, parts of Central and South America, China, the Phillipines and Japan. It is also to be found in Iraq, Iran and the Arabian Peninsula and a small area in India has shown its incidence.

Filariasis: This is a disease of great social importance because of the disablement and disfigurement and blindness it causes. This is associated clinically with elephantiasis and is conveyed to human beings by mosquitoes. In Africa the blinding filariasis onchocerciasis, several varieties of simulium flies act as vectors. The methods of control are closely related to those used for malaria, but complementary measures, which include chemotherapy, may be necessary.

Trypanosomiasis - Not found in India.

Virus diseases: Amongst the acute diseases common to both the developed and less developed areas are some of the virus infections, of which influenza and poliomyelitis may be selected as examples. The use of cultures made of live tissues has changed the face of virology in little more than a decade. Many viruses have been cultivated and harvested, and making of effective prophylactic vaccines against such diseases as influenza and poliomyelitis has become possible on a large scale.

Influenza: In 1957, epidemic occurred at a time when the mass manufacture of influenza vaccine had become a practical proposition, although ultimately its use was restricted by the rapid march of events. The epidemic also gave the WHO influenza programme an opportunity, through its worldwide network of laboratories and observers, to keep up with the spread of the epidemics, and to make available the first strains of the new virus from which the vaccine has been derived.

Poliomyelitis: The virus of poliomyelitis was widespread throughout the world. The maximum rates of the paralytic forms of the disease were recorded in the 0-4 age group. Epidemics were rare events in all but the most isolated communities because of the prevalence of the early acquired immunity. But with improved sanitation and higher standards of living, the age of the first exposure to the virus gradually rose, and epidemics of the disease began to appear in the age groups that were previously protected. In advanced countries, with the improvement of sanitation etc. there is an apparent increase of incidence, but with the production of the polio vaccine and immunization of large population, the incidence of the disease is low. Nevertheless, the achievements of the decade are great and without parallel. The disease, which in previous decades had become a formidable and treacherous destroyer of human life, happiness, physical capacity and economic security is now under control. Live oral poliomyelitis vaccine is used all over the world. In India, the polio vaccine will be manufactured in Coonoor and it will be in the public health workers' hand in a year's time.

3 3 Chronic and degenerative diseases like cancer and cardiovascular diseases: In general terms, these two diseases are responsible for from one-quarter to even more than one-third of the total mortality. Malignant neoplasms are most significant and most common causes of death and their frequency ranges from 14 to 22% of all deaths. Vascular lesions affecting the central nervous system rank third, and their share of the total mortality is between 11 and 16%. (Accidents are the next most frequent cause, that are responsible for from 4 to 7 per cent). There is a rising trend over the past decade. For the developed countries, they represent the major fields of mortality which hinder the further extension of the life span.

Cardiovascular diseases: The diseases that have achieved the greatest notoriety are hypertension and arteriosclerosis which includes coronary thrombosis. The disease is said to be less frequent among Bantus, Nigerians and Japanese. (Fig. 51). There is no exact information. It is in the field that, under WHO sponsorship, national research organisations are collaborating to obtain the comparative data on which to base the further funda-



Fig. 52

NUTRITIONAL DISEASES IN INDIA.

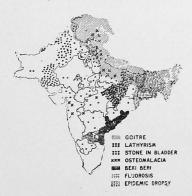


Fig. 53

mental research. Medical science has been active in providing appropriate remedies for these conditions, but what is needed is a more positive approach to their prevention, not necessarily by any continuing prophylactic meditation, but by more rational modes of living.

Cancers: Cancer causes some two million deaths annually in the world and at any one time, five million persons are suffering from the disease or have suffered The mechanisms which from their manifestations. transform an innocent cell into a malignant one and thus set on foot the cancerous processes are still, in the main, hidden from us. There are certain physical, chemical and biological factors which affect the location of cancers in the body and their characteristic distribution amongst populations in various parts of the world. There is a rising incidence of lung cancer and it has become a major health hazard in many countries. Skin cancers are common in areas of intense sunshine. Cancers of cervics and cancers of the cheek etc. are common in India. There are certain potent carcinogenic factors at work. One of these is excessive smoking of cigarettes, which has been statistically associated with the disease in a number of studies. Atmospheric pollution has also been accused as a causal factor. Epidemiological studies of the incidence of the disease are required. In the broad field of cancer prevention, reliance is placed on the removal of carcinogenic hazards in industry; on the control of ionizing radiations; on constant vigilance about the presence of noxious carcinogenic substances in food additives, pharmaceutical and cosmetic preparations and on efforts to limit the general pollution of the atmosphere, and also on the reduction of cigarette smoking (Fig 52).

3.4 Mental Health: The mental disorders do not figure largely in death returns, but affect the national health statistics. Changes in the field of mental health have gathered momentum in the last decade. The mental

hospital has always had two purposes, one the custodial and the second therapeutic and over the years a balance has been struck between them. But recent advances in psychiatry itself and in the use of physical and chemotherapeutic methods of treatment have disturbed the equilibrium and, in consequence, the therapeutic functions and achievements of the institutions have begun to yield somewhat unexpected results. The effect of these measures has enabled the mental hospital to open its doors both literally and figuratively. The open door has become a revolving door through which patients go and return voluntarily, if necessary, for short-term treatment. The domiciliary treatment and surveillance of patients and their integration with the life that surrounds them will require acceptance and understanding on the part of the community as a whole. The existence of this modern approach has been perhaps most marked in the United Kingdom, where it is envisaged that the logic of the present therapeutic policies should lead, say in 15 years, to a reduction of some 40% of the existing mental hospital accommodation. same new concept of community mental care has also found acceptance in many developed and developing countries. Mental ill health is not limited in its incidence the developed countries. It occurs universally, although information regarding both its frequency and the types of its manifestations in the less developed countries is only now being ascertained with any degree of accuracy by the use of modern epidemiological methods

3.5 Accidents: In the list of chief causes of death, accidents are having a high place. The motorist traffic is largely to blame. For every fatal accident, there are many non-fatal ones which cause prolonged or even permanent disability. Statistical information on the age distribution and causation of accidents is more readily available and more reliable for the economically

developed countries. In the first year of life accidents are the outstanding cause of death. Between 1 year and 4 years, they are, on an average, the cause of 30% of all deaths and between 5 and 14 they are responsible for 38% of the deaths. Accidents remain the most frequent cause of death between the ages of 15-44 in many countries. Except at the extremes of life-in infancy and in old agethe male is always more accident-prone than the female. Accidents are universal in their incidence as they are diverse in their causation.

Falls are the second most common cause of accidental deaths in the same countries and the female rates generally exceed those for male. Accidental drowning appears to be third in accidental deaths; as might be expected, the death rate for males is much higher than for females.

- 3. 6 Health Protection and Promotion: Man is able to improve the environment in which he is placed, if there are enough financial resources. This renewal of interest in physical surroundings comes not only from a desire for improved amenities, but it is also a rediscovery of the importance of the environment to health. Many countries suffer from heavy burden of illness due to the bowel diseases and the common infections of the respiratory tract. With rising standards of sanitation, many countries find themselves faced with new hazards to health arising from industrialization and urbanization.
- 3. 6. 1 Environmental Sanitation: A good sanitary environment should include good water supply, sewage and refuse disposal, clean air, radiation protection, housing and town planning, control of overcrowding, noise prevention, vector control and food hygiene. The adequacy of the water supply, both in quantity and quality and its protection from pollution by excremental fouling or industrial wastes, remain the paramount desiderata. International Bank for Reconstruction and Development

has given assistance to several countries, (for example Jordan). The United Nations Special Fund has also provided funds for engineering studies of long-term construction plans for water supply and sewerage in the Calcutta metropolitan district. In Kenya also such assistance is being given. The Calcutta Metropolitan Organisation is getting international assistance for a composite scheme of water supply sewerage, town planning etc.

When a water supply adequate for consumption and trade purpose is made available, there remains the question of sewage disposal. This is a matter which many communities tend to shelve, because of the capital outlay involved, but it is likely to become more and more urgent under the pressure of urbanization.

Atmospheric pollution: The positive approach to the control of air pollution includes site selection for factories and zoning of industry; introduction of equipment which will within limits, deny undesirable substances access to the air; selection of appropriate fuel and its utilisation and legislation directed to ensure clean air. Great work has been done in other countries. In India attempts are being made, but still there is great necessity in the big cities.

Radiation: The problems arising from the effect of ionizing radiations and the industrial use of atomic energy require immediate attention. The problems included the effects of radiation on heredity and the obvious desirability of reducing radiation hazard wherever possible before they became a direct danger to man's health. Medical radiation is one of the principal sources of man's radiation exposure, particular attention was given to the risks inherent in various medical radiological procedures, and to advise on their mitigation.

Under the auspices of the several specialised agencies like the International Atomic Energy Commission, an intensive activity in research is noticed in the exchange of information and in the training of personnel. A coordinated planned approach to the solution has yet to be widely practised.

- 3. 6. 2 Urbanization and Health: Many countries of the world today are faced with problems created by rapid concentration of people, production and services in towns, cities and metropolitan areas. Some causes of ill-health are more characteristic of the countryside than of the cities. They can be brought to the cities by immi-A more detailed study of the social etiology of these conditions reveals that they are essentially the problems which arise from or are associated with inadequate water supplies, unhygienic housing conditions, poor selection of residential and industrial sites and atmospheric pollution, lack of educational facilities, recreational facilities, etc. Technological and psychological preparation is necessary, for the health staff will be working very often in fields traditionally foreign to them, and will have professional and administrative associations with men and women trained in other disciplines. The problems of urbanization are great and will inevitably be greater, but they can only be solved by a combined operation of this kind.
- 3. 6. 3 Housing: Implicit in the problem—complex created by urbanization is the question of the housing conditions in which people live-though bad housing is not limited in its incidence to the towns. It can be an endemic disease of urban and rural communities alike. Most of the inhabited dwellings fail to satisfy the requirements for a residential environment. There is still much haphazard planning of housing facilities, and a tendency to lower both building and accommodation standards in order to increase the volume of construction and to stretch the limited investment resources.

Housing problems differ in their health aspects as in other aspects in the various parts of the world.

3.7 Nutrition:

- 3. 7. 1 The direct relationship of nutrition to the health of the individual and the community is obvious. Economic conditions can still cause extreme under-nutrition, but more frequently nutritional disease and deficiency are causally related to traditional dietetic habits or to ignorance. The pathological conditions are:—
 - (1) Classical avitaminosis;
 - (2) Protein deficiency, of which Kwashiorkor is the most serious; and may be associated with and aggravated by;
 - (3) Heavy bowel infestation-Anaemia;
 - (4) Endemic goitre.

The results of dietary surveys, the study of food habits and scrutiny of the components of the national diet are all taken into account by those concerned in the formulation and carrying out of policy. In the prevention of protein malnutrition in infants and children, which is the world's most important nutritional problem, the joint programme of FAO, UNICEF and WHO has been most effective and acceptable to Governments. Its chief purpose is the production of cheap and suitable protein-rich food. The practical results of the programme are perhaps most advanced in Guatemala, where the Institute of Nutrition of Central America and Panama (INCAP) has developed its own particular mixture of vegetable protein, called Incaparina and in Nigeria and Uganda, the mixtures of vegetable protein and skim milk have become well-established. (Figs 53 & 54).

3. 7. 2 Freedom From Hunger Campaign and World Food Programme:

The forecast is that in the current decade that continuing food surpluses will co-exist with continuing food shortages and malnutrition. Therefore, the governments have to continue to increase production, to foster economic and social development in the less developed countries and the United Nations has to take a greater interest.

The fuller utilization of food surpluses for the economic and social development of the less developed regions has thus appeared in recent years as a powerful new supplement to existing bilateral and multilateral aid programmes. A notable new development is the experimental World Food Programme, jointly sponsored by United Nations and the FAO. This is for utilising the surplus food production of the more developed countries to aid economic and social development in the less developed countries, and to combat hunger and malnutrition generally and famines and other emergencies more specifically. Three types of projects are under way by the World Food Programmes:

- (a) Meeting emergency food needs and emergencies inherent in chronic malnutrition including the establishment of food reserves;
- (b) Assisting in pre-school and school feedings; and
- (c) Implementing pilot projects, including the use of food as an aid to economic and social development, particularly in the context of labour-intensive projects and rural welfare.

The Freedom from Hunger Campaign launched by FAO is a great programme for increasing food production, improving nutrition and raising levels of

living of the rural populations. The objective of the campaign is to arouse public awareness of the dimensions of the problem of hunger and the need for accelerating overall economic and agricultural development; and to stress the need for more cooperative action between countries in the food and agriculture sector.

3. 8 Provision of Medical Care: The changing attitude towards disease and increasing recognition given to community responsibility for its care and prevention, is largely responsible for the expansion of medical care facilities. But the increasing cost of medical care influenced the organisational trends which are now becoming discernible. In the more developed countries, the official health departments, with their established interest in environmental sanitation and communicable diseases control, are now entering the field of medical The governments are assuming greater responsibility The governments are taking care of the indigents, war veterans, the aged or the mentally ill. The govern-ments are assuming responsibility for the provision of medical care as an integral part of the general programme of social services and security. In some countries the responsibility assumed by the Government is the full operation of the medical care services like sickness insurance, etc. In others, it is restricted to paying subsidies to voluntary or charitable institutions, or to making statutory contributions to sickness insurance schemes. which have been organized on either a compulsory or a voluntary basis. Whatever the form of governmental intervention, the obvious trend is for more of the taxpayers' money to be used directly in the financing of medical care programmes and the introduction of comprehensive Health Care,

There is increasing interest in pre-paid medical care programmes and voluntary sickness insurance, as exemplified in countries like the United States of America, where it has been becoming increasingly

popular. 75% of the population of the United States is covered by some form of sickness insurance in 1960, as compared to 50% in 1950. Of these 75, 72 included maternity benefits amongst the benefits provided under the social security schemes.

3. 9. 1 Provision of health services and regionalization: In the application of both medical care and public health policies increasing use is being made of regionalization. This concept put into practice in the early thirties of the present century, has gained wider acceptance. The provision of comprehensive system of health services on a regional basis, with the central authority exercising a supervisory, co-ordinating and financial function rather than playing an executive role, is coming into vogue, United Kingdom is a typical example and Czechoslovakia and the USSR are other The concept of integration of curative and preventive health services is also gaining ground. Preventive and curative medicine are not easily integrated in the strictest sense of the term, but their cooperative association is inescapable since they are complementary parts of a whole.

3. 9. 2 Hospital Services:

In certain countries, this association of preventive and curative medicine is finding a focal point in the hospital. The ivory tower of the hospital is beginning to crumble, and a better coordination of the institution with ambulatory and domiciliary medical care is being established. The specialized hospital for the treatment of a disease entity or group is losing ground and many of the services that are provided including those for mental illness, chronic diseases, tuberculosis and the infectious diseases are coming under the wing of the general hospital. In particular, beds for infectious diseases and tuberculosis have become redundant on a very large scale and have been redeployed advantageously.

Even in the field of mental health, there has been a trend to substitute community care for institutional treatment. Hospitals are being concentrated in large towns and remain relatively inaccessible to the inhabitants of the rural areas. The needs of these areas are being met by the development of health centres, usually with a small number of beds Many developed countries are also beginning to organise hospital services in echelon from the periphery to the centre, thereby facilitating economical concentration, in terms of equipment and personnel, of the more specialised forms of treatment.

3. 10 Health Man Power and Availability of Health Personnel: The medical health manpower requires certain norms and the norms vary with the stage of development of the country The physician-population ratio that is applicable to the highly advanced countries may not apply to the less developed countries. In Europe and the Eastern Mediterranean areas, the ratio is 1:410 in Israel and 1:3500 in Turkey. The model ratio is however, about 1:900. In Argentina and the United States, it is 1:730 and 1:800 respectively. India and Ceylon have ratios of 1:4,900 and 1:4,700 which are below European standards. Nepal has a ratio of 1:72,000 and Indonesia 1:40,000. Africa 1:13,000, Ghana 1:21,000 and Nigeria 1:38,000 (Figs 55 & 56). The nursing and para-medical personnel are equally deficient in developing countries. In the past 10 years, the world has seen not only an increase in the number of medical schools, but have been characterized by new ideas and procedures in medical education. Many experiments now in progress have been motivated by the realisation that some steps had to be taken to organize medical curricula in the light of the future needs of the community with regard to medical care. In most countries, the general practitioners must continue to be the backbone of the medical care services. and much thought is being given to the place of general medical practice in the health programmes. A new type

RELATIVE DISTRIBUTION OF NUTRITIONAL DISORDERS

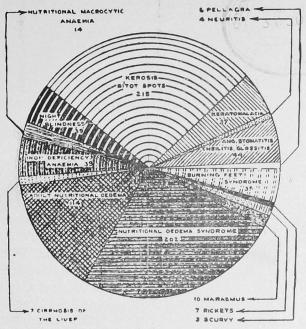


Fig. 54

THE DOCTOR: POPULATION RATIO IN INDIA AT THE END OF THE THIRD PLAN(1966) MAY BE COMPARED WITH THE RATIO PREVALENT IN OTHER COUNTRIES

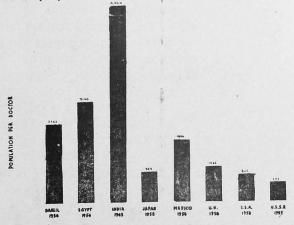
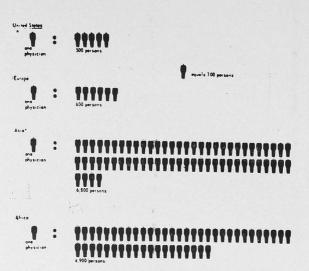


Fig. 55



*excludes China mainland

Projected Physician-Population Ratio in 1975 for Several Geographic Areas, based on the Rate of Physicians Production in 1960

Fig. 56

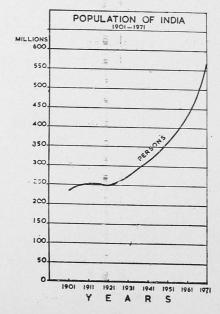


Fig. 57

of general practitioner is needed to deal with the problems of preventive and social medicine, mental health and family pathology. His relationship to the hospital and its specialists and his place in the health team still requires to be worked out.

3. 11 Planning for the health services:

Professional education in the health field is fundamental for the development of health and medical care services, but long-term planning is equally important for the phased evolution. It has as its objective, the social economic and technical development of a country and health fits into this grand design precisely because of the social and economic implications. This was the case with the USSR, where planning was initiated in 1921 and assumed the form of five year plans in 1929. Similarly, in India the development of the health services has been regarded as part of the national and development plans. The Bhore Committee, the Health Survey and Planning Committee, the WHO Expert Committee on Public Health Administration and Planning for Health services have been of great use.

At the national level, the statement of health expenditure does not necessarily give an idea of the extent of the planning or the amount of programming which is in hand.

If the programme of health services is looked at on a world wide basis, the existence of certain of these trends can be detected and an idea can be obtained of what is now regarded by countries as constituting their most important pressure points. On this matter, the budgets of WHO are both informative and instructive. The International Health Conference which met in New York in June 1946 and drew up the Constitution of the WHO agreed that, in order to attain its objectives of "the achievement by all peoples of the highest possible

level of health", the Organization should have twentytwo carefully defined functions, some of which were obviously of greater urgency than others.

4. World Health Organisation's work:

- 4. 1 The first World Health Assembly in 1948 assigned priorities to certain subjects, communicable diseases such as malaria, tuberculosis, venereal diseases, maternal and child welfare, nutrition and environmental sanitation. Most governments which at that time were seeking the assistance of WHO made requests that were in accordance with this listing of priorities.
- 4. 2 In 1950, the general policy of the organisation taking into account the wishes of Governments. began to move away from this somewhat narrow and restrictive pattern, to a system which endeavoured to provide any form of assistance needed by governments for the general promotion and care of health. In this endeavour, the organisation was greatly assisted by the institution in the second half of 1950 of the United Nations Expanded Programmes of Technical Assistance. The departure from the previous stereotyped pattern of assistance was indeed considerable. New projects included, inter alia, such matters as the establishment in association with FAO of a Brucellosis Centre in South Africa, the provision of medical literature and teaching material in many countries, the organisation of Inter American Seminar on Biostatistics, studies of endemic goitre, the preparation of plans for a 200bedded children's hospital and the strengthening of national teaching institutions.

4. 3 Activities of World Health Organisation

- (1) To assist Governments on request.
- (2) To promote improved standards of Teaching and Training and help Medical Man Power.
- (3) Information

- (4) To promote co-operations
- (5) Maternal and Child Health
- (6) Menual Health
- (7) Medical Research Co-ordinations
- (8) Co-operate with other UN Agencies

4, 4 W. H. O. at work

- 1. Central Technical responsibilities
 - (a) Epidemiological services
 - (b) International Standards
 - (c) Dissemination of knowledge.

2. Services to Government

- (a) Practical aid with short term objectives
- (b) Practical aid with long term objectives
- (c) Consultant advice on specific topics
- (d) Control of Communicable Diseases
- (e) Education and training
- (f) MCH services and Health Aspects of Family Planning
- (g) Nutrition
- (h) Mental Health
- (i) Rural Health Services
- 4. 5 By 1960, the scope of the Organisation's interest included radiation and isotopes and the organisation of courses in radiation protection; the more detailed survey of public health administration, with special emphasis on rural health units; the organisation of medical care in general, and more specifically the study of hospital statistics and of hospital administration. The range of interests was also broadened to include occupational health, the provision of health laboratories, the epidemiology of the mental disorders and cardiovascular diseases, as regards both causation and surgical treatment. The whole gamut of problems concerned with professional training in

the health field was constantly under review. The WHO Plan for Development Decade includes drawing of National Health Plans, development of health Manpower, Control of communicable diseases and establishing baseline indices of current health situation in each country, etc.

The great new therapeutic discoveries, the development of techniques for the cultivation of viruses which brought the control of poliomyelitis within the bounds of practical possibilities, and the combined triumphs of surgeon, anaesthetist and physiologist which enlarged the scope of cardiac surgery are some of the great advances. Other trends in research were also beginning to manifest themselves. The Ministry concerned with the welfare of war veterans might institute an inquiry into the effect of lower-limb amputation on longevity and nutrition.

4. 6 World Medical Research

In 1958, the WHO began to participate in research fields. Its entry was facilitated by a special grant of 300,000 from the Government of United States. The WHO Medical Research programme has advanced so much that it is now interested in the establishment of a Special Institute for International Medical Research Recently, the World Health Assembly has approved research in epidemiology and communication science.

4. 7 These trends in planning, programming and research are of importance in relation to the United Nations Development Decade. Measures designed to accelerate the social and economic advancement of member States which aim at elimination of illiteracy, hunger and disease, which seriously affect the productivity of the people of the less developed countries and those directed to promote education in general and vocational and technical training in the developing

countries, in the fields of health. In addition, it advocated the intensification of research and the progressive introduction of statistical facilities.

The policy of WHO on these matters has sought to attain the following objectives.

- (a) Preparation of national plans for the development of public health programmes for the Decade, and the coordination of these with the other related plans in the social and economic fields;
- (b) Concentration upon the education and training of professional and auxiliary staff which would strengthen the health services with specific and measurable targets appropriate to the predetermined needs;
- (c) Establishment of a small number of indices of the current national health situation, as baselines from which to gauge the extent of progress towards certain goals already set as target figures;
- (d) Appropriation of additional national resources for control of disease and health improvement.

In most countries, the attainment of these objectives postulates increased allocation of the national resources to the health sector. Information regarding the proportion of total governmental funds which is donated to health services is incomplete. The distribution between the several parts of health services of the funds provided also varies and depends on the local situation and on the relative degree of priority and urgency which may be assigned to each part. There is evidence that much more thought is being given to the study of these questions and WHO continues to explore them through its expert committees and to give guidance and assistance wherever it is sought.

5. Health in Asia

Spectacular achievements in health and the resultant decline in mortality have been the principal factors in the unprecedented increase of population. This impressive record of achievement must, however, be balanced against the fact that health levels are still amongst the lowest in the world. There is great shortage of health manpower. The quality of medical education suffers from (a) inadequately trained teachers, (b) ill-equipped medical schools and laboratories, and (c) outmoded medical curricula. Medical facilities are concentrated in urban areas. Doctors do not want to go to villages and this is a major limiting factor in rural health. The problems of rural water supply and urban sewerage have assumed even larger proportions. The traditional adherence of large groups of the rural population to animistic beliefs and their general distrust of modern medicine, and the disputable medical competence of traditional medical personnel such as "herb doctors" as well as the problems arising from shortage of financial resources available for health and the inadequacy of administrative machinery for health at the State and local levels add to the difficulties.

In China, efforts to train and improve the status of traditional medical personnel as one means of overcoming the shortage of modern medical personnel, and campaigns to enlist popular participation in health and hygiene improvement have greatly assisted in improving the health of the people of that country. Advance in health in Asia has also been limited by poor housing conditions and education. The low health levels are directly related to the low levels of economic development.

Nutrition:

The population subsists mainly on cereals and pulses and is far below the accepted minimum requirements. Two-thirds of the world population suffers from malnutrition and most of the population is located in Asia. India, Indonesia and Pakistan are worse off than some of the smaller countries. Extensive food shortages have been reported in China because of crop failures.

Education:

A marked expansion of education has occurred, unprecedented in Asian history, with almost double of school enrolment at all levels within 10 years. However, rapid expansion has brought problems in the wake. The quality of education has suffered. The schools are not adequate and equipment is poor. There are no teachers. Wide urban-rural, sex and other differences in educational opportunities continue to exist. The hopes placed in the new stimulus given to technical and vocational education have not generally been realized.

6. Health Situation In India:

India is a federation of 16 States and ten Union Territories. It is the seventh largest and the second most populous country in the world.

6. I Central and State responsibilities, devolution of Powers in health:

Organisation of Health Services

Health is a transferred subject under the Constitution of India and as such the health matters are the concerns of the individual States. The Central Government has the sole executive responsibility for subjects included in the Union List, and concurrent legislative responsibility, with the States for the subjects contained in the concurrent list. The important subjects which are dealt with by the Central Government pertain postgraduate medical education; the promotion special studies in medicine and nutrition; Union agencies and institutes for research; the health scheme for Central Government servants and Members of Parliament; Port Health and quarantine (sea and air), seamen's and marine hospitals and hospitals connected with port quarantine; port and airport health organisation; medical examination of seamen; International Sanitary Regulations and India's relations with the W.H.O., etc., higher training abroad in medical and allied subjects; assistance under the Colombo Plan and Point Four Programme; Town and Country planning at the national level. matters connected with 'Health' are State Government responsibilities and the Central Government's function in respect of matters in the State list is to determine broad policies and planning through the Central Health Council, collection and exchange of information, coordination and giving of expert technical assistance and advice on matters relating to hospitals, medical education, drug control, prevention of food adulteration, Local Self Government and Water Supply Schemes and other subjects of country-wide concern such as control of epidemics.) With implementation of the Union Territories Government Act in the territories of Himachal Pradesh, Manipur, Pondicherry, Tripura, Goa, Daman and Diu, the Centre is now directly responsible only for State subjects in the territories of Delhi, Andaman and Nicobar and Leccadive, Minicoy and Amindivi Islands. (The Central Government also administers a number important training institutions and other establishments situated in various places.

Mention has been made above of the Central Council of Health which is the highest body to confer on common problems and plans of Health. This was set up in August, 1952 under Article 263 of the Constitution of India. This consists of Union Minister for Health as Chairman and Health Ministers of all the States as members.

The Ministry of Health comprises the secretariat and the Directorate General of Health Services which is the department concerned with technical advice to the Central Government and supervision of its technical establishments and personnel in the Union Territories and elsewhere in India. Two charts showing the administrative organisation of the Ministry and the Directorate General of Health Services are enclosed.

Following are the important events which took place during 1961-64. The Health Survey and Planning Committee set up in 1959 to review the progress of health projects and recommend the line of future action, submitted its report. The Malaria Institute was expanded into the National Institute of Communicable Diseases in 1962. Three new institutes viz. National Institute of Health Administration and Education, Central Family Planning Institute and All India Institute of Logopedics were set up during the period under report.

6. 2 Major Social, Cultural and Economic developments:

According to 1961 Census India's population is 43,90,72,582 (Fig. 57). 82% of this live in villages and 18% in cities and towns. Although the 1961 urban ratio of 18% is the highest ever, the country continues to be pre-dominantly rural. The 1961 Census shows that 24.0% of India's population is literate. It appears that educational facilities have expanded a lot as the corresponding figure for 1951 was 16.6%. The literacy among males is 34.4% and among females is 12.9% according to 1961 Census. India's population is constituted by 83.5% Hindus, 10.7% Muslims, 2.44% Christians, 1.79% Sikhs, 0.74 Budhists, 0.4% Jains and 0.37% others.

India is a country with a developing economy, rich in natural resources and manpower. Her resources, however, as well as material, are capable of fuller exploitation and more intensive utilisation. The Indian economy is still predominantly agricultural; about half of the country's national income is derived from agriculture and allied activities which absorb nearly three-fourths of its working force. Only about a fifth of the national income originates from the processing and manufacturing sector including mining. The remaining portion of national income is almost equally shared between commerce and transport and other services. Since Independence the aim has been to accelerate the pace of industrial development, increase agricultural productivity and achieve all round progress under national plans. Net investment in the economy has been arising in recent years. At the end of the Second Plan it amounted to about 11 per cent of the national income.

In common with other underdeveloped countries the levels of national income and per capita income in India are very low and for several decades the Indian economy was almost stagnant, developing at a rate barely exceeding the growth of population. Over the past decade, however, India's net national income has advanced at an average rate of 3.35 % per annum the increase in aggregate national income being about 33.5 per cent. At constant prices, national income in 1963-64 is estimated at Rs. 17,200 crores and per capita income at Rs. 371. The corresponding figures at constant prices (1948-49) is Rs. 13,910 and Rs. 300. As population has been increasing during the last decade at about 2 per cent per annum, the increase in income per capita has been 1.23% per annum. The low rate of economic development would have to be substantially stepped up and special efforts made to reduce the rate at which the population is increasing if the level of living of the bulk of the population has to be significantly raised.

Firm data on aggregate consumption expenditure in the Indian economy are not available and only a broad idea of the likely trends can be obtained by pooling together the information elicited by the National Sample Survey and other sources. It has been found that consumption expenditure per person during the period of thirty days is about Rs. 20 in rural and about Rs. 27 in urban areas. As is expected the proportion of expenditure on food items to total consumption expenditure remains very high in India. Further, given the low consumption standards, even in respect of the bare essentials, it is inevitable that as per capita income increases the bulk of the additional income should be devoted to enlarging the intake of necessities like food, clothing and so forth.

Employment situation is not satisfactory in the country. It is roughly estimated that at the end of Third Plan (March, 1966) there will be 1.20 crores un-employed persons. Another 1.5 to 1.8 crores would be under-employed.

It may be seen that per capita availability of food grains increased from 15.1 ozs. per day in 1955 to 17.5 ozs. in 1964.

A number of social security measures for the welfare of workers have been in operation in the country during the last decade or so. Two major schemes under this head are the Employees' State Insurance Scheme and the Employees' Provident Fund Scheme. The former provides for medical care and treatment, sickness and maternity benefits and compensation for employment, injury, etc., while the latter provides for old age and compensation for dependents in the event of the death of worker while in service At the end of 1964 the coverage of the E.S.I. Scheme was 29.35 lakhs workers and that of E.P.F. Scheme was 40.12 lakhs workers.

Data collected through National Sample Survey shows that in rural areas about 73 per cent of the households live in 'Kucha' and about 2 per cent in 'Pucca' houses; in urban areas such houses are about 25 per cent and 8 per cent respectively, the remaining ones both in rural and urban areas being of the mixed type, i.e. partly 'Kucha and partly' Pucca! Density per room in rural areas comes to the 2.4 persons, and in urban areas 2.2 persons; average floor area per person in the rural and urban areas is 77.8 and 69.5 square feet respectively. The condition in metropolitan and industrial cities and capital towns is much worse. House facilities such as 'tap water' are largely unknown in rural areas; people mostly depend on wells ponds & tanks for drinking water. In urban areas 47 per cent of the households do not have tap facilities and 30 per cent depend on wells, tanks and ponds.

6. 3 National Health Planning: In 1950 Governmenof India set up a well organised body known as Planning Commission to formulate national plans for the developt ment of the country. These plans are executed both by State and Central Governments. India has successfully completed two Five Year Plans (1951-61) and is actively working through the Third (1961-66).

The broad objectives laid down for the Third Five Year Plan on 'health' are the progressive improvement in the health of the people through the development of the public health services and controlling the rate of population growth through Family Planning. The plan outlays for health programme during First, Second and Third Plans are respectively Rs. 140 crores, Rs. 225 crores and Rs. 342 crores. The percentages of the outlays to the total plan provision during the three plans were 5.9, 5.0 and 4.3, respectively. The National Malaria Eradication Programme, the Smallpox Eradication Programme, Control Programmes in respect of other communicable diseases notably T.B., Leprosy, Trachoma and Goitre,

the establishment of Primary Health Centres all over the country together with the setting up of 85 medical colleges, bringing the total admission capacity to over 11,000, stepping up of training facilities for nurses and other paramedical personnel, the increase in hospital beds to about 2,40,000 and a vigorous drive for improving rural and urban water supplies, are the main features of the implementation of the Third Plan. Simultaneously the Family Planning Programme has been intensified and extended. An overall assessment of the health plan has shown that while the targets in respect of medical care (beds, hospitals, Primary Health Centres etc.) are expected to be fulfilled and the targets in respect of several categories of technical manpower like doctors nurses, health visitors, pharmacists, etc., also fulfilled or exceeded, there will be some shortfalls under auxiliary nurse-midwives and dais. It is expected that the number of hospital beds will come upto nearly 0.5 per 1,000 population and the number of doctors will improve from 1:6000 to 1:5800. The water supply and sanitation programme has been affected by several difficulties including the absence of advance action for the procurement of material required for the implementation of these schemes. By February, 1965, there were 10239 Family Welfare Planning Centres in the country which includes 8869 in the rural areas. In addition to these clinics, 1743, sterilization units have been established. Apart from establishing Family Planning Institute at Delhi, other training and research activities were intensified.

6. 4 Control of Communicable Diseases: Despite some of the big achievements in the health field, communicable diseases still constitute the major health problems in India. From the records available upto 1962, 54% of the deaths are caused by communicable diseases. Recognising the need of control of communicable diseases, a beginning was made in 1953, when a nationwide Malaria Eradication Programme was launched.

Under this programme at present 393.25 units each covering a population on an average of 1.2 million are functioning. Out not these, 203.31 units have already entered the maintenance phase and the rest are either in consolidation or attack phase. The mortality rate due to malaria per 1,000 population has come down from 8.79 in 1944 to 0.29 in 1962. There has also been an overall reduction of more than 95% in spleen and parasite indices throughout the country during 1960-61 as compared to 1953-54. The proportionate case rate has also come down from 10.8 in 1953-54 to 0.23 in 1963-64. There has been considerable progress in eradication of Malaria and about 80% population are free from Malaria.

Tuberculosis:

There are about 60 lakhs patients suffering from Tuberculosis in India, and with 5 lakh deaths annually due to T.B. Altogether 182 B.C.G. teams were working during 1964. By the end of the 1964, 216 million persons have been tuberculin tested and 78 million have been vaccinated. Nearly 49% of the population has been covered so far. By the end of 1964, 414 T.B. Clinics and 150 T.B. Hospitals and sanatoria were functioning in the country with a total bed strength of 34,517.

Under the National Smallpox Eradication Programme, which was launched in 1962, 154 units were working in the entire country during 1965 and nearly 86% of the population was covered. Smallpox eradication made good progress. The maintenance phase is engaging the attention of the Government.

Filariasis is yet another major public health problem in India. Recent surveys have revealed that a population of about 122 million lives in areas with varying degree of filarial endemicity. Under the National Filaria Control Programme 47 control units were operating during 1964. Venereal diseases control has however made good progress.

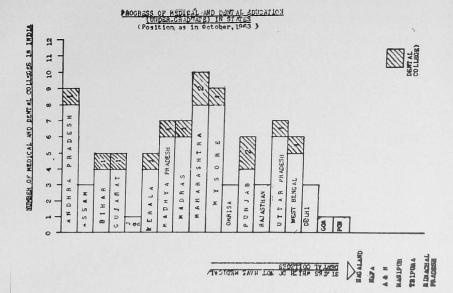
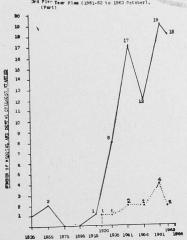


Fig. 58



(Under-graduate 1935-1963)

Total number of Medical Colleges in India in Oct. 1963; 78: Total number of Dental Colleges in India in Oct. 1963; 13: let Five Year Plan(1861-52 to 1865, 56) and Five Year Plan (1965-76 to 1966-61). The Five Year Plan (1965-62 to 1963 October).



(FIVE YEAR PLANS)

Fig. 59

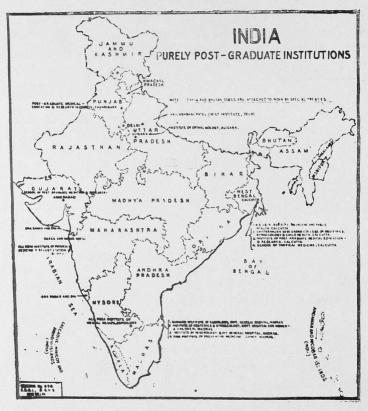


Fig. 60

Trachoma is one of the commonest causes of blindness. It is responsible for 60-80% of preventable blindness. National Trachoma Control Programme was launched in March 1963. At present 56 field units are operating in 7 States.

The estimated number of leprosy cases in India is 2.5 million, of whom about 20% are infectious. In connection with the Leprosy Control Programme, 166 Leprosy Control Units and 487 Survey, Education and Training Centres have been established by the end of 1964. The total population covered by all types of centres under this programme was 38.5 million at the end of 1964.

6. 5 Education and Training of Medical and Allied Personnel:

There has been a considerable expansion of educational facilities in the field of medicine. At the end of 1964 there were 81 medical colleges, 13 dental colleges and 11 other institutions for training in the modern system of medicine. At the end of 1965 there were 88 medical colleges. The admission capacity for medical colleges has risen to 11000 in 1965. (Figs. 58 and 59) 21 postgraduate departments have so far been established during the Third Plan. Five Institutes of Post-graduate Medical Education and Research are already functioning in the country. Training in the specialised subjects is imparted by various institutions like All India Institute of Hygiene and Public Health, Calcutta, National Institute of Communicable Diseases, Delhi, Central Health Education Bureau, Central Family Planning Institute, National Institute of Health Administration and Education, Central Leprosy Teaching and Research Institute, etc.

Facilities for the training of nurses exist in practically all major hospitals in the country and in the nursing colleges at Bombay, Hyderabad, New Delhi, Indore and

Vellore. State Governments and non-official organisations like the Andhra Mahila Sabha have organised short term auxiliary nurse midwives courses with the help of grants from the Central Government. At the end of 1964 there were about 480 nursing schemes and colleges in the country for training nurses, midwives, health visitors and auxiliary midwives.

6. 6 Medical and Public Health Research:

The Indian Council of Medical Research has been engaged in the promotion and coordination of research in India ever since its establishment. It maintains the Nutrition Research Laboratories at Hyderabad, the Virus Research Centre at Poona and the Blood Group Reference Centre at Bombay. It provides grants-in-aid, disseminates information on medical research and publishes two Journals.

The National Institute of Communicable Diseases at Delhi carries out research in methods of malaria and filaria eradication Research is also in progress on other communicable diseases.

Apart from medical colleges and attached hospitals each specialising in some branch of research, the country has a number of specialised institutions. The All India Institute of Hygiene and Public Health, Calcutta, provides training in preventive and social medicine for diseases peculiar to India and ascertains how the results of pure and applied research can be utilised for promoting medical protection and positive health. The School of Tropical Medicine, Calcutta, carries out research in diseases peculiar to tropical areas.

The King Institute of Preventive Medicine, Guindy, Madras, conducts research in the preparation of bacterial vaccines, sterile solutions and therapeutic sera.

Research in tuberculosis and other chest diseases is in progress at the Vallabhbhai Patel Chest Institute, Delhi. Studies of the morphology of the tubercle bacilli and the effect on them of the different drugs constitute a special feature of its investigations.

The Lady Willingdon Leprosy Sanatorium at Chingleput and the Silver Jubilee Children's Clinic at Saidapet have been taken over from the Madras Government and converted into the Central Leprosy Research Institute.

The Haffkine Institute, Bombay, undertakes investigations in the manufacture of vaccines, sera and other biological products. It has been functioning as the chief centre for investigations connected with the prevention and treatment of plague. The scope of the Institute's work has been enlarged to cover, among others, the problems of nutrition, malaria and virus diseases.

Investigations are carried out at the Indian Cancer Research Centre, Bombay. Statistical Surveys of the incidence of cancer in India have also been undertaken by it.

Investigations in the Central Research Institute, Kasauli, relate to problems of microbiology, serology and biochemistry. The Institute maintains pathological museum.

The Pasteur Institute, located at Coonoor, is engaged on research in rabies, influenza, anti-venom serum, tropical eosinophilia and serological reactions.

The activities of the Central Drugs Laboratory, Calcutta, centre round biological and chemical assays of drugs. The Laboratory maintains a herbarium and renders technical advice to concerns manufacturing drugs.

One among several private owned research organisations is the Bengal Immunity Research Institute, Calcutta which conducts research on a large range of problems which have a bearing on the prevention, control and cure of diseases. (Fig. 60, 61, & 62).

6. 7 Major Public Health Problems:

Still the environmental sanitation with particular emphasis on water supplies and sewage disposal remains one of the big public health problems.

Environmental Sanitation:

A Central Public Health Engineering Organisation has been entrusted with the task of tackling this sanitational situation in the entire country. The Organisation has formulated the programme of National Water Supply and Sanitation Programme with the purpose of giving technical scrutiny and advice on all urban and rural water supply and sanitation schemes.

Communicable Diseases:

The persistence of communicable diseases particularly Malaria, Tuberculosis, Leprosy, Smallpox, Diarrhoea and Dysentery and Cholera with their predilection for their vulnerable and susceptible age groups has been responsible for high infant mortality rate, maternal mortality rates, high crude death rates and low expectation of life. The prime killers mainly Malaria, Smallpox and Cholera are on their retreat confining themselves to limited endemic area in the country. Each Five contributes towards more saving of lives with consequent reduction in morbidity and disability. Soon the disappearance of these will influence all health indices particularly in respect of morbidity and mortality resulting in an increase in the average expectation of life. Then the place of communicable diseases will be taken over by the degenerative diseases like cancer, diabetes, heart disease, etc.



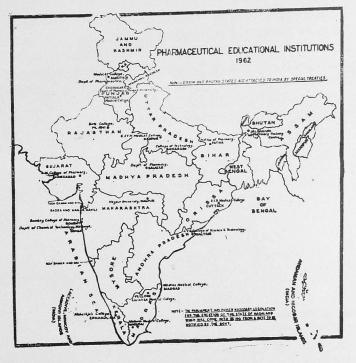


Fig. 61

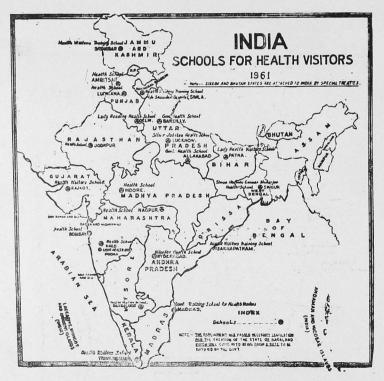


Fig. 62

Latin America should be of interest to the citizens of India. As we receive assistance from developed countries so we should render assistance to the needy countries, in the field of Health. There is no other field of human activity where such help could yield so much dividend as in the field of Health. India should be able to give medical manpower, assistance in the building up of National Health Services, Health Planning, establishing Drug Industry, etc., true to her national tradition. It is necessary to have a long range plan of assisting other countries by expanding our Technical Development wing of the External Affairs personnel, Physical facilities, Drugs, Equipment etc., should be made available to our neighbouring countries besides funds. This will, I venture to suggest, win friends, from many needy countries of the

May the endeavours of those idealists who want friendship and peace, be successful and World Health progress for the Health and Happiness of Mankind.

TABLE 1 POPULATION AND VITAL STATISTICS

Mid-year Population:	1961 442736000	1962 453407000	196 3 464335000
2. Live Births:			
i. Number ii. Rate per 1000 population	8488924	8405860	8344007
(Registered).	27.7	27.7	27.4
3. Deaths:			
i. Number ii. Rate per 1000 population	3742962	3530315	3561006
(Registered).	11.4	11.1	10.7
4. Infant Deaths:			
i. Number ii. Rate per 1000 population	70449.2	675743	643571
(Registered).	83	80	76
5. Deaths 1-4 years:			
i. Number ii. Percentage of	670057	602996	625301
Total deaths.	18.3*	17.3*	17.9*
6. Maternal Deaths:			
i. Number ii. Rate per 1000 population	15337	13790	13397
(Registered).		2.6	2.6
 Based on the d not available 	eaths for	which age dis	stribution is
	Estimated R	ates	
Rigth Rates		1960-61	1961-65

		1960-61	1961-65
Birth Rates	•••	41.7	41.0
Death Rates	***	22.8	17.2
Infant Deaths Rate	•••	139	N.A.

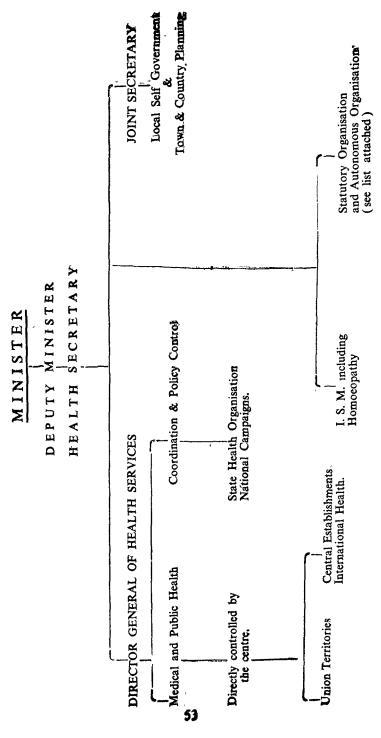


CHART SHOWING THE SET UP OF THE DIRECTORATE GENERAL OF HEALTH SERVICES

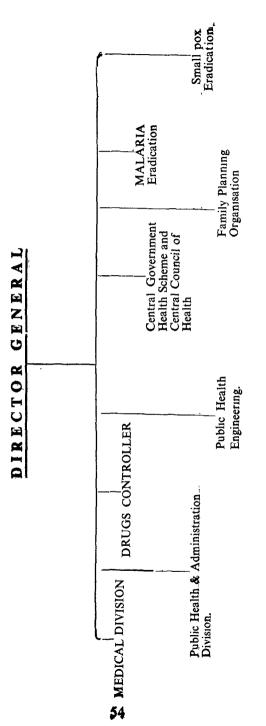


TABLE V ENVIRONMENTAL SANITATION (Year 1960-61)

/30235082 *****

Total nonulation

Lotai	population	•••	439235082
Numl	umber of Towns		2690*
Water	Supplies :		
	mber of Towns with piped ystems	Water	680 [°]
Popula	tion Served :		
i.	Total Urban Population	•••	78835939*
ii.	Population with adequate supply	water 	23237908
iii.	Population with inadequate Supply	water	22357134
'iv.	No water supply	•••	32302397
Sewage	Collection and Disposal		
i.	Number of Towns with sew systems	erage 	75
ii.	Number of Towns with sewerage system	no 	1750

* All figures those marked asteris are from the report of the National Water Supply and Sanitation Committee (1960-61).

TABLE VI CAUSES OF DEATH

- C/10025 ()	Detailed	Number of
Causes	list No.	deaths in 1963
Tuberculosis, all forms .	001-019	20515
Syphilis and its sequelac .	020-029	2077,
Typhoid fever, paratyphoid fevers & other salmonell infections	1, la 040-042	4707
Cholera	043	7206
Descentant will former	045-048	16940
Scarlet fever and streptococca		10940
	050-051	.14
Diphtheria	550	5175
Whooping cough .	` 056	2 18
Meningococcal infections .	057	339
Plague .	058	49
Leprosy .	060	17
Tetanus	061	6738
Yaws .	071	28
Acute poliomyelitis .	080	120
Smallpox .	084	6595
Measles .	085	1306
Yellow fever .	091	10
Rabies .	094	459
Typhus and other rickettsia diseases	al 100-108	36
Malaria .	110-117	711
All other diseases classified a infectious & parasitic .	ns 001-138	3042
Malignant neoplasms (including neoplasms of lymphat and Haematopietic tissues).	ic	2628

Causes	Detailed list No.	No. of deaths in 1963
Benign neoplasms and neoplasms of unspecified nature		197
Non-toxic goitre	250-251	304
Thyrotoxicosis with or without goitre	252	21
Diabetes mellitus	. 260	902
Avitaminoses and other defici	000'004	1825
		5230
Anaemias Vascular Lesions affecting the		3230
central nervous system		1881
Non-Miningococcal meningitis	. 340	722
Rheumatic fever	. 400-402	393
Chronic rheumatic hear diseases	410 416	1049
Arteriosclerotic & degenerative heart diseases	100 100	1440
Other diseases of the heart	430-434	2877
Hypertension	440-447	2085
Influenza	480-483	606
Pneumonia	490-493	9725
Bronchitis	500-502	2953
Ulcer of stomach and duodenus.	540-541	1032
Appendicitis	550-553	445
Intestinal obstruction and hernia	560 561 550	1801

Causes	Detailed list No.	No. of deaths in 1963
Gastritis, duodenitis, enteritis and colitis, except diarrhoea	542 FM1 FM2	4025
of the new born	543, 571, 572	4937
Cirrhosis of liver	581	2334
Nephritis and nephrosis	590-594	5239
Hyperplasia of the prostate	610	1868
Deliveries and complications of pregnancy, child birth and		
Puerperiua	640-689	2948
Congenital malformations	750-759	252
Birth injuries, post-natal asphyria and steleotasis	760-762	1165
Infections of the new birth	763-765	1366
Other diseases peculiar to early infancy and immaturity (unqualified)	769-776	18533
Senility without mention of psychosis, ill defined and unknown causes	780-795	125978
All other diseases ,	Residual	
Motor vehicle accidents	E810-E835	17902
All other accidents	E800-E802 and	
···	E840-E962	10008

Note:—Based on the information received from eleven States and three Union Territories.

PART II

HEALTH PLANNING

In the discussion of the subject "INDIA AND WORLD HEALTH" the need for World Health, the movement towards World Health and India's contribution to it was outlined. The World Health situation, the situation in Asia and the Health situation of India were surveyed

In building up of World Health, Health Planning is essential as otherwise haphazard attempts would only be wasteful and the few resources that are available would be dispersed. The subject of Health Planning therefore is of paramount importance to all Social Scientists, Health Administrators, Teachers of Health Sciences and Citizens who are interested in this problem.

HEALTH PLANNING

Objective:

"We are now engaged in a gigantic and exciting task of achieving rapid and large scale economic development of our country. Such development in an ancient and under-developed country such as India is only possible with purposive planning. True to our democratic principles and traditions, we seek in free discussion and consultation as well as in implementation the enthusiasm and the willing and active co-operation of our people"

Jawaharlal Nehru - 18th December 1956

HEALTH PLANNING

INTRODUCTION

1. The preamble to the Constitution of India sets out the basic objectives which the Nation resolved to bring into existence to all its citizens:

"JUSTICE, Social, economic and political"

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all.

FRATERNITY assuring the dignity of the individual and the unity of the Nation"

To achieve these, National planning is required. Planning represents the process to enable us to formulate policy for economic development and determine the optimum allocation of available resources for such growth on the basis of orderly and rational analysis. As a process, it involves both the formulation of ends or setting of objectives and the identification of the most appropriate means of achieving them. As the ultimate aim of economic development plan is to raise the level of living of the population, investment for health promotion should constitute an essential element. The improvement of health and extension of life span clearly play their part in increasing "human capital" which has an important bearing in economic and social development. It is customary to consider funds for Health by materialist economists as "consumption". However, as the health services stimulate expansion of output, in the manner of fixed productive capital to a large extent, outlay on these services should be regarded by the planners as on par with investment. As such, National Health Planning is an

essential and integral part of National development. The concept of planning for health is simple, but the idea in implementation requires the employment of a wide range of information and skills—administrative, legal, technical and even psychological.

- 2. I General Principles of Health Planning: order to determine the National Health Policy, it is necessary to take up a thorough examination and survey of the health situation of the country. Once the survey is completed and analysed, the numerous health problems should be categorised for priority of action, and after these have been decided upon, general targets and objectives have to be set up for the attainment of specific achievements in a specified time. There is need for long-term planning and within this framework, shortterm planning should be in consonance with the social and economic feasibility. In order to ensure the maximum co-operation and co-ordination for the successful implementation of the plan, extensive consultation and participation of the Public Health Workers at all levels, the profession and the public should be obtained. The plan so determined should be implemented by annual phasing. The progress of the plan implementation should be evaluated periodically and fed back into the programme to achieve maximum efficiency with economy.
- 2. 2 Planning Process and Methodology: This process consists of the diagnosis of the health situation, drawing up of the plans, discussion, implementation and evaluation and revision. The following aspects of Health Planning should be clearly kept in view:—
- (a) Range of Governmental activities as regards planning for economic and social development and for health: It may be noted that economic and social planning came to the forefront in U.S.S.R. in 1921 while

the health planning was included in the first U.S.S.R. Plan in 1929. The concept of planning in India came in 1938 when the Indian National Congress constituted the National Planning Committee under the Chairmanship of late Jawaharlal Nehru. The Health Survey and Development Committee (Bhore Committee) did a magnificent work on Health Planning for India in their voluminous report (1946) which is even today a book of reference. The Health Survey and Planning Committee (Mudaliar Committee) submitted their report in 1962 with recommendations for planning Health Services in India after a masterly survey.

- (b) Information and legislative process as a pre-requisite of planning: The developed countries have a broad range of statistical information in the economic, demographic, health and education fields. In addition, ad hoc surveys for purposes of evaluation or for cross checking are used. In the developing countries, there is great deficiency of statistical information and there is need for sample surveys. Information regarding manpower, institutions and other facilities is vital pre-requisite for Health Planning. Information on the prevalence of communicable diseases, the status of maternal and child health, standard of nutrition, environmental sanitation and population and per capita income is of utmost value. Many countries have either legislation or have powers included in the constitution for the same.
- (c) Preparation of Health Plan: The term of the plan, both long and short-term, the objectives of the plan and the need for flexibility have to be kept in view. The norms and standards should be clearly defined with regard to population bed ratio, and doctor population ratio etc. Priorities should be arranged. Integration of curative and preventive health services should be emphasised. Health Manpower availability and training programmes should be comprehensively considered.

- (d) Planning and Programming: Planning is the foundation of the plan, whereas programming relates to implementation of the plan on a phased basis.
- (e) Information of the public, popular and professional participation: This is a method of obtaining information of the felt needs of the people, popular and professional association with the preparation of the plan.
- (f Evaluation: There are three different forms of evaluation. First is the very basis of health planning process, namely the identification of the problem to be solved and the determination of priorities. The second is the process of evaluating the extent of implementation of the plan. The third is the measurement of the functional efficiency both administrative and technical. Evaluation is considered as a necessary component of the plan for feed back process. There is also need for evaluating the effect of Health Planning on National demographic, economic and health situation of the country.
 - (g) There are six other issues to be considered:
 - (i) The pre-conditions and pre-requisite data for Health Planning,
 - (ii) The approach to Health Planning the choice of the planning organisation and the arrangements for co-ordination;
 - (iii) Health planning and environmental improvement;
 - (iv) Standards and norms of provision for ensuring health care, staffing of institutions, etc.;
 - (v) The characteristics of a realistic Health Plan;
 - (vi) The financial aspects of the Health Plan.

(i) The pre-conditions and pre-requisite data for Health Planning: Experience suggests that certain conditions and data are essential pre-requisites for the economic and social planner at the outset of his task. The fundamental step in planning of public health services is (i) the determination of the Government's health policy; (ii) enabling legislation for planning and subsequent implementation; (iii) a planning organisation for over-all socio-economic planning at policy—and decision-making level, and a health planning organisation which is part of the former or equivalent to it; and (iv) arrangements for co-ordination between all planning organisations and between these organisations and the Government departments concerned.

Pre-requisite data:

- (1) Demographic data—national, regional, provincial and for local districts.
- (2) Vital and health statistics.
- (3) An inventory of public and private health service institutions, including training institutions, and a complete statement by categories of health service manpower.
- (4) National economic background.
- (5) A statement of the financial allocations to the health services.
- (ii) Having regard to the state of development of a country, the approach to Health Planning, the choice of the Planning organisation and the arrangements for co-ordination: Whatever the form of planning organisation, it is considered that planning is a continuous process, and therefore, depending on each country's resources there must be a health planning organisation.

- (iii) The place of Environmental Improvement in the Health Plan: Particularly in the tropics, there are undoubtedly environmental deficiencies responsible for much of their burden of morbidity and deaths, and projects for economic development, such as irrigation systems, can have repercussions in the health field in that they may later alter the biological and ecological environment. Housing conditions, water-supply, disposal of excreta, food, refuse, vector, industry, schools, etc., should be examined.
- (iv) The Use and Practicability of Standards and Norms in the Preparation of a Health Plan: There was a marked difference between developed and developing countries as regards their attitude to the application of standards of provision in the planning of health services. In the developing countries there was much greater flexibility, and the standards could be adjusted to correspond with the resources available. It is clear that international standards of staffing or of provision of beds or equipment were as yet hardly practical, and certainly not applicable to developing countries. Standards might have to be different from each other in various regions of the same country. For developing countries, international standards could be frustrating, and at best might be used to measure progress and to serve as guide lines to objectives which might be achieved in the future. Norms should be scientifically determined by research in contradistinction to standards of provision which are fixed arbitrarily. The planning of health services in principle must base itself on scientific evidence as to the total needs of human beings including physiological, psychological and sociological requirements.

- (v) The characteristics of a Realistic Health Plan: A plan must be simple, comprehensive and flexible. It must be phased, costed, limited in time as regards each step, fully acceptable to the community and capable of evaluation at each stage. There is great need for determination of priorities. There must be provision for educational and training facilities and to the gradual building up of the necessary manpower, and this will be only a realistic plan. The time factor is also important. There should be minimum delay between the completion of the plan and its final implementation. No defence could be offered for the building of hospitals, which by reason of delay in implementation of the plan, were already 10 years out-of-date by the time they were completed.
- (vi) The Financial Aspects of the Health Plan: There is an increasing recognition of the fact that the statement of the capital cost of a project carried with it the responsibility for an indication of the annual recurrent expenditure which will be involved. There is need for close collaboration with the economists concerned with national economic development. It is still difficult to state the relationship in economic terms between the expenditure on health services and the benefit which accrues to the health of the community and the individual. There is a steady demand for information on these matters. The position of the health planner and administrator is strengthened if his budgetary demands are clearly stated, datailed, and supported by reliable data as to the needs of the population, both for the promotion of health and the prevention of disease. The administrators' arguments should be directed to convince the economist that expenditure on health is an investment with great potentialities. Furthermore, the humanitarian aspect of health services should never be lost sight of. Health is a human right, and it is not always possible to use money as a vardstick for measurement.

The proportion of national expenditure which could reasonably be regarded as the fair share of the health services is important. In our country, about 10% of the budget is considered the reasonable optimum. One question was the possible methods of augmenting the financial resources of Governments which embark on Health Planning and implementation. The information should be readily available as to possible sources of international, bilateral, multi-lateral or voluntary aid for this purpose.

(vii) Some Special Points: Methodology and Research: India and certain of the Latin-American countries have evolved their own planning techniques, often based on mathematical and scientific principles and have applied them in practice.

Research: The development of a methodology is usually based on research, and in the case of the Socialist Republics, has resulted in the establishment of many research institutions. Planning techniques and procedures are to be evolved. Operational research into the activities of health services is a very important programme which will save waste of funds. Research is an essential component of the evaluation process which should be applied to all health service activities.

Health Economics: The financial aspects of the Health Plan: Health Planners in their contacts with their economist colleagues should discuss the financial implications of the health plans for the general economic situation. The reduction of infant mortality rate or the elimination in certain countries of diphtheria as a major communicable disease, and especially the eradication of malaria have a productive facet; and these economic aspects serve as good examples. There is also scope for research in this field.

Population: Information on population is quite essential to health planning including the number of inhabitants and their age distribution in part, determines the extent and nature of the medical attention with which the community must be provided. The pathology of a young population will be different from that of the community in which the average age of the inhabitants is higher and which will, therefore, require medical attention of a different kind. Another important characteristic of the population of a local area is its geographic distribution within the area including the number and size of the population centres. The effect of population increase on Health Planning should be taken into account. It is necessary to know the size of the manpower pool from which potential health personnel could be obtained and with specific dates in future. One of the pre-requisites of Health Planning should be health education. The epidemiology of nutritional disorders, of measures for their control and the education of the public in these matters should be stressed. It is necessary to have (1) Research into the norms to be established in planning of health services; (2) Courses in Health Planning; and (3) Planning Procedures to provide guidelines in health planning with a view to facilitating planning operations in developing countries.

2. 3. 1 Planning Problems in Health Field: What is the objective of this activity? To say that it is to maintain and improve health is obviously too vague a description of the objective, because it does not define what is meant by Health or how it is measured. Hence, some indicators have been proposed, some positive and some negative. Amongst the latter group are those indicators which means Health by the conditions that affected the disease, death, etc. Among the positive indicators is the birth rate, morbidity and mortality rates of the population.

Another indicator is life expectancy at birth of in the first year of life. Life expectancy is nothing more than the reciprocal of mortality by age-groups. The lower the mortality, especially among the very young, the greater the average life expectancy. The concept of potential productive capacity represents the number of man years that a community as a whole has at its disposal and that can be devoted to any type of activity.

Y.P.C. means years of productive capacity. This can be achieved either by increasing life expectancy or by reducing morbidity. This concept of Y.P.C. and life expectancy implicitly pre-supposes that the life of the very young is of more importance than the life of the adult or aged since a reduction in mortality among them increases both their life expectancy and the Y.P.C. to a great degree. There are two views on the social importance of the health of individuals:—

- (a) That one person's life is of the same importance as that of any other or
- (b) that the life of certain persons is more important to the community than the life of others.

The first view has reduced to the utmost every obstacle to health with the resources available regardless of the age of the beneficiaries. Highest priority should be given to the diseases whose reduction requires fewest resources.

In the second view, if adopted, it would be necessary to suggest a yardstick for defining how much more of one's life is worth than another, provided the society utilises a certain amount of resources in conceiving, training and maintaining the individual until he reaches the age when he begins to produce the individual's contribution to society which increases his age, until a point

is reached at which the total worth of his contribution balances the amount of resources used to make him a productive person. If a person dies at the age of 5, the loss to society would be far less than if death occurs at the age of 15 or 20, but it will be greater than this if death occurs during the first year of life.

The effect of a given health activity on any health hazard, the yardstick used will be the number of deaths prevented through that activity, irrespective of the benefits arising in the form of a reduction in morbidity or disability.

- 2. 3. 2 Definition and Reduction of Resources to a common Denominator: As in the case of objectives, the resources must be clearly defined. In economics, resources are usually classified as labour, capital and natural resources and each of these can be divided into sub-categories with greater or less detail. The resources to which the science of economics refers are the same as those employed in production of health. To produce health requires physicians, nurses, vaccinators, engineers, administrative personnel and labour, that is to say both skilled and unskilled workers. Capital is needed in the form of hospitals, water system, library, equipment, means of transport and even road and lastly natural resources incorporated in both fixed and working capital used.
- 2. 3. 3 Relationship between objectives and resources: The device of reducing heterogeneous resources to a common denominator and of assigning a monetary value to each does not entirely solve the problem of approachability. The operation of combining the resources in proportion that correspond to given standards of technique will henceforth be called the instrumentalisation of resources. An instrument is a combination of certain resources in certain proportions according to certain

standards which are used to attain one or two more specific objectives. The selection of the appropriate technique for attaining a given thing is one of the planners' most important task. Therefore, one of the principles of planning deals with the selection of techniques and all combination of products.

This may be illustrated by an example: The control of typhoid fever or any other disease is an objective that is attained by means of a number of concrete actions, just as one talks about an agricultural technique so one can talk about preventive or curative technique depending upon the technique used. The cost of each death prevented will vary and it is obvious that a technique will cost less. It will be possible to prevent a greater number of deaths with an amount of instruments. It is sometimes possible to concentrate on all the diseases that will involve the lowest cost per death prevented until available resources were exhausted and then to begin control of other diseases only if some resources were left over. In practice, it is necessary to act upon a number of diseases partly because of considerations relating to the distribution of resources previously mentioned and partly owing to the fact that in some cases in order to achieve results in one disease, several diseases must be controlled at the same time. Strictly speaking, the problem of priorities is the problem of establishing the possible combinations.

2. 3. 4 Time, Space and Planning: Planning is prevention rather than cure. In order to prevent continuation of errors and/or reduce them as much as possible, the planning techniques should work specially for the future and attempt to foresee any problem that might arise. If highly qualified technical personnel need to be trained, a forecast will have to be made. In practice, almost all countries prepare long-range plans for 10—20 years. Long-term plans are of a general nature and only

deal with the general direction of an activity. Mediumterm plans contain more detail. Annual plans contain all the details required for action. It is recommended that health plans be drawn up for 4, 5 or 10 year periods, so that the length of time in each particular case depends on the national plan for every sector of the country.

In the language of planning, it could be said that economic planning is economic activity in the field planned. In the case of health, health activity will be understood to mean actions performed by the Government which are aimed directly at the maintaining and improving of health and include in addition the traditional activity which can be classified as environmental sanitation, nutrition, research and personnel training. In health, the eradication of malaria or the construction of a hospital can be planned separately. The workers' state of health influences its productivity and that productivity in turn affects the capacity for economic development. Planning is in itself an activity that requires resources and especially highly specialised personnel.

- 3. I Programme for United Nations Development Decade: For the United Nations Development Decade, the Director-General of the WHO envisaged the following 10-year public health programme with certain specific objectives to raise the standards of health of the people such as—
 - (i) The preparation of national plans for the development of public health programmes for the Decade; coordinating these programmes with other related plans in the social and economic fields. The steps leading to such a plan would be—
 - (a) survey
 - (b) determining patterns of development for public health services including medical care;

- (c) estimating needs for health manpower and their training;
- (d) drawing up a plan integrated in the plan for socio-economic development.
- (ii) To concentrate on the education and training of professional and auxiliary staff for strengthening their health services with specific measurable targets for expanding each category of staff, depending on the pre-determined needs for each;
- (iii) To establish as baselines certain indices of the current health situation wherefrom to gauge the degree of realisation of certain goals pre-determined as target figures for the Decade:
- (iv) To devote increased national resources to the control of disease and the improvement of health.
 - (v) It is also urged on Governments to increase the level of assistance provided in the field of health with a view to expediting socio-economic progress.

The purpose of National Health Plan would involve the study and investigation of health needs and the availability of Health Manpower, equipment and buildings with a view to determining priorities for action. The main purpose of the plan is to conserve and utilize resources as economically and efficiently as possible.

The WHO offers assistance for member countries for the preparation of the national health plans.

With regard to education and training, the WHO Expert Committee on Public Health Administration (1951) gave a list of the following categories of health personnel needed to carry out a comprehensive health programme:—

- (1) Medical and Health Personnel: Physicians, public health nurses, general nurses, nurse-assistants, pharmacists, nutritionists, health statisticians, nurse-midwives, mid-wives, physiotherapists, dieticians, etc.
- (2) Sanitation personnel: Health engineers, sanitary inspectors, dairy and food technologists, veterinarians.
- (3) Dental Personnel: Dentists, dental nurses, dental technicians.
- (4) Laboratory Personnel: Laboratory specialists, technicians, etc.
- (5) Other Personnel: Health educators, social workers, administrative assistants, etc.

WHO assistance would also be forthcoming with regard to training of personnel. In this fundamental field of education, WHO will continue to coordinate with UNESCO, ILO, UNICEF, with a view to enabling countries to formulate their medical education planning and targets with the realistic context of other needs in the socio-economic field.

- 3. 2 Health Targets for Development: The third component of a possible programme of public health development would be the establishment as baselines of certain indices of the current health situation of countries, wherefrom they could gauge the degree of realisation of certain health goals.
 - (1) Infant mortality.
 - (2) Control of communicable diseases.
 - (3) Nutrition.
 - (4) Sanitation.

Certain baseline data should be available so that targets could be fixed appropriate to the availability of funds.

As for financial support for health development, emphasis has to be laid on health, as in the life of the individual, in the welfare of the community and the prosperity of the nation, health is a fundamental consideration.

The quantitative targets for the health programme should take into consideration that a very high priority to educational and training activities should be given. The highest priority within the decade should be given to the establishment in each country of—

- (a) basic cadre of health personnel at the national level;
- (b) adequate medical supervisory services at an intermediate level;
- (c) minimum curative and preventive services accessible to the whole population of the country;
- (d) educational facilities for medical nursing, sanitary, technical and auxiliary personnel.

In the field of education and training, the proposed targets or standards for the under-developed countries are to have, by 1970, a minimum of—

1 physician per 10,000 population;

1 nurse per 5,000 population;

1 technician (laboratory, X-ray, etc.) per 5,000 population;

1 health auxiliary per 1,000 population;

1 sanitarian per 15,000 population;

1 sanitary engineer per 2,50,000 population.

The Decade (1960-70) has been designated by the United Nations as the Decade of Development. It may be noted that the world population is increasing at a rate of 2-3% annually and it is hoped that the gross National

product by the end of the decade will be increasing in the developing nations at an annual rate of 5%. There is need for social overhead capital. From the point of view of economic development, the provision of social overhead capital is not an end itself. It is a means to an end. It is rather a basic investment to provide the services needed to support the directly productive activities such as mining and manufacturing industries.

4. I Planning in India: The social philosophy embodied in the Constitution is in conformity with the modern thinking and meets India's needs. India's Five Year Plans are giving effect to the social and economic policies envisaged in the Constitution and laying the foundations for the peaceful social transformation which the nation is seeking to bring about.

As already stated earlier, Planning was advocated before independence by groups of people, the Congress and the Government. The Indian National Congress appointed the National Planning Committee in 1937 and the Bombay Plan was drawn. Even the Government of India during the war years had a plan for post-war reconstruction. There was an Advisory Planning Board in 1946 and after independence, the Planning Commission was established in 1950. In spite of the advances made in some lines of manufacture, the deficiency in different sectors of the economy still remained considerable, and a great effort was needed to make up the leeway in agriculture and industrial production. This is reflected in the per capita national income, that is Rs. 253 at 1948-49 prices, which is the lowest in the world. Investment hardly amounted to 5 per cent of the national income which is not enough to keep pace with the rapid growth of population.

The central objective of planning was to initiate "a process of development which will raise living standards and open out to the people also opportunities for a richer and more varied life".

4. 2. I Basic ideas in the First and Second Five Year Plans: In the Five Year Plans, the long-term studies related inter alia to the following subjects: (i) basic concepts underlying democratic planning and the steps to be taken to bring into existence the economic and social pattern envisaged; (ii) the long-term trends in the economy and the institutional and other changes essential for the successful implementation of Plans; and (iii) the period within which the nation should make efforts to double the per capita national income, fixed on an assessment of the material and capital resources likely to be available and on specified assumptions in regard to population increases and other factors. In the First Five Year Plan, the Planning Commission placed before the nation the objective of doubling the per capita income by 1977. This was reviewed in 1956 when the Second Five Year Plan was published, and the objective was defined as doubling the per capita income by 1973-74. The per capita income at the end of the period of (at 1952-53 prices), 1951-56 was Rs. 281.00, 1956-61 Rs. 331.00, 1961-66 Rs. 396.00, 1966-71 Rs. 466.00 and 1971-76 Rs. 546.00 The population and per capita income figures are worked out as follows:-

Provisional estimates based on 1961 census—

1961	••••	438 million
1966	•••	492 million
1971	••••	555 million
1976		625 million

The per capita income at the end of each period is

End of Second Plan	٠	Rs. 330.00
End of Third Plan	••••	Rs. 385.00
End of Fourth Plan		Rs. 450,00
End of Fifth Plan	•••	Rs. 530.00

A principal objective that has to be kept in mind is to stabilize the growth of population over a reasonable period. Another objective is to ensure that the economy after two more plans or so would reduce dependence on assistance from abroad.

In the Five Year Plans, all schemes of social and economic development are classified broadly as follows:—

- (1) Agriculture.
- (2) Power programmes.
- (3) Industry and Minerals.
- (4) Railways.
- (5) Social Services—education, health, etc.
- (6) Miscellaneous.
- 4. 2. 2 Procedure followed in the Third Five Year Plan: The first step in the preparation of the Third Five Year Plan was the formulation of the broad strategy and the aims of the economic and other policies to be followed in regard to it. The basic objective of India's Five-Year Plans as enunciated in 1956 continued. This is to initiate and carry through what has been called the stage of 'take off' in economic growth so that, in about a decade, the economy may be capable of sustained growth on its own strength. The aim of doubling by 1973-74 the per capita national income as it was in 1956 was placed before the country as part of this programme. The population projections showed higher rates of net increase than were assumed in the First and Second Five Year Plans. It was estimated that the population in 1960-61 would be 430 millions and in 1965-66, 480 millions. But the census figures of 1961 showed higher rates of growth of population. The importance of fertility control along with death control has been fully realised and family planning programmes became the chief pillar of the health plan as well as of the economic and social plan,

Physical Targets: For preparing detailed programmes, working groups were appointed for individual sectors of the economy - agriculture, industry, railways, education, health, etc. Simultaneously, a working group on which the Ministries of Finance and Economic Affairs, the Reserve Bank of India and the Planning Commission were represented, was appointed to make a review of the financial resources. While the targets for the public sector in industries and minerals were under preparation by the working groups, discussions were held in regard to targets for industries in the private sector. The next stage was to bring together the physical targets and the financial resources In December 1958, an informal allparty Parliamentary Committee to consider issues relating to the preparation of the Third Five Year Plan was set up. At the next stage, a Draft Outline was prepared, and submitted to the Government. To consider the Draft Outline of the Plan, Parliament set up five committees. The Draft Outline was also discussed in the State and Central legislatures. The Draft Outline was revised in the light of the discussions. After further discussions by the National Development Council, it was placed before the Parliament for acceptance. Progress Reports are maintained every six months.

Research and evaluation are always kept in view so that the feed-back mechanism could rectify some of the defects.

- 4. 3. I First Five Year Plan The First Five Year Plan had the following aims in view:
 - i) To restore the economy which had run down as a result of the war; to resist the inflationary pressures that were prevalent; to build up the transport system; and to ease the food and raw materials position;

- To formulate and execute programmes of development which would be substantial in themselves while laying the foundation for larger efforts in the coming years;
- iii) To initiate measures of social justice on a wide scale, thus taking the first step in the direction of the pattern of society placed before the nation by the Constitution in the Directives of State Policy;
- iv) To build up administrative and other organisations which would be equal to the large programmes of reconstruction.

The outlay for the First Plan was Rs. 2,356 crores.

Health Schemes: In the First Five Year Plan, for schemes of medical relief and education, rural and urban water supplies, anti-malarial measures, family planning, etc., there was an expenditure of Rs. 142 crores.

- 4. 3. 2 Second Five Year Plan: The size of the Second Plan was subject to much thought and discussion. The outlay was of the order of Rs. 4,800 crores. The aims of the Plan were formulated as follows:
 - i) An increase of 5 per cent every year in the national income;
 - ii) Provision of employment of about 10 million persons;
 - iii) Rapid industrialisation;
 - iv) Reduction of inequalities in income and wealth and a more even distribution of economic power, thus helping in the creation of a socialist pattern of society.

The actual expenditure was Rs. 4,600 crores.

Health Schemes-Second Five Year Plan: For schemes of Rural Health Services, education and training, environmental sanitation including rural and urban water supplies, control of communicable diseases and family planning, the total provision was Rs. 274 crores (Rs. 142 crores in the First Plan). For rural and urban water supply schemes, the allocation was Rs. 91 crores and family planning Rs. 5 crores.

- 4. 3. 3 Third Five Year Plan: The Third Five Year Plan had the following aims:
 - i) To secure a rise in national income of 5 to 6 per cent per annum.
 - ii) To achieve self-sufficiency in foodgrains and increased agricultural production.
 - iii) To expand basic industries like steel, fuel and power and chemical industries, etc.
 - iv) To utilise to the fullest possible extent the manpower resources of the country.
 - v) To establish progressively greater equality of opportunity.

The total provision was Rs. 10,400 crores - Public Sector Rs. 7,500 crores and the balance in private sector. (Fig. 1)

Health and Family Planning: The allocation is Rs. 342 crores. (Expenditure in the Second Five Year Plan Rs. 216 crores). Out of this, Rs. 105.3 crores are for urban and rural water supply schemes (Rs. 76 crores in the Second Plan); Rs. 70.5 crores (as against Rs. 64 crores in the Second Plan) for anti-malarial measures and other projects for control of communicable diseases; Rs. 27 crores for family planning (Rs 3 crores in the Second Plan). Expansion of Rural Health Services and Hospitals and training programmes were given balanced allocations,

HOSPITALS, DISPENSARIES AND BEDS

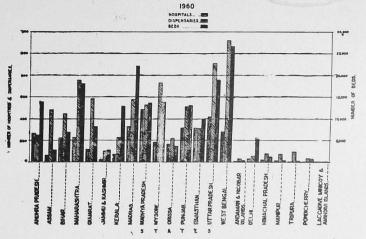
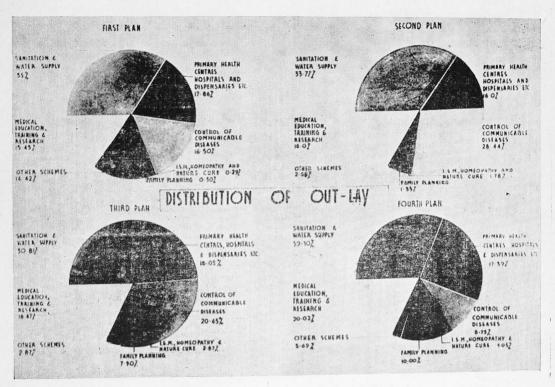


Fig. 1

DISTRIBUTION OF OUTLAY (RUPEES IN CRORES)

No	PROGRAMME	FIRST			OND PLAN MACENTAGE	CAINT MOITADOLLA			AN (TENTATIVE) PERCENTAGE ©
	WATER SUPPLY & SANITATION	49.00	35-00	76-00	35-77	105:30	30-81	371-00	39 10
2	PRIMARY HEALTH CENTRES FIC.	25.00	17-86	36.00	16 00	61-70	18 05	165-0	17 - 39
5	CONTROL OF COMMUNICABLE DISEASES	23-10	16-50	64-00	28-44	70-50	20 63	83 - 3.	8-75
	MEDICAL EDUCATION TRAINING & RESEARCH	21-60	15:43	36-00	16-00	56 30	16-47	190-0	20.02
5	1 S.M. HOMEOPATHY AND NATURE CURE	0.40	0.29	400	1-78	9-80	2-87	10.00	1-05
4	FAMILY PLANNING	0.70	0.50	3.00	1-3%	27-00	7-90		Ю-00
7	OTHER SCHEMES	20-20	14-42	6.00	2-68	14-42.	3-27	35.00	3-69
,	TOTAL	140.00	100.00	225-00	100.00	345-02.	100-00	949-00	

to the Manual Comments



Distribution of out-lay for the four Five Year Plans. Fig. 3

A project in the public sector for a Basic Chemicals and Intermediates plant (near Bombay) is linked up with three other projects estimated to cost Rs. 27.3 crores: (i) Synthetic drugs project for the manufacture of sulpha drugs, vitamins, etc., at Hyderabad (annual output Rs. 6.4 crores); (ii) antibiotics project near Rishikesh for penicillin, streptomycin, etc. (annual output Rs. 26 crores); and (iii) phyto-chemical plant in Kerala for caffeine, ephedrine, etc. (annual output Rs. 0.77 crores) - this project has been abandoned

4. 3. 4 Fourth Plan: The Draft Outline of the Plan is yet to be published. It is anticipated that about Rs. 950 crores out of about Rs. 24,000 crores would be for Health. (Fig. 2) A comprehensive broad based programme is contemplated. It may be concluded that a minimum economic base is necessary in modern societies for the effective functioning of a democratic institution and the creation of conditions in which men and women can have opportunities for rising to their full stature. The experience of developed countries has shown that the take-off stage would be achieved and modernisation barrier pierced when the transition can be made from investing 8 per cent to 15 per cent or more of the national income. In India, this transition has to be effected with the utmost speed; and in the next three Plan periods, a cumulative annual rate of growth has to be achieved which would raise prices. Planning is greatly hindered by the Indo-Pakistan conflict, the decline of external economic aid, the drought conditions and the increased population pressure.

Achievements of Targets in the Three Five Year Plans: The distribution of the outlays (Fig. 3) on Health Schemes during the first three Plans is as under;

	Fir	st Plan	Second Plan		Third Plan	
Health Schemes	Outlay	% to total outlay	Outlay	% to total outlay	Outlay	% to total outlay
Water supply & Sanitation	49.0	35.00	76.00	33.77	105 30	30.81
PHCs, Hospitals & Dispensaries	25.0	17.86	36.00	16.00	61.70	18.05
Control of Communicable Diseases	23.1	16.50	64.00	28.44	70.50	20.63
Med. Education & Trg. & Research		15.43	36.00	16.00	56.30	16.47
I.S.M. (Research)	0.4	0.29	4.00	1.78	9.80	2.87
Other schemes	20.2	14.42	6.00	2.68	11.20	3.27
Family Planning	0.7	0.50	3.00	1.33	27.00	7.90
	140.0	100.00	225.00	100.00	341.80	100.00

The outlay on Health during the first three five year plans and its percentage to the total outlay of the Plans are given below:

(Rs. in crores)

	Total Plan	Health Plan outlay	Percentage to total
1st Plan	2360.00	140.00	5.8
2nd Plan	4600.00	225.00	4.9
3rd Plan	8200.00	345.00	4,2

ACHIEVEMENTS AND TARGETS BEDS HOSPITALS AND DISPENSARIES AND INSTITUTIONS PRIMARY HEALTH UNITS 100 TARGETS TARGETS

Fig. 4

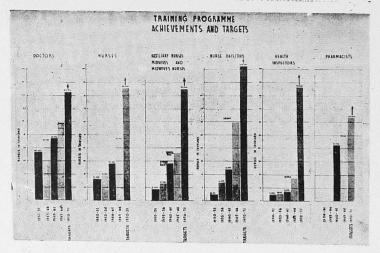


Fig. 5

TOTAL PLAN OUTLAY AND OUTLAY FOR HEALTH FIRST, SECOND, THIRD AND FOURTH PLANS (RUPEES IN (RORES)

PLANS	PUBLIC SECTOR	REALTH PLAN OUTLAY	PEACENTAGE TO TOTAL
FIRST PLAN	2360	140	5-8
SECOND PLAN	4600	225	4.9
THIRD PLAN	8200	3.45	4:2
FOURTH PLAN	14,500	949	6-6

Fig. 6

The proposed allocation for Health and Family Planning Programmes for the Fourth Five Year Plan is as follows:-

		(Rs.	in crores)
1.	Medical Care	****	165.00
2.	Communicable Diseases	•••	83.00
3.	Medical Education, Training	and	
	Research		190.00 *
4.	Family Planning	***	95.00
5	Other schemes (I. S. M., Nut School Health, Health Educa lab. services etc.)		45.00
6.	Water Supply & Sanitation	***	371.00
			949 00

^{*}In addition, a provision of Rs. 17 to 18 crores is included within a provision of Rs. 95 crores suggested for Family Planning for the training of medical and public health personnel.

The physical targets and achievements for important programmes are given in Appendix. (Fig. 4)

4. 4 Appraisal of Health Plans: During the 13 years of planned development, there has been marked improvement in the health of the people as may be observed from the comparative statement of some of the important health indices as given below:

	1941-50	1951-60	1961-64
Mortality Rate	27.4	22.8	16.3
Mortality Rate Infant Mortality			
Rate	182.5	134.0	109.1
Expectation of life			
Total	32.10	41.20	49.11
Male	32.45	41.89	48.40
Female	31.66	40.59	49.82

During all the three Plans, increased emphasis was laid on the public health programmes with very high priority accorded to Family Planning. Anti-malaria programme which was launched in 1953 as a National Malaria Control Programme and converted into a National Malaria Eradication Programme in 1958 has made excellent progress. In the Third Plan, a large number of eradication units have entered the maintenance phase as given below:

Already in the maintenance phase 142.63 units Number of units Approved by the Independent Appraisal Team for entry to the maintenance phase. 60.68

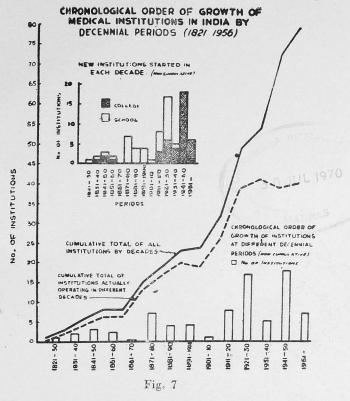
T-1-1 202.21 -- .:

Total: 203.31 units

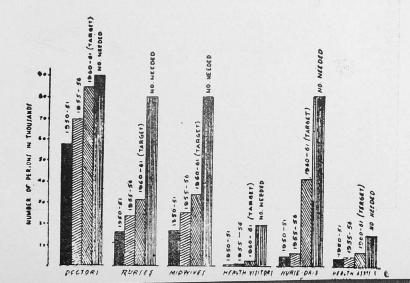
Thus, out of a total of 392 units, 203.31 units have entered the maintenance phase. There are about 2,500 Primary Health Centres where malaria eradication programme has entered the maintenance phase.

A national programme for eradication of Smallpox was launched in 1962 and it is expected that in most of the areas, the attack phase of the programme will be completed before the end of the Third Plan. During the Fourth Plan, it will become a normal routine function of the Basic Health Services and public health services, both in the urban and rural areas.

Successful attack has been launched against Trachoma, a very common eye disease, particularly in the Northern States of the country. The programme of control of Goitre has also progressed satisfactorily during the Third Plan. Iodised salt is distributed free in the sub-Himalayan belt and the endemic areas. In the control of other communicable diseases like Tuberculosis and Leprosy, appreciable progress has been made. The, con-



NUMBER OF HEALTH PERSONNEL, AVAILABLE, AIMED AT . NEEDED



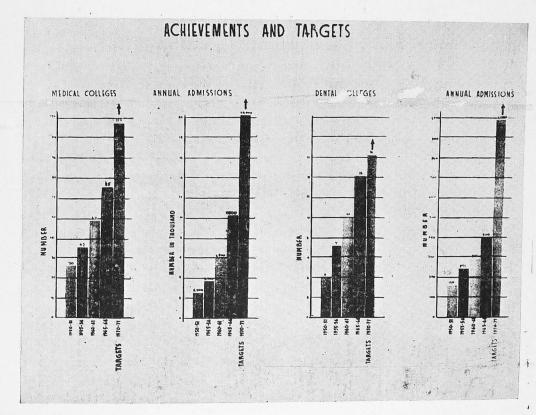
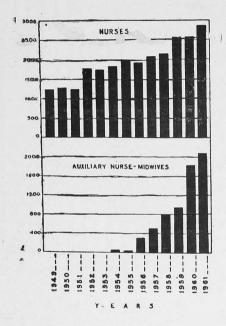


Fig. 8

NUMBER OF NURSING PERSONNEL (QUALIFIED IN EACH YEAR FROM 1949 1961)



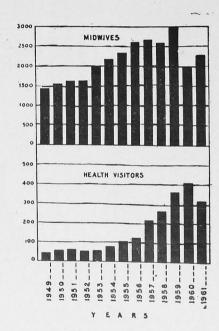




Fig. 10

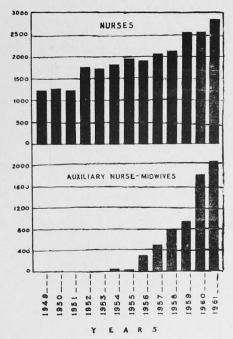


Fig. 12
Rate of growth of Nurses and
Auxiliary Nurse-Midwives

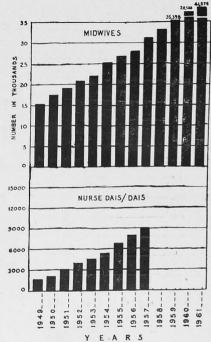


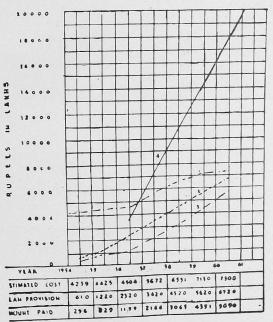
Fig. 11
Rate of growth of Midwives and
Nurse Dais/Dais

trol programme with regard to Filaria and Venereal diseases did not receive the desired attention during the Third Plan. All the same, notable progress has been recorded over the Second Plan position. The number of Primary Health Centres established so far is 4,742 and it is expected that by the end of the Third Plan, all the Primary Health Centres will be in position. To promote the Family Planning Programme in the rural areas, these P.H.Cs are being considerably strengthened with additional staff. As compared with 757 urban and 1379 rural Family Planning clinics in the Second Plan, so far there are 15.808 Family Planning Centres including 13,901 in the rural areas in the country. The number of hospitals and dispensaries has increased from 8,600 in 1950-51 to 12,600 in 1960-61 and 14,000 in 1962-63. The number of hospital beds went up to 2,40,100 by the end of the Third Plan. (Figs. 5 & 6) The number of medical colleges, which was 25 in 1947 and 30 in 1950-51 increased to 42 by the end of the First Plan and to 57 by the end of the Second Plan and to 89 now. The number of annual admissions has increased from 2,500 in 1950-51 to 7,619 in 1962-63 and to 10,227 in 1964. (Figs. 7 and 8) There have been significant additions to medical and para-medical manpower in the course of the development plans particularly during the Third Plan. The number of nurses available at the end of the Second Plan was 27,000 and it has increased to 32,190 in 1962-63. Similarly, Auxiliary Nurse Midwives and Midwives have increased from 19,900 to 25,430 and Sanitary Inspectors from 6,000 to 12,000. (Figs. 9, 10, 11 & 12) There has been a welcome advance in dental education and training. The services in Indigenous Systems of Medicine have also progressed. About 554 schemes of urban water supply and drainage have either been completed or are in progress. A number of rural water supply schemes have been taken up under the health programmes. Investigation units have been sanctioned to all the States. Except the States of Bihar and Jammu & Kashmir, the

rest of the country has been surveyed with regard to availability of water supply and the action to be taken to augment supply of pure drinking water. (Figs. 13 and 14) While the public health of the country has improved, there has been significant population increase causing a great setback in the per capita income. Hence, great importance is given to Family Planning Programmes. With the attainment of death control to a significant measure, there is need for the maintenance of public health by raising the standards of living which can only be achieved through fertility control, increased attention to maternal health and spacing of pregnancies to give undivided attention to the children. The care of the children in the post-natal period and under the age of 5 is considered one of the most important promotional and preventive health activity, for increase in expectation of life and increased productivity.

- 5. Long Term Health Planning: The Bhore Committee (Health Survey and Development Committee) submitted its report to the Government of India in 1946, making comprehensive recommendations for British India on a short-term and long-term basis. Though the report became the background document for all Health Planning in the First and Second Five Year Plans, many of the targets fixed could not be achieved and many of the recommendations were considered unrealistic
- 5. 1. General: The Government of India, therefore, in the Ministry of Health appointed the Health Survey and Planning Committee on 12th June 1959, under the distinguished Chairmanship of Dr. A. L. Mudaliar with fifteen other members. The terms of reference were:—

NATIONAL WATER SUPPLY & SANITATION PROGRAMM PROGRESS CHART FOR URBAN WATER SUPPLY & SEWERAGE PROJECTS



⁻ ESTIMATED CÓST OF PROJECTS APPROVED - FUNDS PROVIDED FOR IN THE FIFE YEAR PLAN - AMOUNT PAID ON APPROVED PROJECTS - RATE OF EXPENDITURE NEEDED TO COMPLETE PROGRAMME IN 29 YEARS. APRIL 1940

NATIONAL WATER SUPPLY AND SANITATION PROGRAM

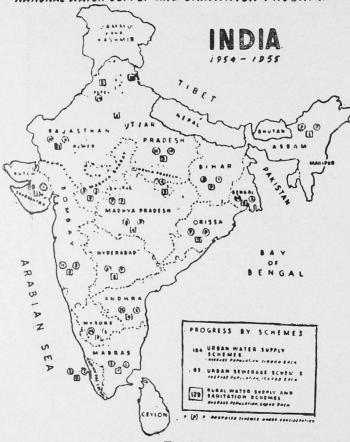


Fig. 14

- The assessment (or evaluation) in the field of medical relief and public health since the submission of the Health Survey and Development Committee's report (the Bhore Committee);
- (2) Review of the first and second Five Year Plan Health projects; and
- (3) Formulation of recommendations for the future plan of health development of the country.

The Committee decided to set up six sub-committees for the following purposes:

- 1. Professional Education and Research
- 2. Medical Care (Urban and Rural)
- 3. Public Health including environmental hygiene.
- 4. Communicable diseases
- 5. Population problem and Family Planning.
- 6. Drugs and Medical Stores.

The first phase of the work of the Committee consisted of:

- (a) elucidating information and views through questionnaires;
- (b) visits to representative institutions;
- (c) interviews with representative organisations and individuals;
- (d) scrutiny of the memoranda received from various sources.

In the second phase was the discussion and drafting of the report by the Committee. The third phase was the presentation of the report to the Government in 1962. The committee after reviewing the health conditions as found by the Health Survey and Development Committee and their recommendations, evaluated the important developments that had taken place since the Bhore Committee's report. The Committee also reviewed the Role of International Organisations and Bilateral agencies and expressed their great appreciation for the assistance.

The Committee after describing the present state of Nation's Health made their review and recommendations on

- 1. Medical Care
- 2. Public Health including environmental sanitation
- 3. Communicable Diseases
- 4. Professional Education
- 5. Research
- 6. Population Problem
- 7. Drugs and Medical Supplies
- 8. Legislation
- 9. Indigenous System of Medicine
- 10. Health Administration
- 11. Financial Aspects

Among the many important recommendations, the following few are highlighted:

5. 2 Medical Care: The Committee recommended:

- (1) that the bed strength be raised to 1 per 1000 beds during the Fourth and Fifth Plan period;
- (2) that the provision of free medical care is not feasible and suggested the introduction of graded charges and Health Insurance Schemes;

- (3) that the District Hospital should be developed as the key institution with enlarged functions to serve as a referral hospital to the Primary Health Centres and Intermediate Hospitals and a to and fro flow of patients encouraged;
- (4) that the Primary Health Centres should be better staffed:
- (5) that the District Hospital should be linked with teaching medical centre on Regional basis:
- (6) that the out-patient departments should be improved with a view to give greater service to the people and also reduce the cost of hospitalization;
- (7) that emphasis should be laid on developing women and children hospitals and other specialist hospitals including rehabilitation;
- (8) that the medical care services to the railways, plantations and coal mines should be integrated and improved;
- (9) that the medical care programmes should be streamlined for the tribal and backward people; and
- (10) that the corporation of general practitioners should be encouraged.
- 5. 3 Public Health: The Committee made comprehensive recommendations on water supply and sanitation. Maternity and child health, school health, nutrition, mental health, housing and vital statistics, health education and physical education.
 - 5. 4 Communicable Diseases: The Committee recommended the establishment of infectious diseases hospitals, public health laboratories and epidemiological

units on a Regional basis. The Committee also after reviewing exhaustively the Malaria, Filariasis, Tuberculosis, Leprosy, Smallpox, Cholera, Trachoma, Venereal diseases, Plague, Virus diseases, Programme made recommendations endorsing the WHO recommendations on the control of these diseases, which should be taken up as a priority.

5. 5 Professional Education: The Committee recommended the establishment of one medical college for 5 million population on a regional basis to meet the Health Manpower requirements.

The Committee also reviewed the selection of candidates to medical colleges, curriculum, examinations, medical college administration qualification and salaries of teachers, methods of teaching, necessity for Rural Health practice and social and preventive orientation and made drastic recommendations for the reform of medical education.

The Committee categorically recommended that there should be only one standard of medical education, conforming to internationally accepted minimum standard.

As regards post-graduate medical education, the Committee outlined the manpower requirements and suggested expanding training facilities by establishing regional post-graduate institutes.

The Committee also laid great stress on the postgraduate training in public health and the establishment of Schools of Public Health.

The Committee recommended the great need for expanding training facilities for Nurses and other paramedical personnel, and also suggested the encouragement of non-medical scientists and Public Health Workers.

The Committee felt that the Dental Education should be expanded and para-dental workers (Dental Hygienists and Dental Mechanics) should be trained to increase the efficiency and scope of service of Dentistry.

5. 6 Medical Research: The Committee while commending the development of the Indian Council of Medical Research, suggested that the manufacturing part of the functions of the Research Institute should be separated. The Committee also recommended opening Research Units in the medical colleges and the organization of State Research Committees or Boards for encouraging research.

The Committee further suggested the collaboration of the Indian Council of Medical Research and Council of Scientific and Industrial Research and the need for Industrial Research.

5. 7 Population Problem: The Committee after reviewing the various aspects of population dynamics, fertility control and the progress of the programme, suggested more intensive demographic, sociological and anthropological study for deciding the method of family planning suited to each area.

The Committee also recommended the production of contraceptives indigenously as a priority.

The Committee recommended that the family planning work should be included within the scope of Primary Health Centres, Community development blocks, Central Social Welfare Board and other organisations.

5. 8 Drugs and Medical Supplies; The Committee desired the expansion of the Drug Control Organisation and the expansion of production facilities for drugs to attain self-sufficiency.

The Committee particularly emphasised the need for reducing the period covered by patents and revocation of

patents if drugs are not produced indigenously in the stipulated period.

The Committee laid particular stress on the indigenous production of surgical and laboratory equipment.

5. 9 Administrative Organisation: The committee recommended that the Director General should be given the status of an Additional Secretary to the Government and that in purely technical matters, the D.G's views and recommendations should be dealt with at the highest level without the intervention of the Secretariat.

The Committee also recommended the establishment of Health Education Bureaux and the organisation of Medical Education and Planning Divisions.

As regards State Health Crganisations, the Committee recommended the integration of medical and public health services and the appointment of Chief District Medical and Health Officer at the District level.

The Committee also recommended that an All-India Health Service should be organised at an early date.

6. EVALUATION: Evaluation of the Implementation of the Recommendations: It is unfortunate that the Report came too late for the implementation of any recommendations in the Third Plan, as by that time the Third Plan was drafted. However, some of the recommendations were taken into consideration in the formulation of the Fourth Plan. But it must be said that India hopes not to emulate the British reputation that it appoints many commissions and committees without implementing any of their recommendations. It is also hoped that notwithstanding the present difficulties, this report will have the well deserved consideration for the health development of the country.

The report is a monumental document and the people of India owe a deep debt of gratitude to Dr. A. L. Mudaliar, the Chairman for his magnificent contribution to the Health Planning of the country.

APPENDIX
Physical Targets and Achievements for Important Programmes

			•	
Category	Units	At the end of 2nd Plan 1960-61	Third Plan Trgets 1,65-66	Expected by the end of 3rd Plan 1965-66
1	2	3	4	5
Hospitals and D spensaries	Total No.	12,600	1 ,,600	14,600
Institution beds	73	185,600	240,100	240,100
ii) Primary Health Centres	>>	2,800	5,000	5,223
in) Medical Education	,,			
Colleges	,,	57	75	87
Annual Admissions	"	5,800	8,000	10,625
iv) Dental Colleges	**	10	14	-13
Annual Admissions	,,	281	400	600
Available Technical Man Power:				
D octors	,,	70,000	81,000	8 4- 8 6,400
Nurses	**	27,000	45,0 00	45,000
Auxiliary Nurses/ Midwives	"	19,900	48,500	35,000
Health Visitors	"	1,500	3,500	4,200
Nurse Dais/Dais	,,	11,500	40, 00 0	25,000
Sanitary Inspectors	,.	6,000	19 ,200	18,000
Control of Communicable Diseases:				
a) Malaria Units No. Functioning	**	3 9 0	3 9 0	393.25
Population (in millions) covered	**	438 4	97 Category	No. of Units
		Ati Consolida Maintens	80.26 170.3 6 142.63	
				393.25

1	2	3	4	5
b) TUBERCULOSIS	99	220	42 0	425 Functioning at present of which 126 are properly equipped and staffed
Training Centres	,,	10	15	15
Beds	**	26,500	30,000	34,500
c) <u>LEPROSY</u>				
i) Control Units No. t establish		-pro-subminish	184	178
ii) S. E. T. Centres	**	*************	980	7 17
lii) Training Centres for Para-medical World		energy-world.	10	10
d) V. D. CLINICS	,,	83	189	150
e) SMALL POX				
Population Vaccinated (in million)	n	-Mind-disting	493	100%coverage of all sectors of population.

PART III

MEDICAL EDUCATION

3 JUL 1970) %

MEDICAL ÉDUCATION

INTRODUCTION

Vice-Chancellor Sir, Ladies and Gentlemen:

I am grateful for the very kind words which our Vice-Chancellor said on my behalf and it is very difficult to say anything more than "thank you" for the very kind words.

Sir, In my first lecture, the unity of the world in the field of health and the health situation in the world in Asia and India and India's contribution towards the world health were considered. In the second lecture the need for planning, the general principles and methodology of health planning, health policies of the W.H.O. during the United Nations Developing decade and health planning of India and the long term recommendations of the Mudaliar's Committee were outlined.

In these two lectures, how world nations and India owe a deep gratitude for Mudaliar was also focussed.

I am also happy that it has been possible for Dr. Mudaliar to preside over this lecture on medical education, a subject so dear to him and for which he devoted half-a-century in the pursuit of excellence, growth and development. Dr. A.L. Mudaliar's contribution towards world health, national and world health planning on medical education are so unique and outstanding that the world health would always remember with gratitude and affection. Medical historians of the future of world health would not have found ample occasions to recall the great contributions towards it made by Dr. A. L. Mudaliar in this century.

At the levels of higher education, medicine lends strength to the humanitarian goals to the constant struggle for excellence, to the application of science to immediate problems and to the building of leadership and prestige for the country. Throughout the developing areas of the world, man is striving for a manner of life that nearly approaches his fellowmen in other countries. His efforts are frustrated by poverty, ignorance, disease and population which are a serious impediment to higher levels of living. Medicine has a great contribution to make in each of the above. Nation's Health depends upon standard of living, general education and organisation of health services. The proper functioning of the health services requires adequate Health Manpower, physical facilities such as Hospitals, Poly-clinics, Health Centres, Specialist Hospitals and drugs and equipment. Wi hout adequate manpower none of the services could furction. Health manpower therefore becomes the crucial factor not only in the achievement of comprehensive health care, but also in the conquest of poverty, ignerance, disease, hunger and population pressure. While the Health manpower includes the entire team, the education and training of the team leader, the doctor becomes the most important factor. It would, therefore, be appropriate to review briefly the history of Medical Education, the present situation in some advanced countries and the progress made in medical education in India to enable us to plan our needs to meet our future responsibilities.

2. History of Medical Education in the world and International trends. Historical Review upto 1800 A. D. — In the ancient civilisations of Egypt, Babylonia, Mexico, and Peru, medicine was practised by the priests, and it was a curious blend of superstition, empiricism, and observation - the three fundamental strands which continue even today though varying in

degree. Archaelogical relics do not give an indication of the methods of medical education. Although the other ancient civilisations have died out, the Oriental civilisation of the River Valleys of India and China have survived up to the present time along with their systems of medicine. In the recorded History of India during the Post-Vedic Period (600 B.C.-200 A.D.) Medical Education was introduced in the Taxila and Nalanda Universities leading to the title of Prana Acharya and Prana Visharada. Kashi became a great centre of surgery. Charaka and Susruta are names known the world over for their contribution to the Indian systems of medicine and surgery respectively and the classical writings of these authors are still a perennial source of study by persons who wish to be trained in the Indian Medicine. Restrictions over the practice of Kuvaidyas or quacks were imposed. A "Medical Oath" binding the student with rules of personal hygiene, prevention of transmission of infection and contamination to others, and moral behaviour and obligations to the Teache and patients of both sexes was enforced. A series of Hospital system was developed in India by Rahula Sankrityayana (son of Buddha) for men, women, and animals - which was perpetuated by King Asoka in later years in great measure by extending the Hospital system throughout the Kingdom and abroad, the relics of which are still found in Ceylon and Nalanda. Medical Education in India thereafter remained static, the ancient universities vanished, and with the changed political conditions Unani and the Western systems of Medicine were introduced into the country.

In Greek and Roman medical literature, detailed information of the Medical Education of their times is available. In Greece, medical education was based more on experience than on book learning, practical training being acquired as an apprentice from a physician-father or a practitioner. The Hippocratic

oath exemplifies the pupil-teacher relationship and the ethical standards expected of a physician for which he had the necessary training.

The first school of scientific medicine in medieval times was established in Salerno by the fusion of the cultures of the Greek, Latin, Jew and Arab. Students dissected animals and attended demonstrations. At the same time in China, medical education was on a relatively systematic footing during Sung Dynasty (960—1280) and later in the Mogol Dynasty (1280—1368). During the Ming Dynasty (1368—1644) the first medical school in China was established at Peking.

During the 12th century the students trained in Salerno opened schools in France, Spain, Portugal, and England, and most of them were closely aligned to theology and the clergy. The University of Montpelier was founded in 1181, and the other outstanding medieval seats of learning date from about the same period. The University of Paris was founded in 1110, Bologna in 1113, Oxford 1167, and Padua in 1222; all the medical men in these universities were clerics, and scholastic standards dominated medical education. The state of medicine was basically a repetition of Greek medicine combined with authority, reasoning, and dialectics. Two outstanding men of the period. Albertus Magnus and Roger Bacon, exerted considerable influence in turning men's minds towards scientific approach. Bacon stressed the importance of acquiring knowledge through original research, but he was far before his times.

The Renaissance (1400—1500) saw the greatness of the Italian Medical Schools at Padua, Bologna, and Pisa. Other universites in Holland, Sweden and Switzerland also were popular during the period. Students from Oxford and Cambridge studied at the Continental Universities but took their M.D. degrees at their universities as directed by the Parliament.

During the 16th century, the notable event in world medical education was the adoption of the system of licensure in England. In 1512 Barbers Company had received a new charter. In 1518 Thomas Linacre, after 12 years of training at the Italian University, founded the Royal College of Physicians under a charter from Henry VIII. Linacre established Chairs of Medicine at Oxford and Cambridge. John Caius, another advocate of continental approach to medicine in the century, brought back the teachings of Vesalius, Professor of Anatomy at Padua, and endowed fellowships and scholarships at Caius College of Medicine at Cambridge. The beginning of modern experimental period may be said to date from Paracelsus, who overthrew the absolute sovereignty of Hippocrates, Galen and Avicenna.

In the 17th century the experimental method gave new life both to medicine and science. At the Padua University the great Englishman Harvey became the Professor of Anatomy, and with a thorough knowledge of Anatomy made his far-reaching discovery of the circulation of blood and laid the foundations of modern physiology. Locke and Sydenham, one in theory and the other in practice, left their distinctive mark on medical education.

In the 18th century the most notable contribution to medical education was made in England. London, Edinburgh, Aberdeen, and Dublin came to be known as medical centres of learning. Gays and St. Thomas Hospitals gave the best formal teaching. Attendance at lectures of men like Hunter, Hewson, Cruickshank, Baillie and Wilson, enabled the students to present themselves for examination to the Corporation of Surgeons or the Society of Apothecaries. Those aspiring to be Physicians had to pass the Licensure examination except in the case of Oxford and Cambridge graduates. In 1800, writes Dr. Charles Newman, the sim of medical education in England was to produce

- "a cultural and highly educated gentleman with, quite secondarily, an adequate knowledge of Medicine." Students began to find their way more to the French Schools where Laennec and Louis were advocates of modern medicine. Later in the country, Germany attracted many young medical students to study the Laboratory Sciences and Physics, Chemistry, Pathology, Physiology and Bacteriology under Virchow, Helmholtz, Muller, Cohnhein and Ludwig.
- 2.2. Modern Medical Education in United Kingdom began from 1800 onwards. In the early part of the 19th century technology began to supplement wisdom. The outstanding gain in the country was the absorption of clinical science into medical education and "the recognition of physical signs and the resultant scientific inductive attitude to diagnosis." This educational change necessitated the establishment of organised hospital medical schools, "The students took active part, worked rather than listened, were educated rather than instructed." In this country again there was the obsession that the aim of medical education was to train "a safe general practitioner." (Fig. 1)

The General Medical Council of Great Britain was established by the Medical Act of 1858, a hundred years ago with the following functions:-

- 1. Supervision and regulation of standard of professional knowledge expected of medical students before qualification,
 - 2. Registration of qualified medical men, and
 - 3. To publish British Pharmacopoeia.

There were 47 members of the General Medical Council appointed severally by the Crown, by the medical corporations, by universities having medical faculties, and directly by the medical practitioners of England and

PART III

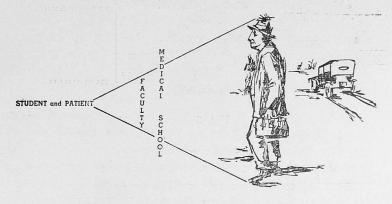


Fig. 1

Figure depicting the singular objective of medical education several decades ago - the education of general physician (With the kind permission of the Editor, Journal of Medical Education).

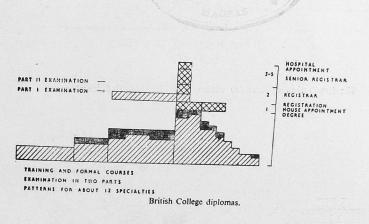


Fig. 2

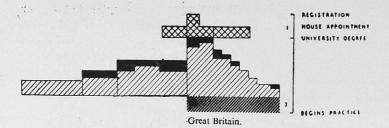
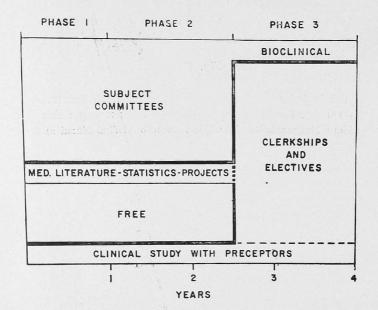


Fig. 3



The distribution of time for various activities through three phases

Fig. 4

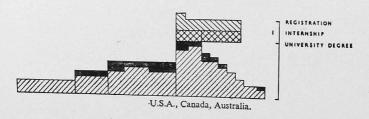


Fig. 5

Scotland. The broad plan of the curriculum was laid down by the General Medical Council in 1867. A logical order of subjects was decided by the Medical Education Committee in 1869. This pattern persisted to the present day, with the addition of one specialisation after another in the later part of the 19th century. The concept of the "safe general practitioner" was responsible to these additions. Aclands logical order of "Pre-medical" "Pre-clinical" and "clinical" had the greatest disadvantage that the student had the horizontal method of instruction without any correlation of each successive phase. The whole matter thus became one of syllabuses of useful knowledge, and examinations without any consideration of the aims of medical education. Reform of medical education became an absolute necessity, much more so, as by now, the age of preventive medicine dawned.

The cause of medical education in the world has been notably advanced by the various reports, such as "Report from the Select Committee on Medical Education" 1834, in which the views on medical education of many men of British Medicine of that time were recorded. The report of Earl of Selbourne's Commission on "Advancement of higher education in London," Flexner's Report (U.S.A.) 1910, Sir George Newman's reports of 1918 and 1923, Sir William Goodenough's report on "Interdepartmental Committee on Medical Schools" 1944, the Fullbright Committee's third report, and the B. M. A. Medical Committee's report. It was said of United Kingdom that no other country produced so many reports but acted upon none. Nevertheless, the effect was obviously there.

In the 20th century the aim of medical education in Great Britain has moved imperceptibly to turn out a "basic doctor" able to go on learning for himself and equipped for further training in any direction he may choose. This is exemplified in the statutory recognition

of the Compulsory Preregistration year as an intern after 6 year course which includes pre-medical year, two years pre-clinical and 3 years clinical studies, and the recognition that even general practice requires post-graduate study in the hospital. (Figs. 2 and 3.) Dr. Charles Newman firmly advocated a forward step to incorporate the study of health and disease in society outside hospitals for preparing for medicine of tomorrow and also to take step to bring the university atmosphere to medical education. The decision of the General Medical Council in 1958 to permit experiments in medical education was a great step forward in the progress of medical education.

With regard to post-graduate medical education in Britain, the most important recommendation of the Goodenough Committee was the setting up of the British Post-graduate Medical Federation of which the Hammersmith London County Hospital and Post-graduate Medical School associated with it as one of the federal units. In addition to the post-graduate medical school, there are now thirteen specialist institutes scattered about in London. Recently, Sir George Pickering's report on improvement of post-graduate medical education is a great contribution. Porrit Report in 1963 reviewed the medical services and commented that "We cannot escape the conclusion that medical facilities of British universities are lagging considerably behind those of many comparable countries in respect of research facilities, accommodation and available teachers...." The British Government has appointed a Royal Commission in 1965 to go into the question of medical education in Great Britain and report.

2. 3 Medical Education in United States: The growth of medical education in United States may be divided into five periods.

- 1. The colonial and early federal period: During the colonial period out of 3600 doctors only 10 per cent were university graduates, mainly from Edinburgh. German and French Universities. Some were clergymen, who received instructions in both religion and medicine. New physicians developed apprentices under the physician-preceptor. In 1765, the 1st medical college in United States of America was started by Morgan along with his friend Willian Shippen at Philadelphia. In 1813, the medical school at Yale was established. Other Universities like Columbia, Harvard, and Dartmouth, followed the example. The course of study extended up to 7 years but was later reduced to 4 years. The same pattern of English medical education continued in these universities with a little flavour of the Continental method. Medical graduates with M.B. degrees obtained M.D. after 2 years.
 - 2. Nineteenth Century Period: Owing to the westward march of the population and on account of the military needs of the country there was a rush to train doctors and in the process the ideals of liberal education before taking to medical education were given up. Proprietary medical schools were established with profit motive. In 1821, the system of licensure was introduced in some states to raise the standards as the number of apprentice practitioners without formal qualification increased to phenomenal proportions. The system of licensure spread to other states, and the unlicensed doctors had to appear for the state examinations. The American Medical Association was formed in 1847 with a view to raise standards of medical education on all fronts such as requirements for admission to medical schools and examination for licensure. In 1900 there were 160 medical schools.
 - 3. Period of drive to raise the standards: 1880-1920 As early as 1870-1880 new forces began to act on medical education in the United States. One of these forces was

science. Koch, Pasteur, and Meister were performing miracles with laboratory sciences on the continent. The American physicians and the people were awakened. The establishment of the Johns Hopkins medical school at Baltimore in association with the university had a salutory effect on the morale of the American medical profession. The entrance requirement at Johns Hopkins School was a graduate degree, and the German ideal of scientific research was kept in view. With the formation of the Association of Medical Colleges and the Council on Medical Education and State Licensing Boards and the entry of the Philanthrophic foundation like Caregie in the field of medical education and the publication of Flexner's report (1910), the death knell of the proprietary medical school was founded. The medical schools decreased from 160 in 1900 to 131 in 1910 and to 96 in 1915. By 1920, American medical colleges attained much prestige and status. Science was given the proper place in the education of the doctor, the free elective system was emphasised, and premedical requirements were extended to the graduate qualification. Today there are 88 fullfledged medical colleges with an enrolment strength of 32,428 pupils and with a physician output of 7,409 per annum. The physician citizen ratio in United States is about 1:670. In United States there are Osteopath physicians passing out from 5-6 colleges. Attempts are being made to integrate them in to the medical profession.

- 4. Period between the two world wars: During this period there was a genuine cry against science and too early specialisation. There were also arguments for liberal education as pre-requisite for medical education to raise the status of the profession as well as to increase the professional competence.
 - 5. Contemporary situation;

- (a) Pre-medical education: Dr. Alan Gregg of the Rockefeller Foundation made a profound contribution to medical education by his forthright views. He was concerned more with the methods than with values of liberal education.
- (b) Medical education: It is considered that liberal education should be felt not only in the pre-medical period but also in the school of medicine. Mention is being made of the "Widening Horizons in Medical Education" and increasing emphasis of "Social" and comprehensive medicine. The joint Committee of the Associations of Medical Colleges in 1958 in their report stated:
- "There are three major features of illness: physical, emotional and social. These are intimately interwoven in the pattern of disease and that they must be considered together rather than as separate entities. All these must be included in the curriculum if medical education is to provide the students with the knowledge and skill necessary to fulfil the aims of medicine."
- (c) Intern program: During the last five years there has been a great interest in the preceptorship programmes to learn the profession by taking up resident appointments with established physicians in hospitals. (Fig. 4).
- (d) Curriculum coordination: Curriculum is being liberalised and freed from the shakles of horizontal methods. Integration and correlation are introduced in education with a view to increase comprehension and to reduce the didactic lectures. The walls between departments are being broken. Functional relationship between the basic sciences and the clinical sciences are being emphasised. A number of medical schools have developed their integrated programmes and particular mention should be made of Western Reserve experiment. (Figs. 5, 6 and 7.)

(e) Integration of pre-medical and medical studies: Medical education has become expensive, with increasing cost of medical care. The student entering medical school, after a liberal arts qualification at the age of 20 or 22, has to study for 4 years at a medical school, after which the intern and post-graduate programmes would continue for 3-4 years, and with the 2 years' compulsory military service could only settle down to practice at the age of 30. (Figs. 8 & 9) Now a number of medical colleges have integrated programmes. Particular mention may be made of Johns Hopkins experiment which is designed to ameliorate three major defects of the present education:

The undesirable length of time to train a physician;

The dichotomy which exists between the liberal arts and the medical sciences, and

The noticeable decline in the strength of staff in the and basic science departments of medical schools.

The last 2 years of the college education are therefore integrated at Johns Hopkins with medical education thus reducing two years of study which enables early entry into the profession.

The dramatic demonstration of Soviet Technological progress is likely to accelerate the introduction of the Johns Hopkins Plan widely. Immediate goals of technical skill may supersede the deferred goals of liberal education.

The recent trends in medical education in United States are:-

Reduction of lectures;

Increase in conferences, seminars and clinicopathological conferences and other types of small group discussions;

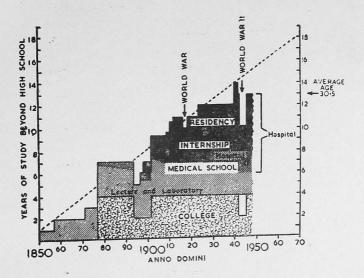
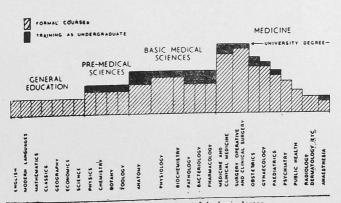
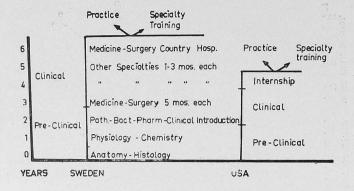


Fig. 6



-Educational equipment of the basic doctor.



MEDICAL SCHOOL

-Clinical and preclinical education in the United States and Sweden

Fig. 8

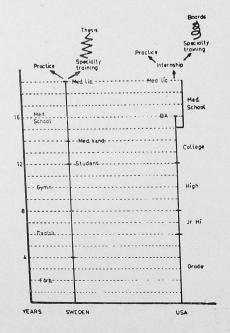


Fig. 9
Years of medical education in the United States and Sweden.

Increased interdepartmental cooperation, correlation of basic sciences amongst themselves and with clinical sciences;

Planning free time in the student schedule for electives and research;

Modern clinical clerkship;

Increasing experimentation in individual medical colleges;

Great emphasis on graduate training as intern and postgraduate education in both continuing education and speciality;

Integration of the last years of the college with the years in the medical schools; and

Reduction of examinations and emphasis on day-to-day assessment.

The aims of medical education in United States may be epitomised at present as follows:—

The acquisition of basic professional knowledge;

The establishment of essential habits for self education;

The attainment of clinical and social status essential for the utilization of professional knowledge;

The development of basic intellectual attitudes, ethics, and moral principles to command the confidence of the patient and the community in which he lives;

The maintenance of good health to take care of the community health later.

2.4 Medical eudcation in U. S. S. R. — In Russia at the time of the revolution there were in all fifteen colleges with about 8,600 pupils on the rolls and with an annual output of 1300 doctors. These institutions were not

distributed uniformly over the country. Within a few years after the revolution, 162 faculties or institutes were opened. It is stated that the real improvement in medical education took place after Stalin's historic speech at the 17th Congress of C.P.S.U. From then onward improvement of instruction, provision of new teaching appliances, and real progress in higher medical education took place.

At the present time there are over 80 medical colleges, where tens of thousands of young men and women study. To enter a medical college, a matriculation certificate is required, and the candidates are admitted only on merit. All the students in Soviet medical colleges receive stipends, and hostel accommodation is provided for students who come from distant places. Till 1945 the length of the medical course was five years, after which it was extended to 6 years. Practical experience is emphasised. Each student is assigned every year a definite programme of work to be done in the hospitals and clinics under the guidance of experienced specialists.

The medical student after the first 2 or 3 years of study has the option to specialise in internal medicine or pediatrics or public health. The rate of production of doctors could be noted from the fact that the number of physicians in the country in 1950 were twice as they were in 1946. Medicine is obviously a technology rather than a profession.

In 1934 the degrees of Doctor of medical Sciences and candidate for Medical Sciences were established. The physicians should possess the above post-graduate qualifications for consideration for faculty posts. The State also enables the doctors to specialise in various branches of medicine such as general medicine, surgery, tuberculosis, eye, etc. There are, at present, over eleven advanced training institutes for post-graduate studies.

At present there are over 200,000 doctors and hundreds of thousands of intermediaries called Feldshers.

The Academy of Medical Sciences of U.S.S.R. was founded in 1945, and research in basic and applied medical sciences is encouraged in institutes, hospitals, clinics, etc.

The Soviet Union's tremendous achievements in public health are said to be the evidence of their scientific progress. With the recent technological advances in Soviet science, with space satellites, Russia has, to some extent, established pre-eminence in scientific achievement.

2. Medical education in China: New China with 700 million population has about 80,000 doctors trained in modern medicine. About 200,000 traditional practitioners of the ancient system of medicine are integrated with the modern doctors in the hospitals, clinics and in the community centres. These traditional doctors have been given training in public health and immunization Chinese People's Republic has techniques. The encouraged the patriotic health campaign so that the two types of doctors work together. In China, as in Russia, the communist policy is to produce more doctors in a short time. The medical training, before the Chinese Republic came into existence, was of 6 years training on the Anglo-American pattern. The New Government reduced it to 5 years. They also follow the Soviet plan by which some of the students take up specialities like internal medicine, or public health or pediatrics after 2 years of Basic Medical Sciences training. The medical colleges in China as in Russia are quite separate from the universities, showing their technical approach to medical educa-They take more students into the colleges than they can properly hold. The proposals to raise the number of colleges from 35 to 80 had to be abandoned partly for lack of teachers, and so the existing medical colleges

were expanded to take in each 300-400 students each year. The annual intake into all the medical colleges is now 8,500.

According to Fox, and Ydkin, in Peking Medical College, there are about 2,300 students instead of 400. The same is the case with medical colleges at Shanghai, Canton, and other centres. These centres are stated to be becoming medical universities. Mass production of doctors to meet the needs of the people has been developed to technical perfection. Lecture classes have 200 students but the practical classes are said to be smaller in these colleges.

A Chinese student joins the medical college at the age of 17 years after 6 years at primary school and 5 years at secondary school and after completing a state examination in Physics, chemistry, sociology, Chinese literature, and political science. In Peking 44 per-cent are stated to be women students.

Examinations: As in Russia the examinations do not dominate the students. 80 per cent are said to be orals and 20 per cent written.

Teachers: Selected young graduates are picked up for post-graduate work and research. Peking Medical College is said to be of the same standing as the Johns Hopkins. It was built and supported by the Rockefeller Foundation.

The Academy of Medical Sciences of China serves the same purpose as the Soviet Academy of Medical Sciences. Medical research is itself planned and outlined at a higher level, by scientific planning committees. The Chinese endeavour to improve the low standard of health of their people is said to be admirable,.

2. 6. Medical Education in the European Continent.

Italy: No limitation whatsoever exists on the number of students who can enter the medical schools after they pass the qualifying examination. There is much of overcrowding and inadequate teaching staff. The first 3 years of medical course deal with basic sciences, and the last 3 years with clinical subjects. The medical schools form a part of the university, and the professors have the same standing as the other professors in the university.

2. France: All those students who pass the qualifying examination to enter the university are eligible to enter medical colleges in France. Hence, the number of admissions into the medical schools is not limited. The medical course is for 6 years, with 2 years pre-clinical, 3 years clinical and one year practical training in hospitals. In the Faculty of Medicine of Paris University, about 1800 students join. There is a large drop out. Lecture classes are large. Clinical students are distributed to many clinical centres. It is now proposed the faculty will be split up into 8-10 medical schools, attached to different hospitals in the city of Paris.

The advantages of more practical education are well realised and students help themselves with knowledge. (Fig. 10)

3. INTERNATIONAL TRENDS IN MEDICAL EDUDATION: The World Health Organisation Expert Committee on professional and technical education of medical and ancillary personnel met in their second session in December, 1952. They defined some of the fundamental concepts in medical education in relation to the Society, reviewed the functions of medical teaching institutions, the educational requirements of medical students and the detailed curriculum of professional education. They stressed the relationship between the basic and clinical sciences and the necessity for supervised experience (internship)

after completion of formal course and also emphasised the importance of student's physical welfare, etc. They also considered the necessity for the creation of educational environment and the importance of proper selection and training of faculty members. The committee also recommended national cooperation and international collaboration with a view of promoting improved standards of medical education.

The first World Medical Education Conference which was held in London in August, 1953, had its theme "Philosophy of First Rate." The conference considered the requirements for entry into medical schools, the aims and content of the medical curriculum, the techniques and methods of medical education, and the importance of Social and Preventive Medicine in the training of physicians. The proceedings of the conference are of great importance to the progress of medical education in the world.

The South East Asia Regional Office, W.H.O., in an analytical study of medical education in South East Asia during 1952—53 recommended the establishment of a national planning body a sort of medical manpower commission in each country in the region. They also recommended the orientation of medical teaching from the predominantly individual and curative approach to a more community minded and a preventive one.

The Second World Conference on Medical Education was held in Chicago during the 1st week of September, 1959. "Medicine, a Life Long Study" was the theme for the conference. Special emphasis was laid at this conference on medical education beyond medical school. The subject was discussed under the following items.

- 1. Basic clinical training for all doctors.
- 2. Advanced clinical training for a general and specialist practice.

- 3. Training for teachers and research.
- 4. Continuing medical education.

The conference was a great success. Many Indian educationists contributed to the deliberations, notably, Dr. A. L. Mudaliar and Dr. Khanolkar.

The World Health Organisation in its eighth report of the Expert Committee (1961) considered the teaching of the Basic Medical Sciences in the light of modern medicine. The committee not only reviewed the purpose and scope of the preclinical sciences in modern medical education, but also considered the training of teachers, selection of students, text-books, the basic sciences education in Physics, Chemistry, Biology, preclinical education in Biophysics, Anatomy, Physiology, Sociophysiology, Biochemistry, Pharmacology, Genetics, Medical Psychology, Pathology and Microbiology. The Committee also considered the development of means for introducing the preventive concept specifically in the preclinical portion of the curriculum.

The WHO report of a study group (1962) outlined the internationally acceptable minimum standards of medical education. The report considered the problems of establishing minimum standards and reviewed some of the existing arrangements of general education, pre-medical education, admission to medical schools, medical curriculum, methods of teaching and present arrangements for maintaining standards. The report made suggestions and recommendations concerning the general aims, eslection of students, the general requirements and the content of the medical curriculum, the organisation of medical schools, physical facilities required and the staffing of the schools; difficulties in attaining standards and suggestions for evercoming them besides the assessment and maintenance of standards.

The conference on medical education in the Eastern Mediterranean Region sponsored by WHO Regional Office (1962) has done commendable service to the region by discussing the aims and objects of medical education, under-graduate and post-graduate medical education.

In 1964 and 1965, study groups and expert panels of the WHO considered the curriculum of the pre-medical education, and basic medical sciences. The Inter-regional Conference at Geneva in 1965 considered the question of medical education in developing countries.

- 4. I. TRENDS IN INDIA. Modern Medical education in India started in 1822 in a medical school at Calcutta. Medical colleges at Calcutta, Bombay and Madras were started in 1835. They were recognised by the Royal College of Surgeons since 1843. The Goa Medical School was started by the Portuguese in 1842. The Nizam of Hyderabad started a Medical School of Modern Medicine in 1846 at Hyderabad. In the past 100 years medical education has developed till 1933 under the general supervision of the General Medical Council of United Kingdom. The University degrees were registered in the Register of the General Medical Council, which implied that the standard of medical education had reached the minimum level obtaining in Great Britain during that period.
 - 4. 2. The Medical Council of India was constituted in 1933 along the lines comparable with the functions of the General Medical Council, with the exception that the provincial councils maintained registers and took up disciplinary work. Its twofold responsibility was to maintain uniform minimum standards of university medical qualifications in India and to further the recognition of these qualifications outside the country. "Efficiency at home and honour abroad" was the watchword prescribed by Sir Fazali Hussain in his inaugural address to the Medical Council in 1933.

The Bhore Committee (of which Dr. A. L. Mudaliar was a distinguished member) in 1946 went into the question of medical education amongst other health matters and recommended a 4½ year course of 1½ year preclinical and 3-year clinical course after intermediate in science qualification. The committee also recommended 1 year of compulsory internship after provisional registration on the lines suggested by the Goodenough Committee in Great Britain.

The Medical Council of India, during these eventful years, streamlined medical education in our country. Amongst others the following are the important reforms effected in medical education by the council:—

- 1. Uniform minimum standard of qualifications in Medicine;
- 2. Uniform curriculum was recommended by a committee for adoption by all the universities, social and preventive medicine was included in the training of the student at the pre-clinical, clinical and intern years;
- 3. Standard requirements of medical colleges with regard to staff, equipment, buildings for admission of 100 students were prescribed;
- 4. Qualifications for the teachers in the various subjects were recommended;
- 5. Recommendations on post-graduate medical education regarding nomenclature of the degrees, courses, and number of students, examinations, recognition of training institutes, and teachers were forwarded to all universities;
- 6. Post-graduate medical education committee was constituted to prescribe standards for examinations, teaching and training requirements, and for inspection of facilities and examinations, etc.;

- 7. Inspection of medical colleges and examinations:
- 8. A planning committee was established to plan the medical manpower requirements of the country and to regulate the establishment of new medical colleges and expansion of the existing ones;
- 9. The council recommended the exchange of teachers from one university to the other to improve methods of teaching;
- The council strove for better standards of remuneration for teachers and advocated wholetime teaching units;
- 11. The council recommended the establishment of boards of post-graduate medical education and research in each university: to encourage research and post-graduate studies;
- 12. The council obtained recognition of the Indian qualifications on reciprocal basis by other countries.

The Medical Councl under the 1933 Act has done much against many odds. The 1933 Act was replaced by 1956 Act which gave more powers to the Medical Council with regard to the maintenance of an All-India Register, under-graduate medical education, etc. The Act was further amended in 1964 to give more powers for the prevention of quackery and inspection of medical colleges etc. Much credit goes to the stalwarts like Dr. B. C. Roy, Dr. Jivraj N. Mehta, Dr. A. L. Mudaliar, and Dr. C. S. Patel, the President, who guided the destinies of the Council with dexterity and foresight during some of these eventful years.

4. 3. The Government of India organised a Medical Education Conference in the fall of 1955 which considered the proceedings of the World Medical

Education Conference recommendations with special reference to the country's needs and recommended major reforms in medical education in India. This conference considered the question of selection of students, pre-medical studies, and entrance requirements, study and curriculum hours, examination and assessment of the students' progress, establishment of social and preventive and statistical departments, establishment of full-time units for each department, selection of teachers and conditions of their service, post-mortem examinations and psychological medicine, and made recommendations. Many of these recommendations have been generally accepted but, unfortunately, are far from being implemented.

The 2nd Medical Education Conference convened by the Ministry of Health at New Delhi in 1959, recommended again the early establishment of full-time teaching units, increased scales of salaries to medical teachers for the encouragement of post-graduate medical education and research and recommended measures to meet the inadequacy of teachers, especially in nonclinical subjects, such as extension of the age of retirement, employment of retired teachers, offering of fellowships for training in teaching, relaxation of conditions of appointment of qualified teacher, integrated scheme of fellowships for training abroad, with a recommendation to the universities to relax the domiciliary restrictions in the award of post-graduate degrees. The State Governments and the universities have not implemented these except a few cases.

4.4 The Government of India in the Ministry of Health set up a committee in 1959 under the Chairmanship of Dr. A. L. Mudaliar, to undertake a review of the developments that had taken place since the publication of the Health Survey and Development Committee (Bhore Committee) in 1946 with a view to formulate further Health Programmes for the country in the Third and

subsequent five year plan periods. The Mudaliar Committee (Health Survey and Planning Committee) also considered professional education of doctors, nurses, para-medical and other personnel. The Committee made comprehensive recommendations on under-graduate and post-graduate medical education which are far more farreaching than the Flexners and Goodenough committee reports. If only they are implemented in their totality, the standard of medical education in this country will be second to none in the world. Among the many recommendations for under-graduate medical education, special emphasis was laid on the quality of education, while suggesting the establishment of one medical college for every 5 million population, criteria for admission, content of curriculum, importance of social and preventive medicine, value of day to day assessment, introduction of new teaching methods, the qualifications of teachers, the conversion of the internship to that of a compulsory housemanship, etc.

In the field of post-graduate medical education, to meet the great shortage of teachers and specialists, this committee recommended the establishment of six post-graduate centres besides the All-India Institute of Medical Sciences (New Delhi), at Bombay, Madras, Calcutta, Hyderabad, Chandigarh and Lucknow. The committee also recommended inter-institutional relationship between Indian Medical centres and those in countries like U. K., U. S. A., Canada, etc. A beginning has been made between Baroda and Edinburgh, Johns Hopkins and Calcutta and others are under consideration. The committee also laid great stress on continuing education.

The report made a panoramic survey of the whole field of professional education and I have no hesitation in saying that it is a product of the master mind of Dr. A. L. Mudaliar, the Chairman of the Health Survey and Planning Committee.

- 4. 5 The Indian Association for the Advancement of Medical Education. was inaugurated in 1961 at Hyderabad by the founder President Dr. A. L. Mudaliar under the patronage of the Ministry of Health. At the 2nd Conference at Baroda (1962) the importance of social and preventive medicine in the medical curriculum was discussed. The third conference in 1963 at Calcutta had a teaching institute in Basic Medical Sciences. The fourth conference held at Madras (1964) under the auspices of the Madras University held a Teaching Institute in Clinical Sciences. The fifth conference at Delhi (1965) discussed the Post-graduate medical education. The sixth conference met at Bombay (1966) had its theme "Medicine and Society". This conference considered the subjects given as under:—
 - (1) problem of medical education in contemporary society-general considerations;
 - (2) Medical education and medical manpower;
 - (3) Content of medical education to meet the needs of society;
 - (4) Experiments in Medical education for a developing society;
 - (5) Planning for research in a developing society.

The sixth conference of the Indian Association for Advancement of Medical Education was a great success in as much as it stimulated thought of the entire medical faculties of the country, to consider the medicine in relation to society's needs in developing countries.

4. 6 The Third World Medical Education Conference under the distinguished presidency of Dr. A. L. Mudahar will meet in Delhi in November, 1966. The theme of the conference is "Medical Education: Factor in Socio-economic development." This has a particular relevance to developing countries.

- 5. PRESENT POSITION OF MEDICAL EDU-CATION IN INDIA:
- 5.1. General: Medical education is a continuous process built up on essential foundations of good general education with emphasis on Biological sciences, Mathematics and Humanities through pre-clinical, paraclinical and clinical sciences to acquire scientific knowledge, good habits, basic skills, sound attitudes and a sense of responsibility towards patients with emphasis on method rather than acquisition of facts, education rather than instruction after which the doctor continues to learn Medicine as a life-long study. At this juncture I may also digress in portraying the different types of students one may come across in a medical school and it should be our endeavour to breed a balanced medical student with the above indicated traits. (Figs. 11 to 15). The progress trends in secondary level education in developed and developing countries reflect the future demands for technical education. (Figs. 16 & 17).
 - 5.2. Under-graduate Medical Education: Until 1946, there were 15 medical colleges in the country with an annual enrolment of 1200 students besides 45 medical Schools. Today, in 84 medical colleges, over 10,000 annual admissions are made. (Figs. 18 to 20) Thirty-seven out of 61 Universities have medical faculties. Considering the Report of the Health Survey and Planning Committee with regard to the number of medical colleges, the situation is satisfactory as far as South India is concerned. But in the States Madhya Pradesh, Rajasthan, Bihar, Uttar Pradesh, which have about 80 million population, there are only 4 or 5 medical colleges and two of them are Central Universities-Aligarh & Banaras. In Bihar there are only 3 medical colleges and the health care of the people there is far from adequate. Facilities for training of nursing personnel could not be utilised for want of students.



Fig. 10



Fig. 11

The well-balanced medical student (With the kind permission of the Editor, Journal of Medical Education).

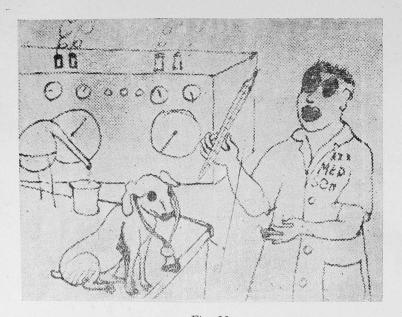


Fig. 12
The medical student as an impractical scientist.
(With the kind permission of the Editor, Journal of Medical Education).

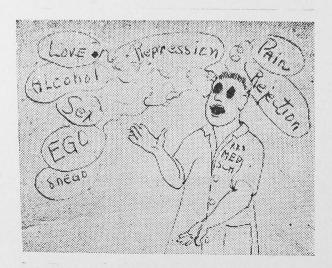


Fig. 13
The student as a one-tract sociologist.
(With the kind permission of the Editor, Journal of Medical Education).

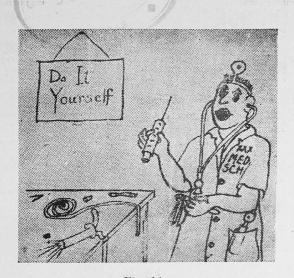
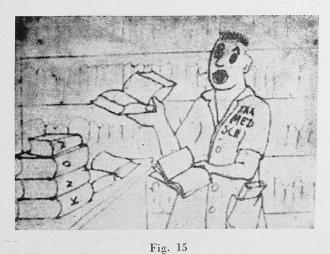
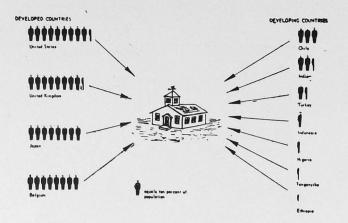


Fig. 14 The medical student as a confused artisan (With the kind permission of the Editor, Journal of Medical Education).

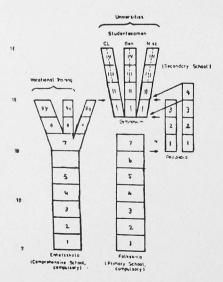


The medical student as an overwhelmed book work. (With the kind permission of the Editor, Journal of Medical Education).



Estimated percent of Population enrolled in Second-level Education (ages 15-19 inclusive, high school) in Developed and Developing Countries

Fig. 16



The Swedish school systein

Fig. 17

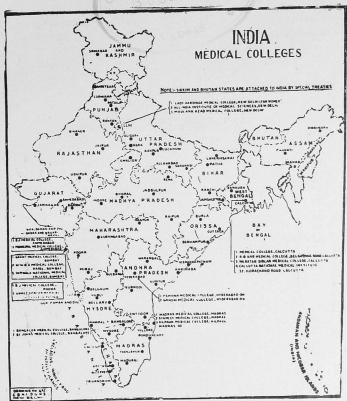
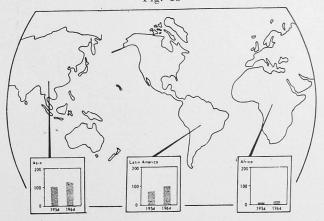


Fig. 18



Increase Number of Medical Schools in Developing Countries

GRAPH SHOWING NUMBER OF ADMISSIONS AND NUMBER GRADUATING IN MEDICAL COLLEGES (1947 - 1962)

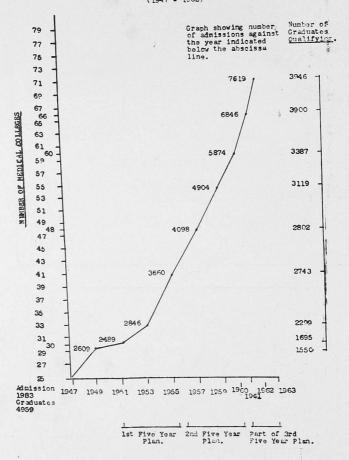


Fig. 20

Kerala State subscribes a large number of candidates for nurses training in Bihar, Orissa and U. P. and this is going to be a draught on the future health development of the country as a whole.

The Medical Council of India under the Act 1956 rugulates the standards of under-graduate and post-graduate medical education through Universities and colleges. Some of the great draw-backs of our medical colleges are deficiency of teachers and equipment. The deficiency of teachers is felt more in the basic medical sciences. It was estimated that there is a 45% deficiency in qualified teachers. The medical manpower requirents can only be met by either expanding the existing institutions or by starting new medical colleges, and both require more teachers. The curriculum now covers $5\frac{1}{2}$ years after PUC or $4\frac{1}{2}$ years after Intermediate in Science followed by one year of compulsory houseman-ship. The curriculum follow 18 months of pre-clinical and three years para-clinical and clinical studies with staged examinations. However, the rate of passes for MBBS was 57.9% in 1962, which requires remedial measures. Day to day assessment and multiple choice questions require to be introduced. Experiments in medical education are being conducted in different centres. B.Sc. in Human Biology is being organised some centres in the pre-clinical years. some, the Honours Course is being instituted. There is, at present, a great ferment in the field of medical education regarding selection of students, the curriculum and content of education, methods of teaching and type of examination. This has been greatly stimulated by the proceedings of the World Medical Education Conferences, Seminars on Education periodically are held in the country under the auspices of the Indian Medical Council, Indian Association for the Advancement of Medical Education, and the Ministry of Health, Govt. of India. There is increasing awareness that adaptation of medical education to modern medicine cannot be

achieved by changes in under-graduate curriculum alone and that the latter must be related to graduate and post-graduate training suited to the needs of the country. We are making a stupendous effort to increase the medical manpower in quantity and quality and attempting to overcome maldistribution. The number of years of medical course should neither be reduced nor lengthened. If you reduce the number of years and reduce the curriculum sufficiently to make the student untired, you cannot meet the requirements of the situation and too much of reduction will really not at all keep people mature and absorb and develop mature ideas for really serving the society. Similarly lengthening the course also is not desirable as it will not meet the requirements of the present situation. (Figs. 22 and 23)

5.3. Post-graduate Medical Education: Post-graduate medical education comprehends (a) graduate medical education after full registration, (b) post-graduate education for a qualification, either for a Diploma or a Degree, which qualifies the practitioner for specialisation, and (c) continuing education either for a General Practitioner or for a specialist.

The aims of post-graduate medical education are to train generalists and specialists to render a high standard of medical care, competent teachers for the rapidly increasing medical institutes and research workers to do fundamental and applied research for the solution of health problems, besides providing continuing education for the generalists and the specialists.

About 56 medical centres affiliated to about 32 universities are offering post-graduate studies besides the All-India Institute of Medical Sciences. (Fig. 24) The estalishment of the All-India Institutes of Medical Sciences, was recommended by the Bhore Committee. To begin with, the All-India Institute of Medical Sciences, New Delhi, was started in 1956 as an autonomous institution

ANNEX 10

DIVISION OF THE MEDICAL CURRICULUM, IN YEARS:

[•] The pre-medical and medical periods have been grouped together in this column, owing to the fact that no clear distinction is made between them in the medical schools of certain countries,



Fig. 22 It is possible to shorten the period of training by limiting our teaching to the techniques of performing certain task. Whether the student gets the full appreciation of what he is doing is another question. (With the kind permission of the Editor, Journal of Medical Education).



responsible for setting up effective patterns of education, under-graduate and post-graduate, in all Health Sciences. This Institute has attained great eminence in setting the patterns of education. The Health Survey and Planning Committee recommended the establishment of six more centres at Calcutta, Madras, Chandigarh, Hyderabad, Bombay and Lucknow. The Government have declared the Medical College at Pondicherry as the Jawaharlal Institute of Post-graduate Education and Research. The Institutes at Calcutta and Chandigarh are in the process of development as Post-graduate Medical Schools on the Hammersmith model. Other centres at Hyderabad, Bombay, Madras and Lucknow require reorganisation and further development. The present financial difficulties arising out of Indo-Pakistan conflicts and non-availability of international aids has impeded our progress in establishing the remaining centres contemplated. From next year onwards, it is proposed to implement the recommendations of the Health Survey and Planning Committee. There is great scope for improving and expanding postgraduate medical education by offering more courses, recognising the non-teaching hospitals for training and utilising every hospital for purposes of postgraduate courses and experience. At present after the M. B. S. degree there is a compulsory house surgeoncy or internship, senior house surgeoncy of one year and then two years for M. D. or M. S. Some of the universities are skipping one year of house surgeoncy and bring the M.D. or M.S. degree examination nearer, i.e., three years after the formal course at the University level. But the recommendations of the Health Survey & Planning Committee and the various conferences held under the auspices of the Indian Association for the Advancement of Medical Education and the Medical Council of India insist on one year house surgeoncy in addition to compulsory internship or compulsory house surgeoncy and thereafter, two years till the emergency is over, three years. The enrolment in 1963-65 for post-graduate study and research in both basic medical and clinical sciences was about 2,335 (1963) for the two year Degree course i. e. an annual admission of about 1,200 and 1,873 (1963) for Diploma courses.

The general pattern of training for post-graduate qualifications is two years for Degree and one year for Diploma courses after one year of senior housemanship after full registration. The period recommended is to be extended to 3 years.

In the field of post-graduate medical education in clinical sciences, both in the graduate, post-graduate and continuing phase, the hospital is the basic component and should be of the requisite standard to give proper training for the future generalists and specialists. The present training facilities in the teaching and non-teaching hospitals require serious examination.

Clinical Training of Compulsory Houseman (Graduate Education) Under the revised curriculum for M.B.B.S, internship has been replaced by compulsory housemanship (rotating) for a period of 12 months in an approved hospital or work in the Defence Medical Services or any other medical institution recognised for this purpose. The student is required to undergo training for 3 months in Medicine, 3 months in Surgery, 3 months in Obstetrics and Gynaecology and 3 months in Public Health with local variations. The present arrangements are not satisfactory and the supervision is inadequate. There is need for the organisation of a regular training programme. At present, about 10,000 students are being admitted to medical colleges, and from 1967, about 10,000 housemen would require replacements annually.

Clinical Training Programmes for Senior House Surgeons and Residents (Post-graduate): At least 5,000 doctors would take senior House Surgeon's training to qualify for selection to the Post-graduate Diploma or Degree courses. Even after the Compulsory Housemanship, the future generalist still requires further House Officer's training. Suitable arrangements are, therefore, necessary in the various teaching and non-teaching hospitals, not only for teaching purposes but also for providing amenities like library, clinical conference rooms X-ray and pathological services etc.

Residencies: About 2,500 post-graduates are expected to be enrolled to undergo clinical training for a period of one to two years. At any one time, therefore, there would be about 7,500 trainees. The present post-graduate training facilities are inadequate and far from satisfactory as in-service training and patient care are not insisted upon. The quality of our specialists could only improve if residency pattern of training is given to our post-graduates.

It is, therefore, of urgent and immediate concern for the present and future of the health services of the country that facilities for education in the hospitals should be radically improved.

Post-graduate education in Basic Medical Sciences, Clinical Sciences and Public Health: Post-graduate Medical education for qualification may be considered under the following heads:—

For Basic Medical Sciences (Anatomy, Physiology, Bio-chemistry, Pathology, Microbiology, Pharmacology, etc.) In-service training in departments of medical colleges and other specialised institutions should be organised. In order to attract medical graduates, training posts should be offered with incentives. They should have teaching opportunities while working as Demonstrators or Tutors or Fellows. Non-medical scientists programme should also be organised as recommended by the Health Survey and Planning Committee.

Clinical Sciences: In clinical sciences, training will have to be given in hospitals where laboratory, diagnostic and experimental facilities are available and suitable teachers are in position to train. The subjects in which post-graduate training facilities have to be given are:—General Medicine, General Surgery, Obstetrics and Gynaecology, Paediatrics, and in specialities, like Ophthalmology, E. N. T. Diseases, Orthopedics, Cardiology, Neurology, Dermatology, Radiology, Anaesthesiology, etc (Fig.25) The training should consist of clinical training in the Hospitals, regular systematic courses, conferences and seminars, and graded responsibility for patient-care. The period of training should be extended to four years after full registration.

Post-graduate education in Public Health and Social Medicine: There is need for Public Health qualified teachers either D. P. H., M. D., or Ph. D., for administrative, teaching and research posts. Inducements should be offered to this group as the country needs a large number of qualified personnel.

Continuing Education: The continuing education of physicians, both generalists and specialists, is one of the most pressing problems facing medical education today throughout the world. Successful attempts are made in U.S.A., U.K., U.S.S.R. and other developed countries. In India, specialist organisations and medical associations are making efforts, but much remains to be done. There is a necessity to create nation-wide "University without wall" for the continuing medical education. Every regional hospital centre and medical college should take up this work besides the two Colleges of General Practitioners functioning at Hyderabad and Delhi. The National Committee should formulate policies and encourage every Regional Committee in each State to work out local programmes. This would



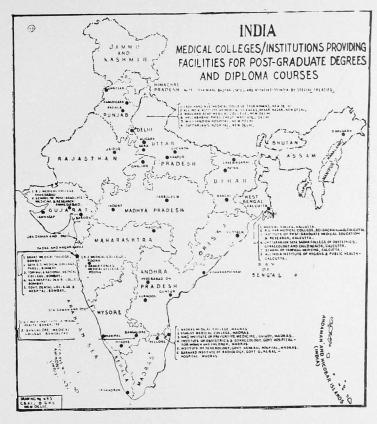
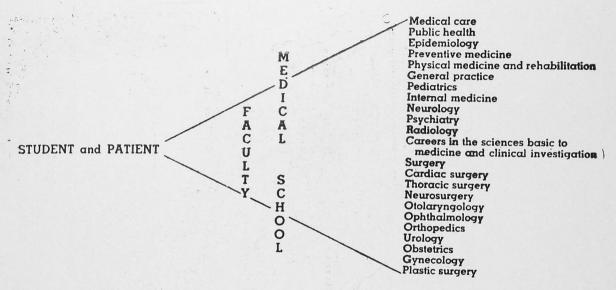


Fig. 24



A diagrammatic representation of some of the career opportunities that medical school graduates currently pursue.

Fig. 25

with the advances in science and technology, greatly step up the standard of medical care in the country and the knowledge of physicians, besides attaining self sufficiency in post-graduate medical education.

5.4 Trends in U.K., U.S.A., U.S.S.R., and Australia:

In the United Kingdom, it is said that till recently the clinical training for post-graduates had received less attention possibly because the over-emphasis of the needs of the undergraduate education tended to overshadow the equally pressing question of postgraduate education. The problem of men and women doctors holding training posts in hospitals and not obtaining the required facilities for such training because of lack of organisation, is one of the major issues now in the United Kingdom. The minimum requirements of post-graduate training posts can only be obtained in hospitals when there is an organisation to work for it. The British post-graduate Medical Federation in London has done yeoman service in the organisation of post-graduate Medical Education in U.K.

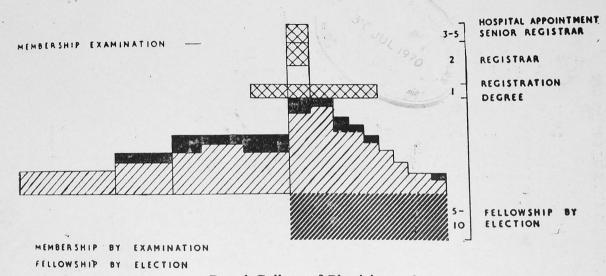
The Royal College of physicians of London have recently changed their pattern of examination and they have made it into three stages of examination — the preliminary examination, the regular examination and the special selection examination for final session of selection of persons for the Membership. (Fig 26).

As far as the Indian doctors who go there are concerned, they usually serve as Registrars/Internees and out of 200 students who appear for the examination, about 150 are Indians and 50 are of indigenous origin, from Britain or Canada, etc. Out of the 50 from Britain, Canada, etc., nearly 35 to 40 students qualify whereas out of 150 students of India and Pakistan, only 5 or 6 get through. It is a matter of shame that we should permit our students to go and appear for these examinations when post-graduate facilities could be organised in India and

given every opportunity for every post-graduate, if he wants to and if he has the aptitude. Therefore restriction has been imposed by the Ministry of Health to give finance or foreign exchange only to students who have passed M.S., or M.D., so that they do not bring any disgrace to the country. Unless they are first class students with 60% marks and who have done 3 years in India, or they are general practitioners with 7 years standing who go abroad for refresher course or to continue their studies, they will not be allowed to go abroad. As it is people resort to legal steps and get the passport. But unless they have the support of the Medical profession and all the teachers in the Universities, a suggestion is not possible. But in any case, we must recognise that post-graduate medical education must improve in this country and every student who wants to appear for higher examination, if he has got the merit, must be given opportunity that requires expansion of post-graduate medical education.

As regards teaching of surgery in England, practical training in a hospital is insisted upon and those who desire to take Fellowship examination of the Royal College of Surgeons need to work in recognised hospitals for a period of two-three years. Six months house-surgeoncy is not sufficient for a graduate to be allowed to pursue the postgraduate course in any speciality. (Fig. 27)

In U. S. A., great emphasis is laid on the training of clinical post-graduates by a Residency type in patient care under supervision. The hospitals, big and small teaching and non-teaching, are accredited by the American Hospital Association and the Council on Medical Education and Teaching Hospitals of A. M. A. only when they conform to the minium standards. The American Boards have done much in the last few years towards the organisation of graduate and post-graduate education of specialists.



Royal College of Physicians of London.

Fig. 26

TEACHING OF SURGERY IN ENGLAND

QUALIFIES		23
HOUSE SURGEON	6 MONTHS	
HOUSE PHYSICIAN		
REGISTERS		24
DEMONSTRATOR ANATOMY OR PHY AND MAY TAKE COURSE PRIMARY	SIOLOGY I YEAR	25
· MILITARY SERVICE	2 YEARS	27
SENIOR HOSPITAL OFFICER	1 YEAR	28 (26)
FELLOWSHIP		
REGISTRAR	2 YEARS	30 (28)
SENIOR REGISTRAR	4 YEARS	34 (32)

Fig. 27

374 ADVANCED TRAINING FOR GENERAL AND SPECIALTY PRACTICE

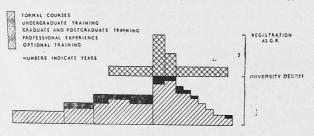
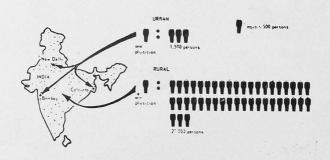


Fig. 29



Disproportionate Distribution of Physicians in India, 1964 A comparison of urban and rural areas

Mention may be made of training of part-time practice of speciality. In other countries there are Junior Certificate qualifications. In Canada, we have 'certification'. also, there are colleges like the International College of Surgeons which certifies after a particular period of training. The American College of Surgeons recognises after a period of training and now they are having examinations for their own citizens. Only with regard to outside countries, the Professors and others who have done eminent work are given the Fellowship of the American Colleges of Surgeons. But, as far as the Board Examinations are concerned, they have got part-time specialist. The general practitioners do lot of surgery in U.S.A. For the speciality Boards in the U.S.A., there is a plan-training and examination and assessment of professional status. These are non-Governmental institutions: they are not connected with the Universities. It is a self-imposed examination by the profession on the profession, so that the specialists are given the appropriate status. This qualification is not required for becoming a Professor of an University, etc.: but if he is the Board's specialist, he is recognised as one who has passed the test and the Profession has got the confidence, so that indirectly people will have the confidence. Thus it will be observed that after the basic University degree, there is an internship, registration, Licentia and then you have Residency Training of 5 to 6 years and they appear for Board Certificates. Unless he is a general surgeon or a general physician, usually sub-speciality training is not taken for mere neuro-surgery or thoracic surgery, but there are other specialities like Paediatrics, Ophthalmology, and E.N.T.—in these speciality training continues and they need not take the General Board's Certificates in general surgery. Thus the postgraduate training in U.S.A. is very well organised. There are 28,000 Residency posts and 12,000 Intern posts available but they have only 8,000 students passing and 4,000 interns recruited from all over the world and these 4,000

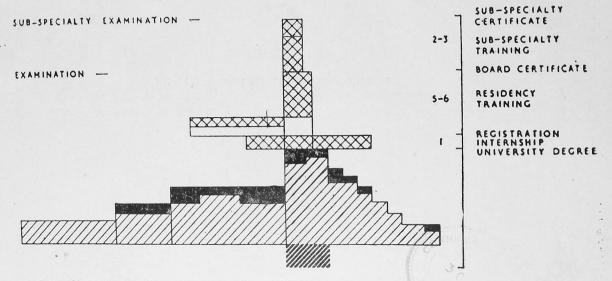
work in the hospital which are not of repute and they function as male nurses in the hospitals as cheap labour. Our students who are going there, except a very few, are not having the opportunity to have regular post-graduate training, so that they can be considered when they come back as real specialists.

The Registrar's post is a very responsible post and he shoud have the fellowship and practical training. The difference between U.S.A. and U.K. is, in U.S.A., the Residency Programme of 4 to 5 years in a speciality is done before appearing for the Board Examinations, whereas in Britain, the Fellowship can be obtained after doing 2 years or $2\frac{1}{2}$ years practical training as Registrar, Junior Registrar or a Senior Medical Officer. After the Fellowship as a Registrar, he will gain experience for a period of 4 or 5 years, so that he can aspire for consultants' and higher appointments. (Figs. 28, 29&30).

In U.S.S.R., most of the city hospitals are used for teaching which enables them to admit a large number of clinical under-graduates and post-graduates.

In Australia, the Australian Post-graduate Medical Federation at the national level and the Post-graduate Medical Committees at the State level have contributed much for the organisation of post-graduate education in the Commonwealth of Australia and New Zealand.

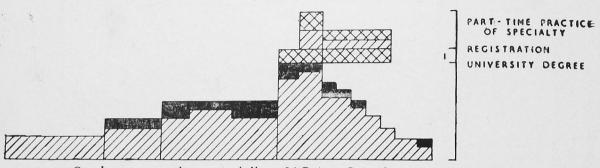
5. 5.1 Suggested Pattern of Organisation for India: Organisation of clinical post-graduate medical education in India is important to the citizens and to the doctors who require training in order to provide better specialist care to our population. Arrangements should be made to enable as many doctors as possible to have post-graduate medical education and training in India not only while they occupy training posts in hospitals, such as House Surgeoncy and Residency training for the post-graduate courses of M.D., M.S, or Diploma courses, but



PLANNED TRAINING-EXAMINATIONS AND ASSESSMENT OF PROFESSIONAL STATUS

PATTERNS FOR 19 SPECIALTIES

United States specialty boards.



—Semi- or part-time specialist—U.S.A., Canada, and Australia. Surgery is shown, but may be any other specialty or a number of specialties—often training only with or without short formal courses.

Fig. 30

also during their continuing education. With the pace of advancement of medical and scientific knowledge, post-graduate education has become more important now. As Medicine is a life-long study, post-graduate education has to supplement the undergraduate education. This should continue even after service in training posts is ended, and include arrangements to allow not only trainees but also doctors from all branches of the medical profession to have access to reference libraries and discussion groups.

There is a need to establish regional Hospital Boards in the different areas around medical centres not only to organise better hospital services but also better training facilities to our future practitioners and specialists. (Fig. 31)

There is, thus, a necessity to recognise certain posts as training posts in all hospitals that satisfy the above requirements so that a large number of would-be specialists could get training to qualify. In order to achieve this, not only the Regional Post-graduate Unit but also the District hospital or a group of hospitals should be teaching centres which should fulfil the following requirements:-

- (a) All consultants should recognise their responsibility in the training of junior staff and in regarding this as one of the most important aspects of their work.
- (b) It is important to promote an educational atmosphere in the whole system which would form the Regional Hospital service. Senior staff and junior staff should have time, over and above service commitments, to devote to education.

- (c) In each of these hospitals or hospital groups, a consultant should be nominated by the authorities for post-graduate education, as clinical Director, responsible for teaching arrangements and general care of those under training. He should have administrative support and adequate secretarial assistance.
- (d) The clinical Director should also be the person responsible, in consultation with the general practitioners in the area, for organising opportunities for them to participate in clinical discussions and in clinicopathological conferences. They should also have access to the library and to the diagnostic department for consultation.
- (e) Certain physical facilities are necessary in each such hospital, as
 - i. Seminar Room:
 - ii. Library;
- iii. Clinical Director's Office;
- iv. Laboratories adjacent to the wards in which trainees can perform tests and investigate their patients;
 - v. Married quarters for junior hospital staff to allow them to live in the premises of the hospitals;
- vi. Lunch room as a focal point where hospital medical staff can meet and be joined by general practitioners.
- (f) Certain criteria should be developed to create standards relating to
 - i. Standard of supervision;
 - ii. Quantity and variety of clinical material;
- iii. Standard of records;
- iv. Postmortem Service;

- v. X-ray and pathological services;
- vi. Laboratory facilities;
- vii. Seminars, clinico-pathological conferences, etc.

Post-graduate medical education should, therefore, be organised as a regional scheme in which all hospital units are the basic elements, and they must be in association with the regional university or faculty of an all-India medical centre. As such, the Hospitals have to be upgraded to meet the training requirements of interns, housemen and Residents (Post-graduates). This is a matter of great urgency if we want to train proper general practitioners, specialists, teachers and investigators for the future, according to the minimum international standards.

National and Regional Committees on Post-graduate Medical Education in Medicine and Allied Sciences:

5.5.2 National Committee: In order to achieve the above, a National Committee for Higher Education in Medicine and Allied Sciences for the formulation principles of policy was constituted by the Health Ministry in 1963 with the following members:

- 1. Minister for Health.
- 2. Secretary, Ministry of Health.
- 3. Director General of Health Services.
- 4. A member of the University Grants Commission
- 5. A representative of the University.
- 6. President, Medical Council of India.
- 7. A representative of the All India Institute of Medical Sciences.
- 8. A representative of the Indian Academy of Medical Sciences.
- 9. Representatives of the Regional Hospitals,

10. Representatives of the colleges of General practitioners or the President of the Indian Medical Association, and

co-opted members (professionals and members of the professional associations).

This committee considers the over-all manpower requirements of physicians, specialists, etc., and the action to be taken for obtaining them. This Committee may eventually be the Governing Body of the Indian Postgraduate Medical Federation that should be formed.

Regional Committee: There is now a necessity for the constitution of regional bodies, one for each State, to serve as the post-graduate Medical Committee, comprising the State Health Minister, University representatives, Director of Health Services, Regional Hospitals, representatives, Deans or Principals of Medical Colleges, representatives of College of General practitioners or associations and co-opted members interested in postgraduate education.

These committees should co-ordinate the activities of the various elements responsible for post-graduate medical education in clinical sciences and also decide the responsibility between the various authorities. With proper co-ordinated work of the National and Regional Committees, uniform development of facilities for such training throughout the country would become a reality.

There should be a Post-graduate Dean or Chairman appointed from the faculty of the medical centre concerned with the following responsibilities:—

- 1. Inter-relationship between the region and University and the college.
- 2. Arrangements for teaching and training in the region.
- 3. Advising on careers to the young doctors so that their future career may be planned.

- 4. Advising and placing of students from other States or areas.
- 5. Integration of general practitioners and specialists outside the services into these post-graduate arrangements.

In view of the need for a large number of teachers and specialists required for Health Services and for providing opportunities for the large number of post-graduates who otherwise go to U.K., or U.S.A., for want of facilities in India, this becomes all the more urgent.

Specialised Hospital-Institutes or Units in Hospitals: In large centres like Delhi, Bombay, Calcutta, Madras and Hyderabad, where there are specialised hospitals, there is need for establishing Institutes in association with the specialist hospitals, e. g. Institute of Orthopaedics, Institute of Child Health, Institute of Laryngology and Otology, Institute of Diseases of the Chest, Institute of Dermatology, Institute of Cardiology, Institute of Urology, Institute of Dental Surgery, Institute of Neurology, Institute of Psychiatry, etc.

In smaller centres, where there are no specialised hospitals, specialist units or departments should be established and post-graduate education should be coordinated in co-operation with all units.

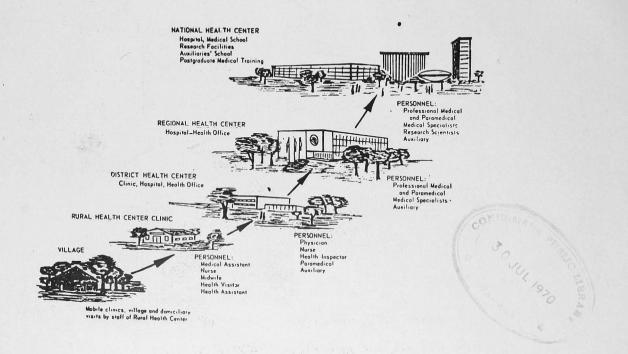
Considering the basic medical education pattern given in our country and the various University degrees awarded in some cases after many chances and in some cases before, it would be desirable to have a uniform policy. In any case the period of internship must be considered as practical training; we must give patient's care and responsibility to the students as some Universities in other countries are thinking of using the final year, particularly the internship period. If this is done, the practical training imparted will be much more satisfactory.

5.5.3. National Examinations: In view of the lack of uniformity of standards of examinations in the various universities, the Post-graduate Committee and the Medical Council of India have recommended National examinations and their conduct by a Statutory Body. The Indian Academy of Medical Sciences has come forward with a scheme for training of specialists and holding of examinations for their membership qualification. (Fig. 32) The Speical Committee appointed by the Central Council of Health under the chairmanship of Dr. A. L. Mudaliar, Vice-Chancellor, Madras University, for the enforcement of uniform standards of post-graduate qualifications has recommended National examinations to be conducted by an Academy statutorily constituted.

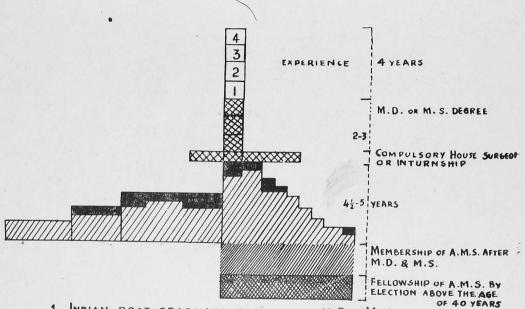
6. THOUGHTS FOR THE FUTURE.

6.1. Some Problems of Medical Education in a Developing Society:

Today, in developing countries, one witnesses efforts on the part of national governments to expand opportunities for medical education on an ever-in creasing scale to provide trained personnel for the medical and public health services. As already stated earlier, in India alone, there are about 84 medical colleges with an annual admission of about 11,000 students. There are at present about 108,737 doctors, 12,429 of whom are women. While 82% of the population is rural, 80% of the doctors work in urban and semi-unban areas causing a maldistribution of medical manpower. (Figs. 33, 34, & 35) The momentum for the production of doctors in India has reached a high peak. There is a great scarcity of sub-professionals or intermediate health workers, nursing and other para-medical personnel in all developing countries. The shortage of high level medical manpower makes it mandatory that such para-medical personnel be used in an increasing



Fendall's Outline for Medical Services in Developing Countries



- 1. INDIAN POST GRADUATE DEGREES OF M.D. & M.S
- 2 MEMBERSHIP AND FELLOWSHIP OF ACADEMY OF MEDICAL SCIENCES.

Fig. 32

THE MEDICAL	PERSONNEL REQUIREMENTS	FOR INDIA (BASED ON 1961 CENSUS)
	PLANNED FOR INDIA	I W H O RECOMMENDATION

PLANNED FOR INDIA			W.H.O. RECOMMENDATION			
GENERAL I PER 3000 PRACTITIONERS POPULATION		NOS 146261	I PER 1500 POPULATION	NO5 292522		
SURGEONS	1 PER 20,000 .	21830	1 = 10,000 -	43878		
EYE, E.N.T.	1 - 30,000 -	14426	1 " 15,000 "	29252		
OBST, & GYN.	1 . 20,000 .	21939	1" 20,000 "	21939		
PHYSICIANS.	1 - 30,000 -	14626				
PEDIATRICIANS.	1 " 30,000 "	14626	1 - 50,000 -	9772		
X-RAY EXPERTS.	1 - 60,000 -	7313	1 - 60,000 -	7513		
UNOLOGISTS.	1" 12 000 •	36565	1 - 65,000-	675		
PATHOLOGISTS.	1 - 200,000 +	2193	1 * 100,000 *	4386		
ORTHOPEDICS.	1- 200,000 -	2193	1 - 100,000 -	4386		
DERMATOLOGISTS.	1 - 100,000 -	4386	1 - 100,000 -	4386		
PSYCHIATRISTS.	1 - 200,000-	2193	1 - 100,000 -	4386		

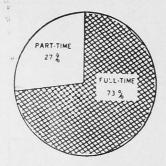
Fig. 34

ANNEX-8. WORLD TOTALS

Ą rea	Population °	Number of medical schools	Number of physicians	Annual number of medical graduates	Population per medical school °	Population per physician	Annual number of medical graduates per 1000 physicians	new physician i.e., crumal
Africa . North and Central America . South America . Asia, Eastern . Asia, Western . Europe . Oceania	210 832 000 234 276 000 121 000 000 1 370 821 000 82 529 000 619 707 000 14 234 000	16 124 53 171 15 253 6	23 284 259 664 48 263 209 688 16 951 665 522 12 427	1 089 9 076 5 308 12 418 863 37 222 741	13 177 000 1 889 000 2 283 000 8 016 000 5 614 000 2 449 000 2 372 000	9 055 902 2 507 6 537 4 869 931 1 145	46 8 35.0 110.0 59.2 51.0 55.8 59.6	194 000 26 000 23 000 110 000 95 000 17 000 19 000
World total	2 653 399 000	638	1 235 799	66 722	4 160 000	2 147	54.0	40 000

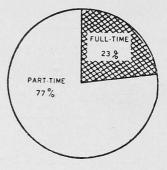
[·] Figures rounded off to nearest thousand

COMPARISON OF FULL-TIME VERSUS PART-TIME STAFFING PATTERNS IN BASIC SCIENCE AND IN CLINICAL DEPARTMENTS (JULY 1960)



BASIC SCIENCE DEPARTMENTS

N = 5 141



CLINICAL DEPARTMENTS

N = 30,209

Fig. 36

measure with responsibility for health care in the rural areas. As medical manpower development is to be planned in conjunction with the socio-economic development and within the context of the employment potential, the development of medical manpower has to be pursued on a phased basis at various levels.

The shortage of teachers is the most acutely-felt problem in developing countries hampering the expansion of educational opportunities. Non-medical scientists who have been trained to an advanced level in basic medical sciences are not used to the extent that they could be; they can be of great help in meeting the problem of shortage of medical teachers.

In a developing country such as ours, it is impossible to have full time units all over the country. It will only be possible in certain institutions or in some of the institutions to have one unit of research-minded full time personnel totally for that particular work. In the United States, in the Clinical Departments there are only 23 per cent full time staff, and the rest of 77% are part-time. In the Basic Sciences Department, they have got 73 per cent full time and 27 percent part-time. Even the general practitioners who are interested in Anatomy, Physiology and Biochemistry are employed as part-time teachers, so that the faculty-students ratio is maintained. In most of the Medical Colleges in the United States with 50 to 60 annual admissions, except the State University Medical Colleges where the admission is 200, faculties consist mostly of practitioners. It would not be impossible for us to create sufficient faculties if we approach the problem in this manner. The Health Survey and Planning Committee has also recommended this. The University, the Government and the Profession should do something in this direction and see that our faculty is sufficient and at the same time we could think in terms of full time faculty at least in certain disciplines. (Fig. 36)

The quality of pre-medical education leaves much to be desired. If medical education has to be a univercity type of education where critical faculties are developed and education is essentially self-education, and the responsibility of teachers is really to emphasise the method, there is need for improvements in the quality and pattern of pre-medical education.

It is necessary for the medical schools in developing countries to have clear concepts regarding the objectives of medical education in their respective schools. No one will deny that the general objectives are essentially similar to those frequently stated for medical schools in the developed countries, viz. "to train doctors with the requisite knowledge and basic skills, to develop in them essential habits and attitudes, and to make them understand professional and ethical principles." More specially, the aim of education for developing countries should be to make the doctors familiar with local problems and to develop in them the capacity to analyse such problems and contribute towards their solution.

Suggestions: Orientation towards local problems: In the training of the doctor, the nature of the local problems must be highlighted and methods to deal with such problems discussed. The doctor should be made familiar with the range of resources available to him to deal with the problems. It should be emphasised that he should even take the initiative to play a vital role in organising community resources for the solution of local health problems.

Communication with the rural population: One of the major problems in the work of a doctor in rural areas is for him to be able to discuss with the people the nature of their problems, the essential causes of their ailments and the methods that are available for their control. In this process, the doctor is often handicapped by his inability to explain the pathogenesis of disease in a language understandable by the rural population. His own education in the medical school has been developed along concepts of pathogenesis which are expressed in a language essentially derived from Latin and Greek. To the indigenous people of a rural area, such concepts convey no meaning. They appreciate concepts of disease expressed in their own language through their indigenous systems of medicine. It is one of the essential functions of medical education to prepare the doctor to meet this problem in his work in the villages. The student must learn how to approach the village people and find the basis of common interest in order to understand their behaviour and reactions. He must know how to work with their local leaders.

Rural Setting: The bulk of the medical training today is given in the urban environment where the medical schools are situated in the vicinity of large city hospitals. To introduce a rural bias in the education of the doctor, a period of compulsory internship in a rural practice area is generally included. This undoubtedly helps to enable the student to acquire a proper perspective, but this measure alone is little more than a kind of repair for an intrinsic defect in the educational system. When new schools are created at any rate in the future it is well worth considering their location predominantly in rural surroundings so that the education of the physician can take place in the context of rural conditions.

Family Planning: Family Planning should receive the highest priority in the educational programme. Principles of reproductive biology should be introduced at the very beginning of the undergraduate curriculum and its application for the control of the growth of the population should be constantly kept in focus of the student throughout his training period. The maternal and child welfare centres provide excellent opportunities

in rural areas for demonstrating to the student the importance of family planning as a vital element of maternal and child health.

Prevention of disease should form the main basis of the educational system. Of equal importance is Health Education. The long-range advantages of preferential emphasis on education rather than medication should be repeatedly emphasised.

In times of national emergencies, the content of medical education should include emergency medicine, management of medical, surgical, psychiatric and public health problems of war and instruction in the promotion and maintenace of good health as the greatest morale builder of a Nation.

6.2 Experiments in medical education for a Developing Society: It is essential to define the objectives of education in the first instance and design methods of teaching to be in accordance with those objectives. The method should always be subservient to the attainment of the goal. The relative roles of the lecture, the demonstration, the clinical-pathological conference, audio-visual aids, the T.V., etc., have been discussed several times in the past. Their application in developing countries depends, to a large extent, on the availability of resources. Large classes and few teachers are the general rule, and methods of education should be so designed as to meet with such a situation.

Application of modern techniques and tools of medical education are very essential in developing countries because the classes are large and we want more doctors, teachers and research workers and as such we must be able to utilise all the modern gadgets that are available to put across to the students the knowledge that they wish to gain with more opportunities for self-education. (Figs. 37 & 38)

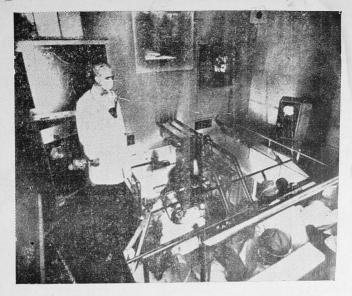


Fig. 37

At the University of Kansas School of Medicine television provides the surgeon's eye views of the operative field for the students who actually witness the surgery in a gallery classroom. Slides, motion pictures, blackboard (with ultra-violet light and flourescent chalk) and view boxes permit a range of teaching approaches to surgery as living anatomy.

(With the kind permission of the Editor, Journal of Medical Education).

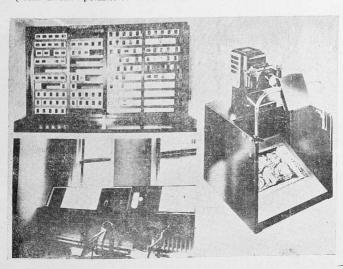


Fig. 38

Visual teaching aids in a Gynaecological Department.
(With the kind permission of the Editor, Journal of Medical Education).

It is no use paying lip service to the modern techniques of teaching and even inscribe them in the blue-prints of educational objectives of a medical school and yet fail utterly in implementing them. The guiding principle for teachers should be that learning is a personal and active process, it must aim at realistic goals and that learning should be accompanied by a feed-back process and based on good inter-personal relationship with the students. Student participation in the learning and teaching process is vital.

Current efforts in the developed countries to adopt an integrated method of teaching are to be welcomed. The encouragement of students to participate in seminars and symposia are certainly of great help. Teaching at the out-patient, at the bed-side and at the rural health practice centres would facilitate medical education. But all of this should be considered within the context of conditions actually prevailing in the medical schools of developing countries. The prevailing picture is familiar to all. Poor faculty-student ratio, inadequacy of equipment, the burden of frequent and repeated examinations, the poignancy of the examination system which has such a stronghold on the motivation of the student, the need for text books which would actually help the student in understanding the health problems in his area — these are some of the features of the present situation in developing countries, and it is against this background that educational objectives and educational methods have to be devised by faculties of medical schools.

It is necessary to find an answer to the question as to whether it is desirable to have the same pattern of medical education for all types of persons, viz. general practitioners, specialists, teachers, investigators, public health workers, etc. It has been suggested that the training of the future teacher and the specialist could be different at the undergraduate level from the training of

the basic doctor who has to work in the rural area. It is only when we have more precise information on this problem that it would be possible to arrive at what is good in the interests of the society.

There is much to be done for the improvement of the administration of medical colleges as many of the difficulties of medical education in developing countries seem to be administrative and social in nature. There is need for evaluation of the present administrative system for streamlining procedures. Operational research and evaluation of the educational patterns and methods of teaching would yield good results in modelling medical education to suit the needs of society.

Experiments and innovations in the examination system are long overdue. Day-to-day assessment and objective multiple choice type of questions should be tried out.

- 6.3 Research: Problem-oriented research should receive the greatest emphasis. If the faculty members of medical schools of developing countries engage themselves seriously in the study of local problems, this would create a climate in which the students would spontaneously acquire the necessary motivation for dedicating their energies in future for the study of their local diseases. Here, the role of the faculty and its motivation are of paramount importance. Each teacher in the medical schools in developing countries should be imbued with a spirit of work in rural areas and should attempt to create the necessary climate for young students to encourage them in the pursuit of problem-oriented research.
- 7. CONCLUSION: In this review of Medical Education, an attempt has been made to trace the history of medical education, the contemporary developments in the world and India's efforts in the field of medical education. It is my humble tribute to Sir A. L. Mudaliar's contribution to world medical education.