

No. 1

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF HUMAN RESOURCE DEVELOPMENT  
INDIA

**BASIC DESIGN STUDY REPORT  
ON  
THE PROJECT  
FOR  
AUGMENTATION OF MEDICAL SERVICES  
IN  
THE INSTITUTE OF MEDICAL SCIENCES,  
BANARAS HINDU UNIVERSITY  
IN  
INDIA**

JANUARY 1994

BINKO LTD.

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BASIC DESIGN STUDY REPORT ON THE PROJECT FOR AUGMENTATION OF MEDICAL SERVICES  
IN THE INSTITUTE OF MEDICAL SCIENCES, BANARAS HINDU UNIVERSITY IN INDIA

JANUARY 1994

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## PREFACE

In response to a request from the Government of India, the Government of Japan decided to conduct a basic design study on the Project for Augmentation of Medical Services in the Institute of Medical Sciences, Banaras Hindu University in India and entrusted the study to the Japan International Cooperation Agency (JICA).

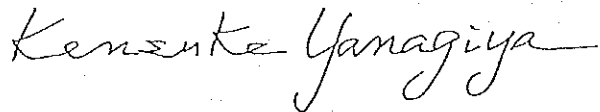
JICA sent to India a study team headed by M.D. Minoru Tanabe, Department of International Cooperation, National Medical Center Hospital, Ministry of Health and Welfare and constituted by members of Binko Ltd., from 15 August 1993 to 12 September 1993.

The team held discussions with the officials concerned of the Government of the India, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to India in order to discuss a draft report, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of India for their close cooperation extended to the teams.

January 1994



Kensuke Yanagiya  
President

Japan International Cooperation Agency

January 1994

Mr. Kensuke Yanagiya,  
President  
Japan International Cooperation Agency  
Tokyo, Japan

Letter of Transmittal


We are pleased to submit to you the basic design study report on the Project for Augmentation of Medical Services in the Institute of Medical Sciences, Banaras Hindu University in India.

This study was conducted by Binko Ltd., under a contract to JICA, during the period 29 July 1993 to 29 January 1994. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of India, and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

We wish to take this opportunity to express our sincere gratitude to the officials concerned of JICA, the Ministry of Foreign Affairs, and the Ministry of Health and Welfare. We would also like to express our gratitude to the officials concerned of the Ministry of Human Resources Development of India, the JICA India office and Embassy of Japan in India for their cooperation and assistance throughout our field survey.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



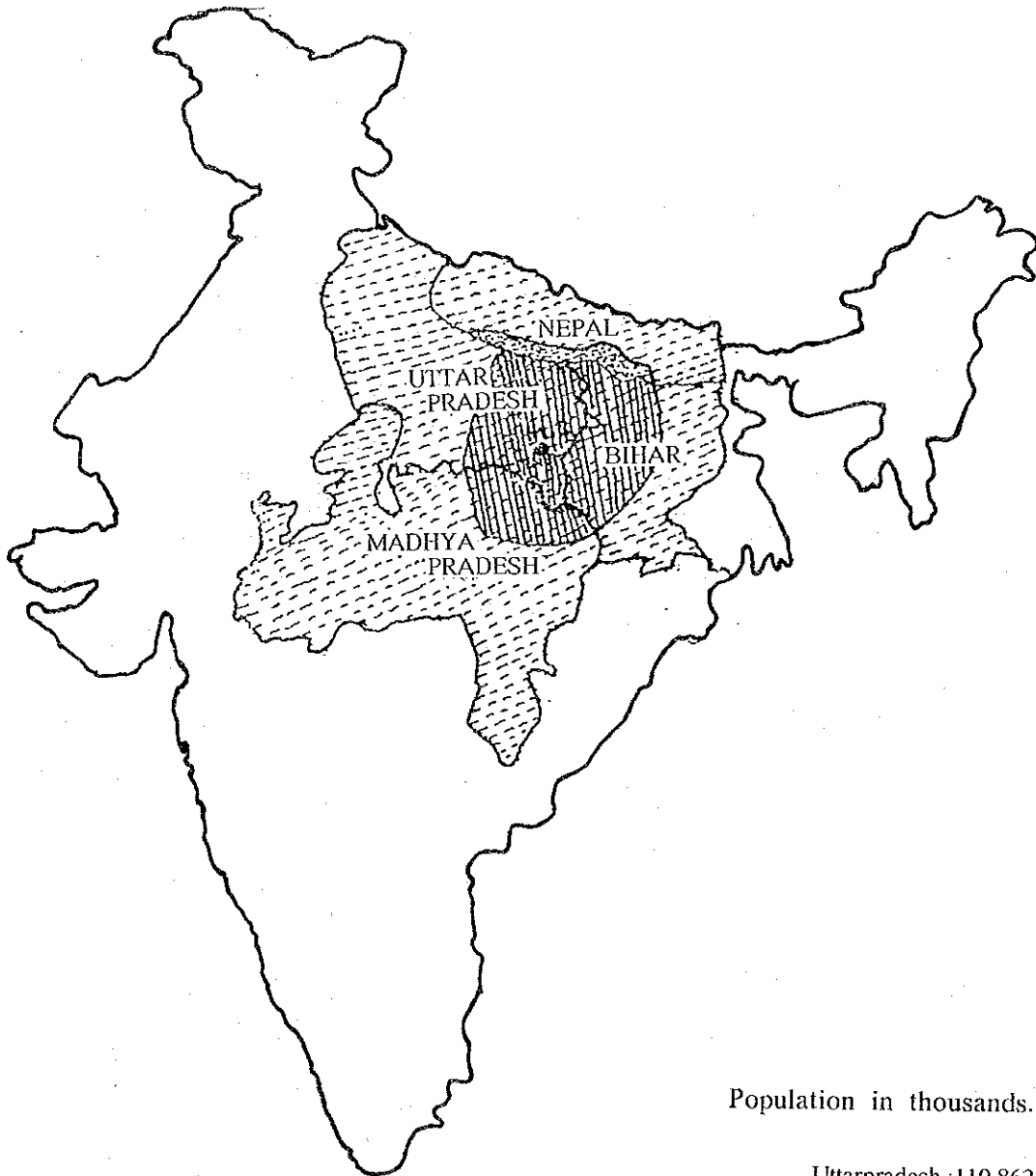
Shinichi Kimura  
Project manager

Basic design study team on  
The Project for Augmentation of Medical  
Services in the Institute of Medical  
Sciences, Banaras Hindu University

Binko Ltd.



# Catchment Area of BHU



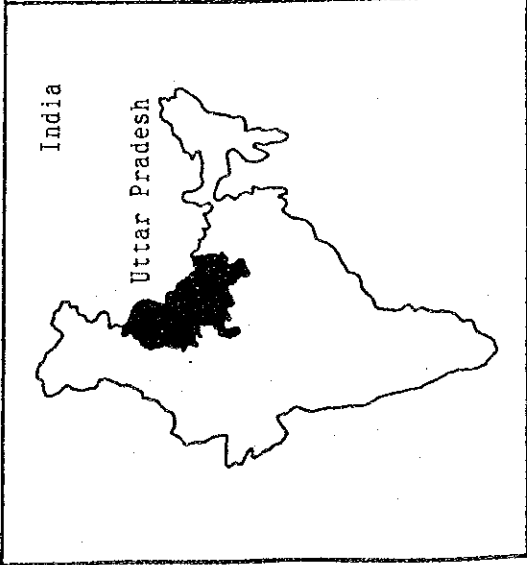
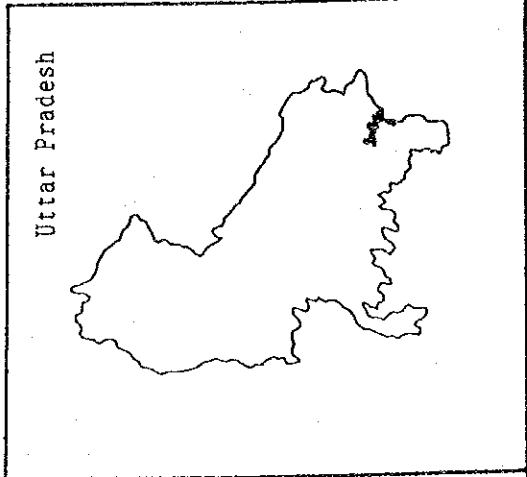
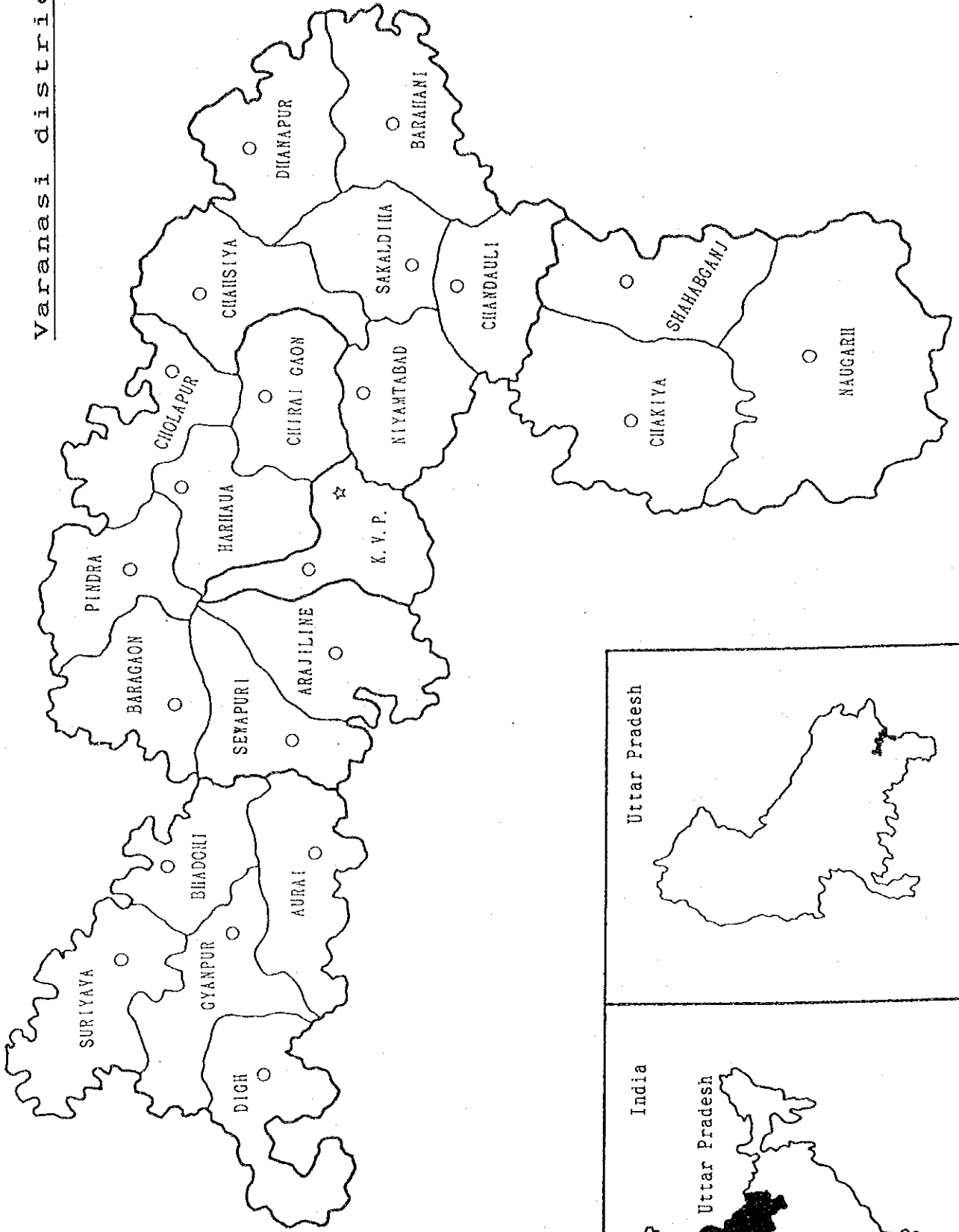
Population in thousands.

Uttar Pradesh : 110,862.

Madhya Pradesh : 57,173

Bihar : 69,915

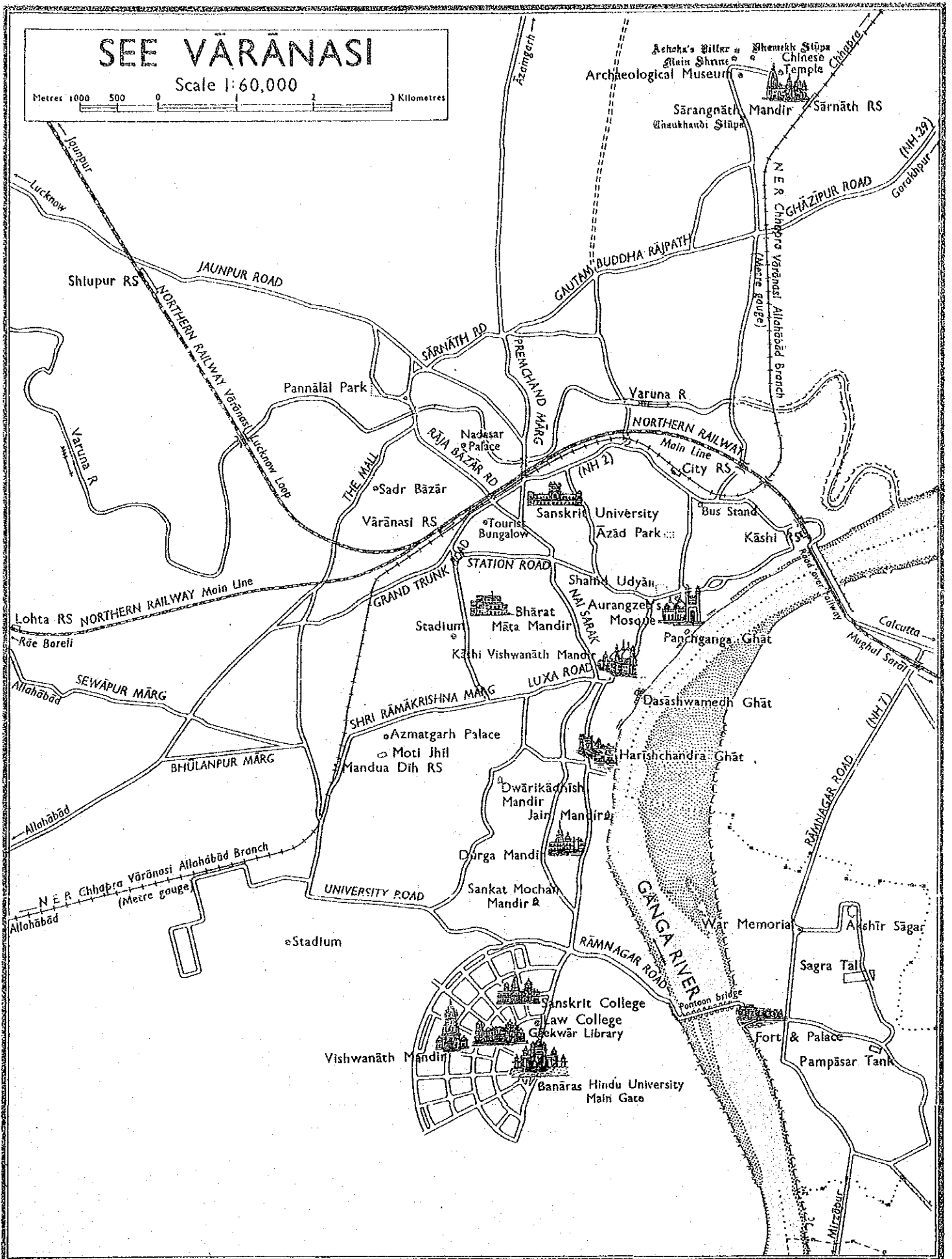
Varanasi district



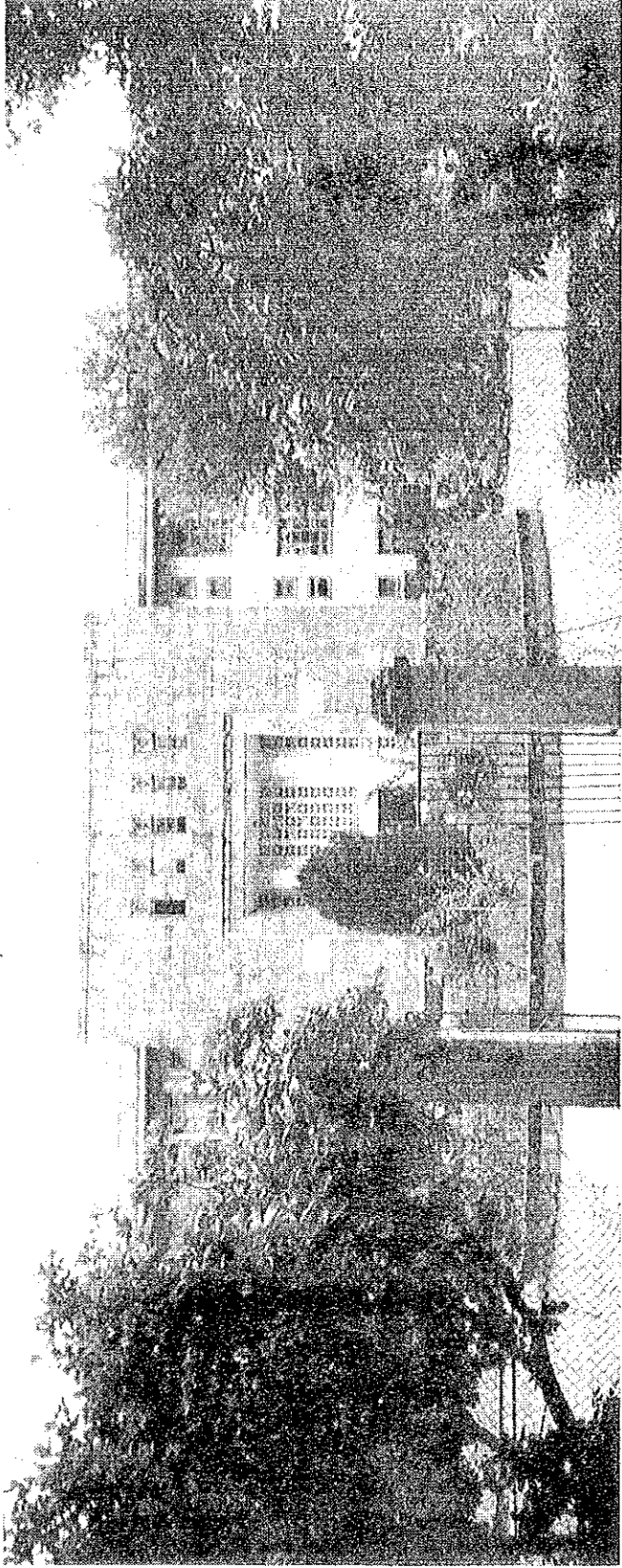
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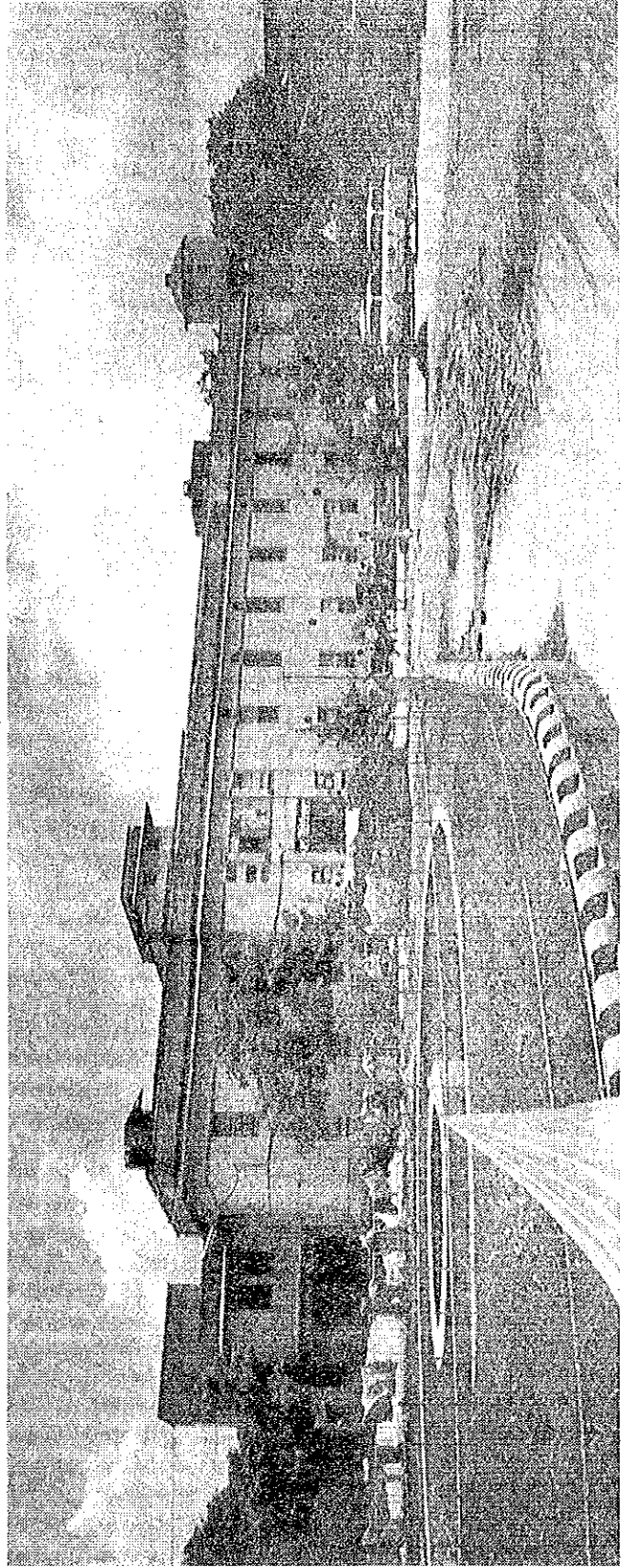


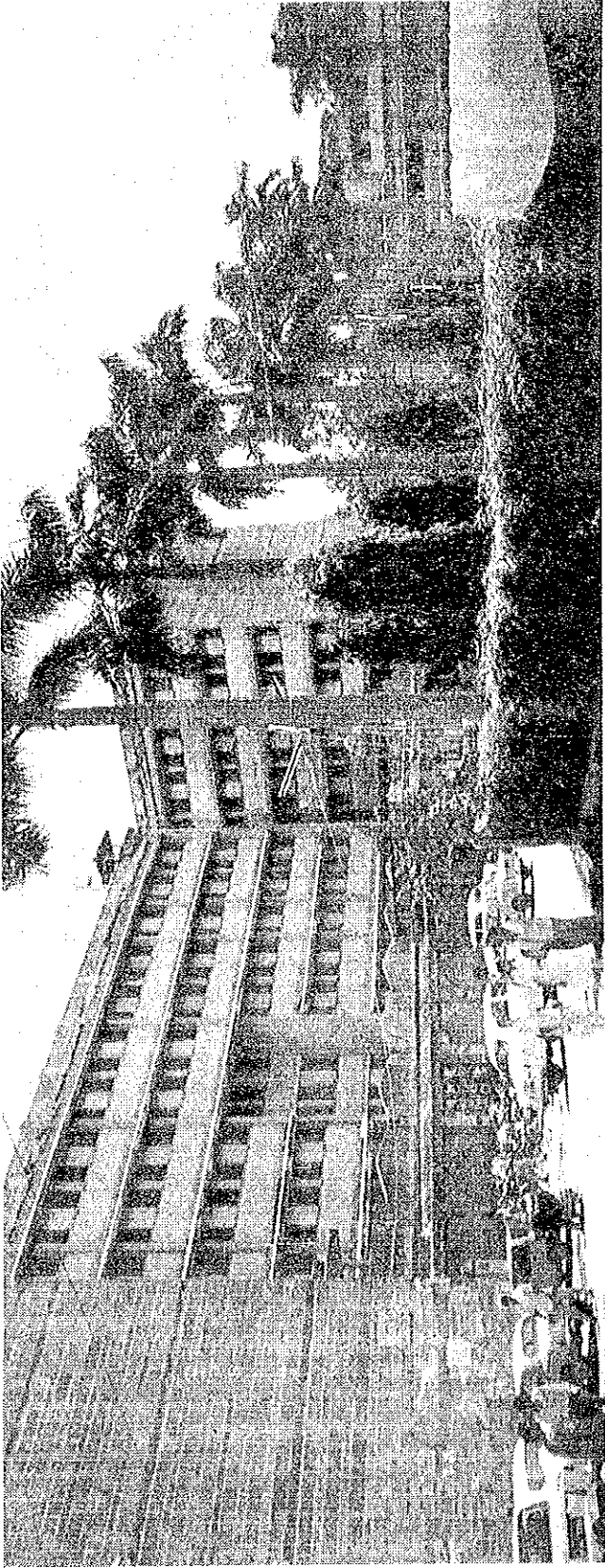




▲ INSTITUTE OF MEDICAL SCIENCE

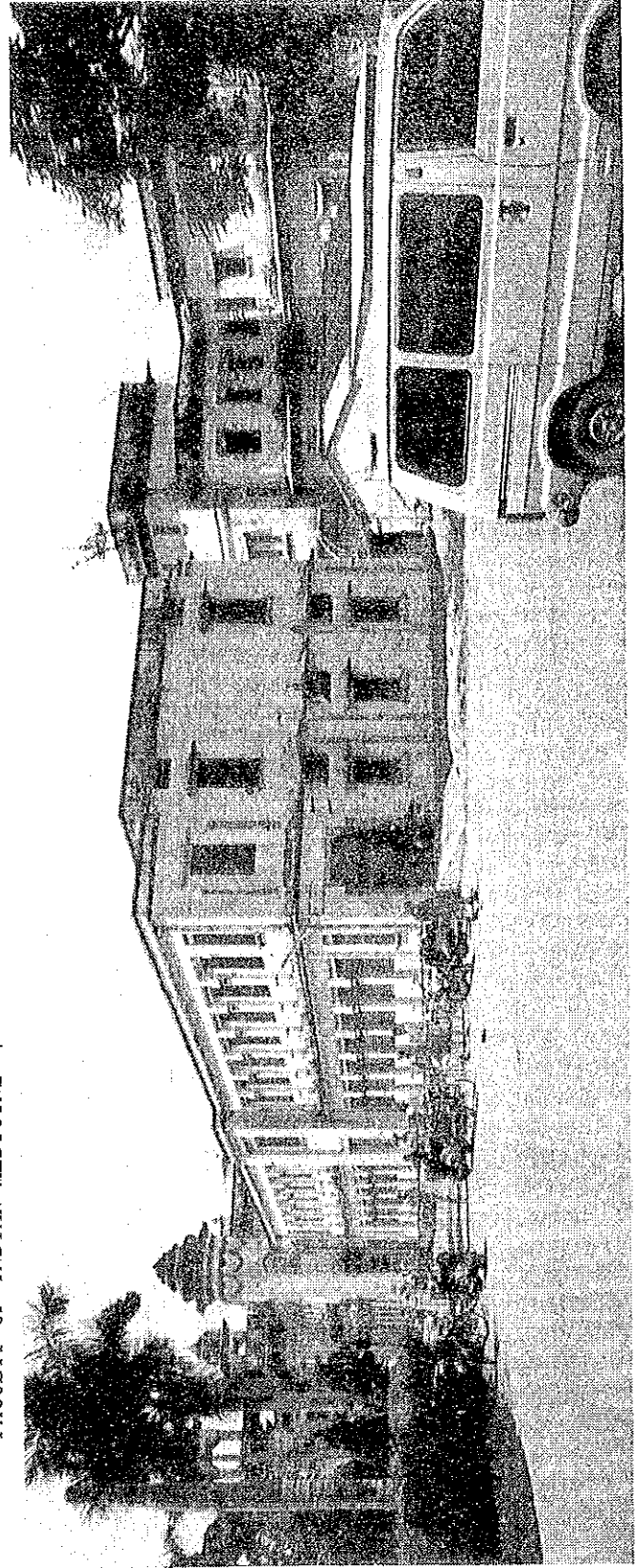
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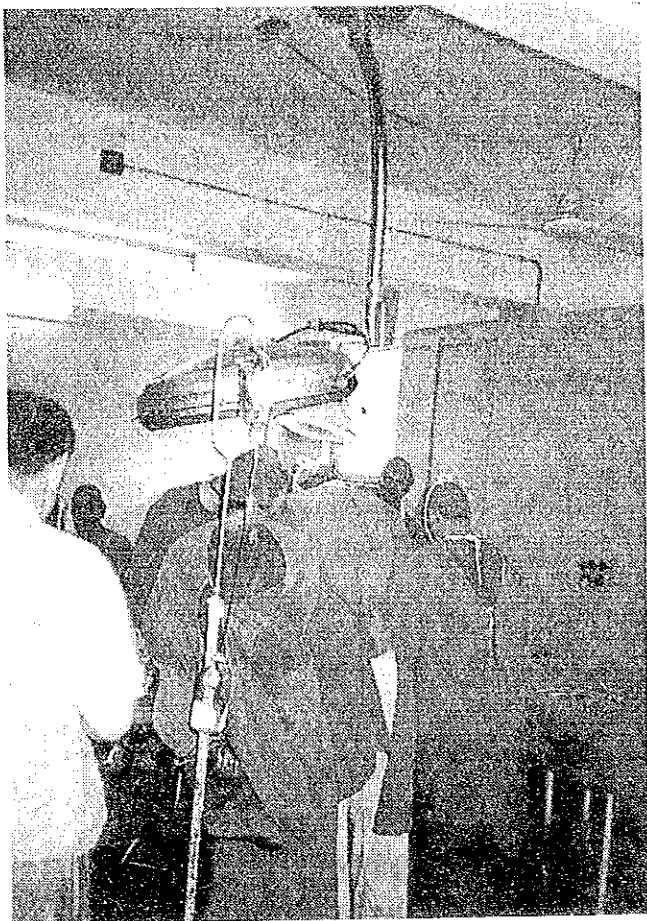




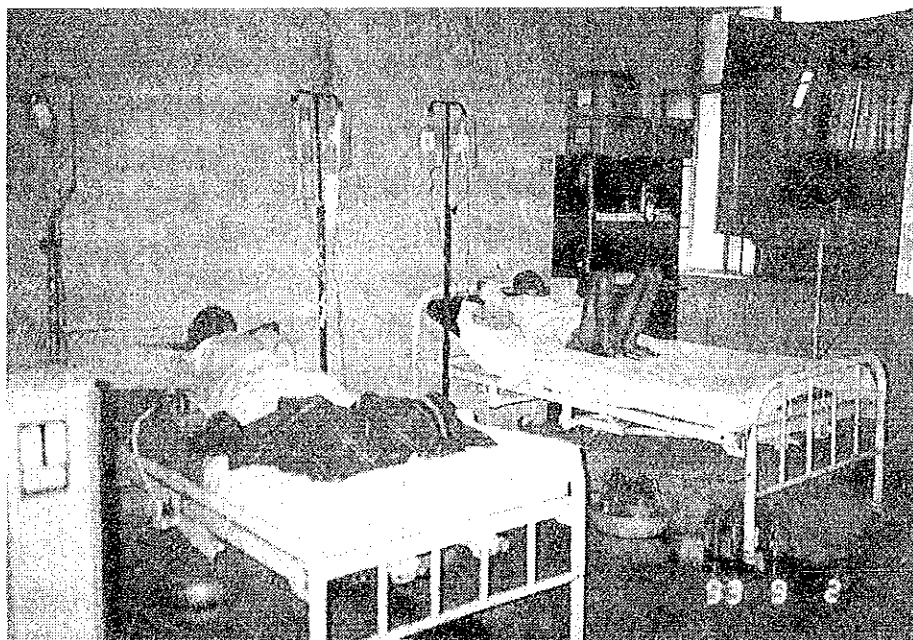
▲ FACULTY OF MODERN MEDICINE

▼ FACULTY OF INDIAN MEDICINE

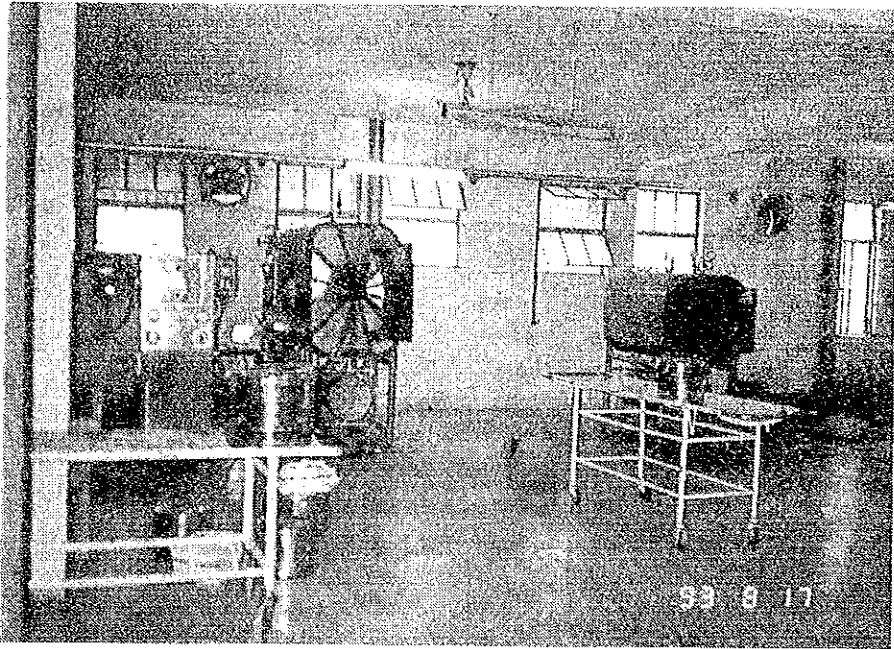




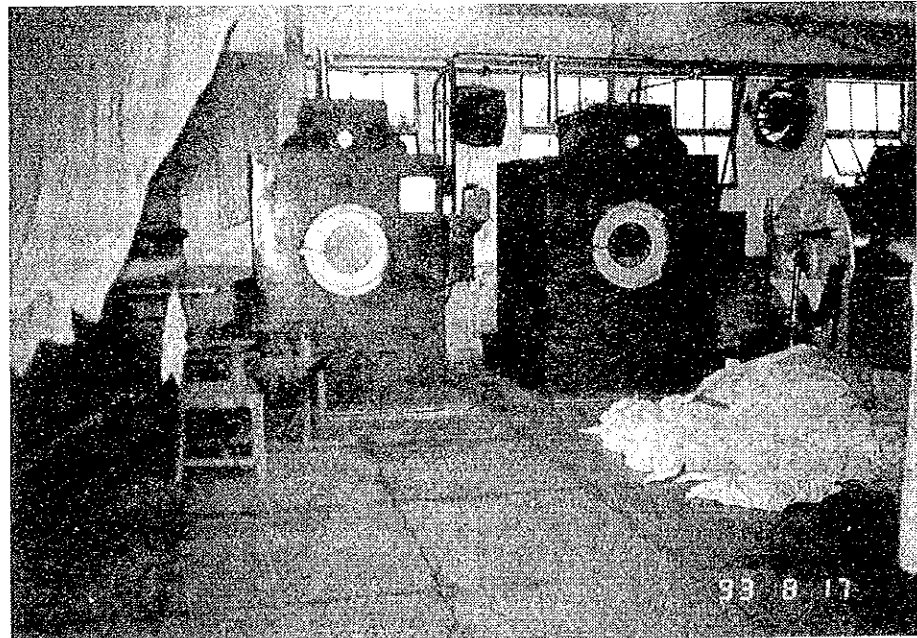
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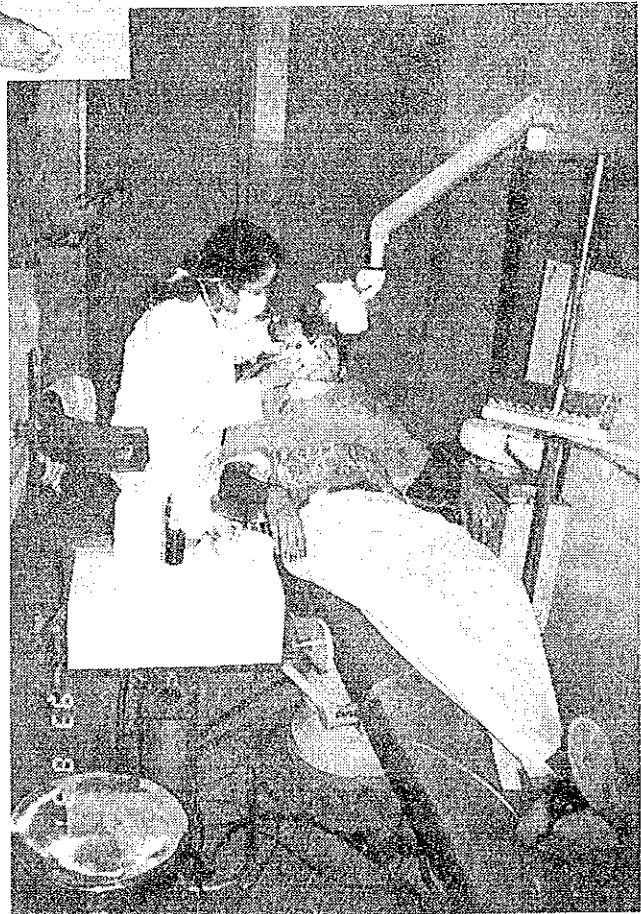
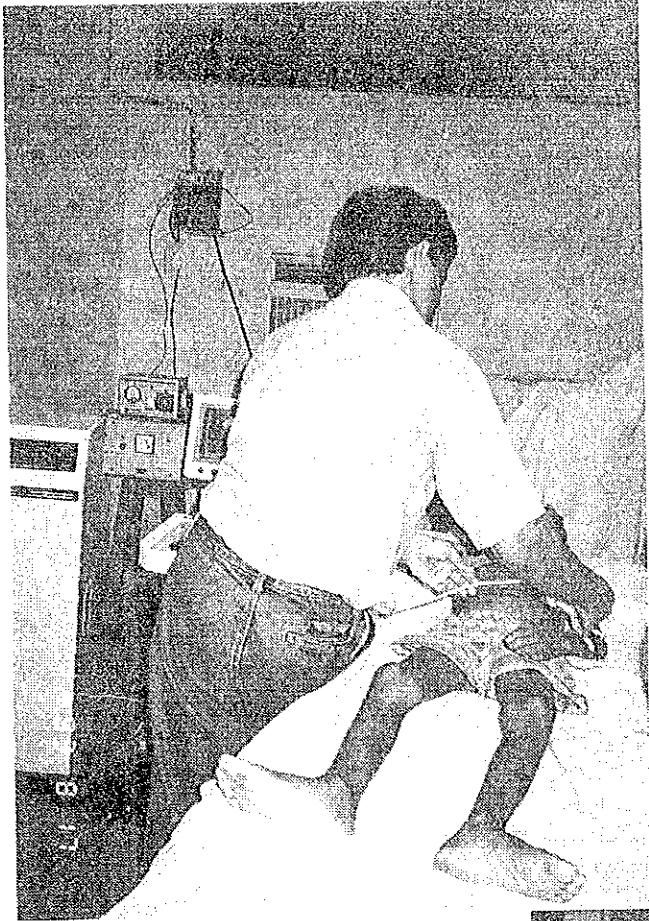
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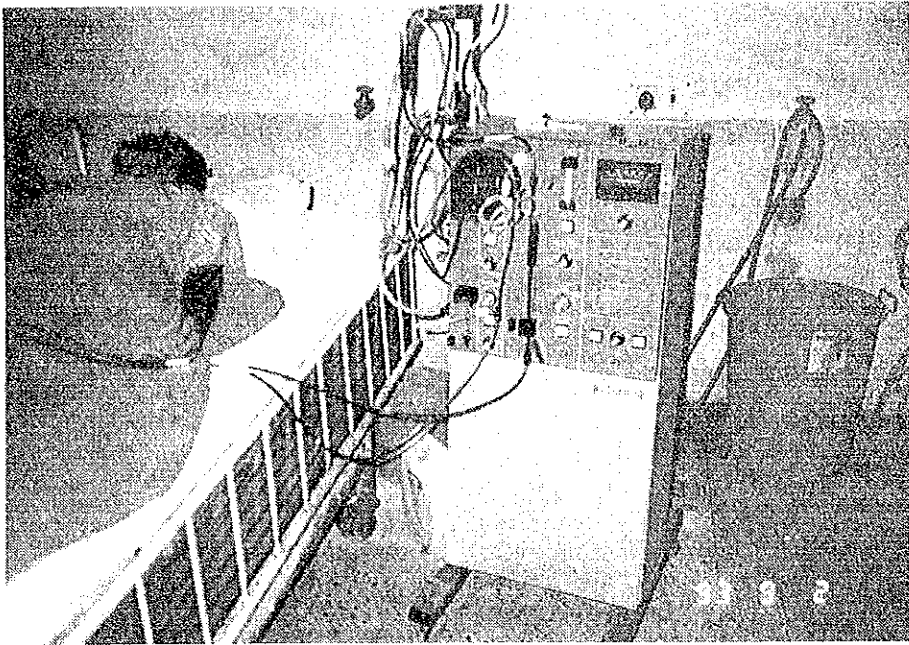
LAUNDRY (LINEN SUPPLY)



DEPT. OF PEDIATRICS



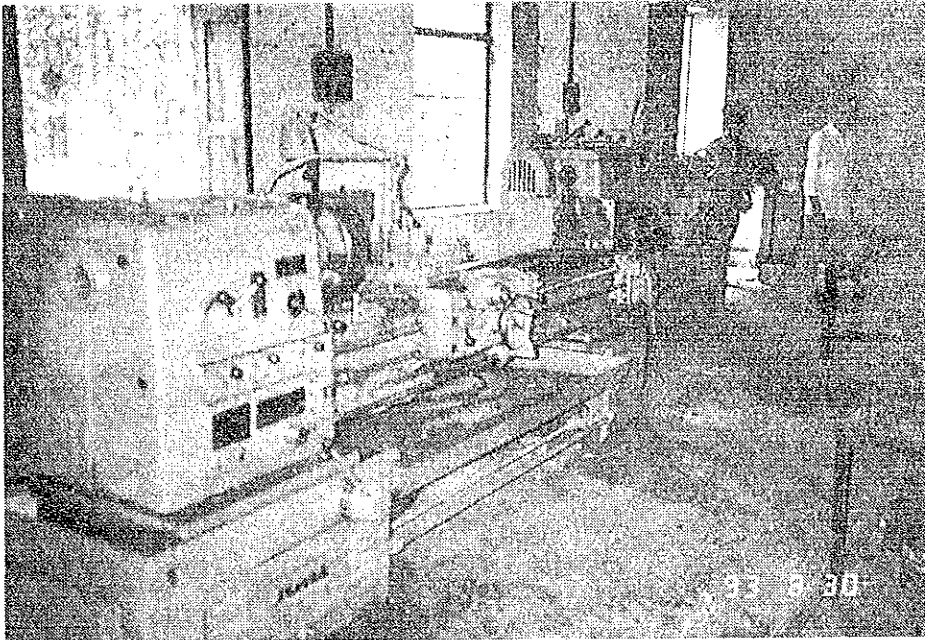
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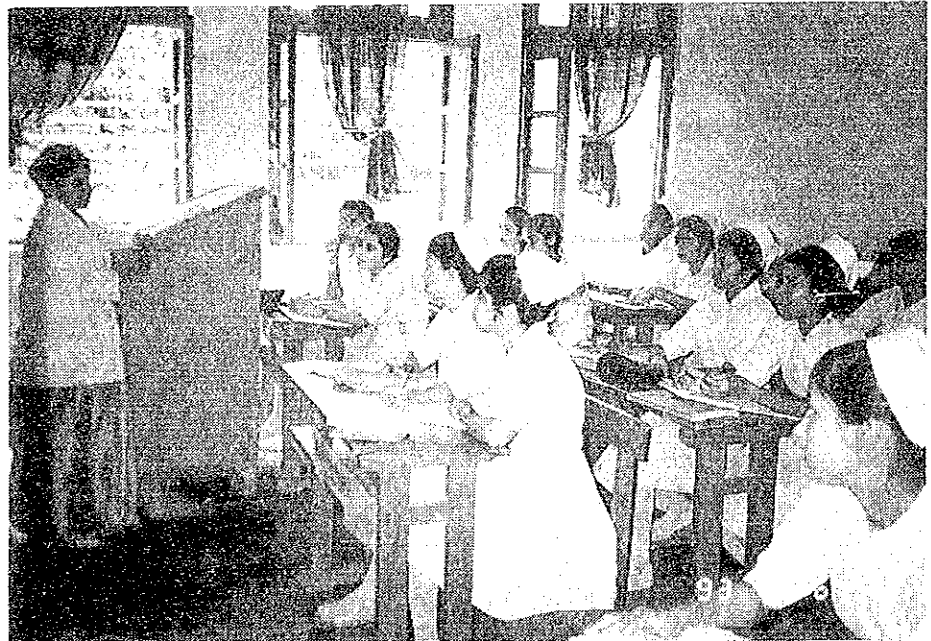
SECTION OF NEPHROLOGY



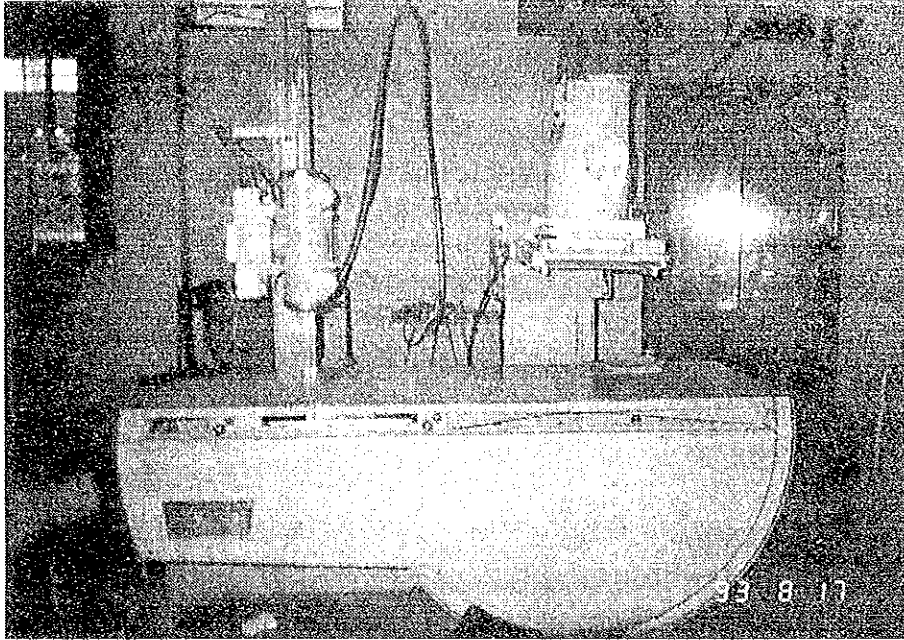
DEPT. OF RADIOTHERAPY



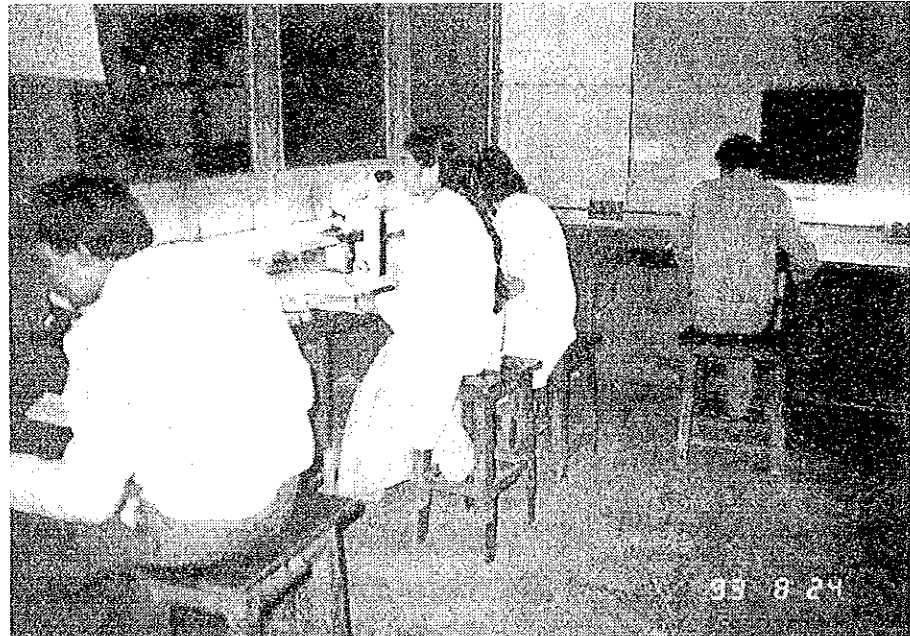
INSTITUTE WORKSHOP



NURSING SCHOOL



DEPT. OF RADIOLOGY



CLINICAL PATHOLOGY LAB.

## Summary

In 1983, the Government of India established national health policy under the slogan of "Health to all people by the year 2000", and ever since, has promoted development with the emphasis on 1) the diffusion of health and medical services to the citizen's level, 2) the encouragement of citizen participation, and 3) the supply of safety drinking water and the improvement of environmental sanitation and nourishment. As a result of such efforts, conspicuous improvements have been achieved in the level of fundamental health levels as can be seen in the fact that the average life expectancy rose from 44 years in 1960 to 59.1 years in 1990, and the mortality rate of under five year old fell from 282/1000 to 142/1000 over the same period. However, despite this trend, India's basic health level is still the second lowest in Asia only ahead of Bangladesh, and the chronic state of malnourishment is a general issue for the Indian people.

The state of diseases in India is much the same as that in other developing countries with infectious diseases forming the majority, and as well as diseases which have already been eradicated in the advanced nations and modern diseases such as heart disease and malignant tumors are on the increase. Moreover, due to diseases which were caused by the poor state of public sanitation and malnourishment, the infant mortality rate is still high.

In response to such a situation, the Government of India has tried to improve medical equipment in medical institutions such as The Banaras Hindu University (BHU) Institute of Medical Sciences (IMS), Sir Sunderlal (SS) Hospital which is the proposed hospital of this project, through the forming of the Health Development Five Year Plan under the 8th State Five Year Plan. However, due to the financial reason, implementation of the project became difficult. Therefore, the Japanese Government was requested to render grant aid assistance for the procurement of the most urgently needed diagnostic and therapeutic equipment which are included in the above Health Development Five Year Plan.

The Institute of Medical Sciences, Banaras Hindu University was established in 1960 as a medical university, and in 1971 was reorganized as an institute for medical sciences. The Institute's Sir Sunderlal Hospital covers a service area of roughly 100 million people in eastern Uttar Pradesh, Bihar State and eastern Madhya Pradesh, and is the sole medical institute in the north east of India. Currently, it possesses ten high level specialist therapy departments, and deals with some 2,000 outpatients and carries out over 100 operations per day. It is also an educational institution which provides post graduate training for 340 doctors every year. Despite its huge responsibility of providing high level specialist medical service to the east of India, and being education centre, it is not in a position to carry out its expected role because of the quantitative shortage of and obsolescence of medical equipment in the Hospital.

In response to this situation, the Government of Japan decided to conduct an investigation into the matter, and in March, 1993 the Japan International Cooperation Agency (JICA) dispatched a Preliminary Study Team to discuss and confirm on the background and detailed contents of the project. As a result of the study, JICA decided to conduct a basic design study concerning Japan's Grant Aid, and in August, 1993 sent a Basic Design Study Team to India. The team held discussions with the government of India officials while collecting information, based on the results of the preliminary study, and following the subsequent analysis and explanation of the draft report executed in January, 1994. The basic design study report presented herewith has been compiled based on these activities.

As a result of the study, it was decided that the implementation of the project is appropriate in view of the facts that the proposed hospital is the highest level medical institution in the area; there are no other medical facilities to which the local people are able to access, the proposed hospital's equipment is obsolete and deteriorating in functional terms and is thus in need of urgent renewal and supplementation; and the scope and scale of the project is within the bounds of Japan's Grant Aid framework.

In this study, a Basic Design was determined based on the objectives of the project, budgetary provisions, operation and maintenance systems, and the effectiveness of the Project. It was decided that the Basic Design should adhere to the following policies:

- 1) The problem for medical care activities in the proposed hospital lies in the quantitative shortage of and functional deterioration in existing equipment, but in the forming of this basic design, it shall be implemented with the fact that the hospital is a national general hospital which provides total medical service ranging from the basic to the high level.
- 2) The equipment procured is not for so called high level therapy nor special diseases, but for supporting the primary and secondary medical care for the diagnosis and therapy of high occurrence rate and general diseases of the area. The chosen equipment is also possible to be operated, maintained and controlled within the existing technological and budgetary bounds by way of analysing the disease trends, case numbers and present by available equipment at the hospital.
- 3) This project is designed on the basis of achieving the centralization and rationalization of medical care activities in the hospital, to carry out the improvement of equipment for those departments such as the surgical, central laboratory, central sterilization, maintenance workshops etc., which are able to provide both directly and indirectly, wide ranging benefits, and are in line with the aforementioned concepts.
- 4) In consideration of ease and certainty of maintaining the equipment after being procured, and the equipment which the hospital currently possesses, it is planned that part of the equipment will be procured from India and third countries.

5) On the technical side, the equipment will be the same as current levels and easy to operate, of simple and durable construction, and be able to cope with the unstable state of electricity and tropical climate of high temperature and humidity in India. It will also be so arranged that spare parts are supplied for the maintenance by the hands of India side and technical guidance for maintenance to be given at the time of procurement.

The subject of this project will be the operating theatre block, the central sterilization and supply department, the central clinical laboratory and the clinical pathological laboratory which are in most urgent need of equipment improvement. The following are the main items of equipment which have been selected on the basis of the above consideration.

Designed Equipment by Division

Division	Main Equipment List
Operating Theatre Block	
General Surgery Operation Theatres	Operating Theatre Shadowless Lamp, Operating Theatre Table for General Surgery, Operating Theatre Diathermy, Anaesthesia Apparatus, Defibrillator, Patient Monitor, Laparo-fiberscope, etc.
Orthopedic Surgery Operating Theatres	Operating Theatre Shadowless Lamp, Operation Theatre Table for Orthopedic, Operation Theatre Diathermy, Anaesthesia Apparatus, Defibrillator, Patient Monitor, Surgical Image Intensifier C-Arm X-ray, Surgical Instrument set, for Orthopedic Surgery, etc.
Plastic Surgery Operating Theatres	Operating Theatre Shadowless Lamp, Operating Theatre Table for Plastic Surgery, Operating Theatre Diathermy, Anaesthesia Apparatus, Patient Monitor, Operating Microscope for Micro-Surgery, etc.
Gynecological Surgery Operating Theatres	Operating Theatre Shadowless Lamp, Operating Theatre Table for Gynecological Surgery, Operating Theatre Diathermy, Anaesthesia Apparatus, Defibrillator, Colposcope with camera, etc.



Division	Main Equipment List
Cystoscopy Surgery Operating Theatres	Operating Theatre Table for Cysto Surgery, Anaesthesia Apparatus, etc.
Urological Surgery Operating Theatres	Operating Theatre Shadowless Lamp, Operating Theatre Table for Urolo Surgery, Operating Theatre Diathermy, Anaesthesia Apparatus, Operating Microscope for Urological-Sugery, Surgical Scrube Station, etc
Cardiothoracic Surgery Operating Theatres	Operating Theatre Shadowless Lamp, Operating Theatre Table for Cardiothoracic Surgery, Operating Theatre Diathermy, Anaesthesia Apparatus, Defibrillator, etc.
Neuro Surgery Operating Theatres	Operating Theatre Shadowless Lamp, Operating Theatre Table for Neuro Surgery, Operating Theatre Diathermy, Anaesthesia Apparatus, Patient Monitor, etc.
Emergency Surgery Operating Theatres	Operating Theatre Shadowless Lamp, Operating Theatre Table for Emergency Surgery, Operating Theatre Diathermy, Anaesthesia Apparatus, Defibrillator, Patient Monitor, Surgical Instrument set, for General Surgery, etc.
Post Operative	Ventilator, Patient Monitor , Infusion Pump., Defibrillator, Blood Gas Analyzer, Na, K. Analyzer, Glucometer, etc.
Central Sterilization and Supply Department	
Central Sterilization and Supply Room	High Pressure Sterilizer, Ultrasonic Instrument Washer, Drying Cabinet, Surgical Glove Washer & Dryer, Water Softening Plant, etc.
Laundry Section	Washing Machine, Breaching Machine, Automatic Hydric Washer Extractor, Drying Tumber, Electric Press Machine, Linen Supply Trolley, etc.
Incinerator Section,	Incinerator, Electric Type
Central Clinical Laboratory	
Pathology Lab.	Full Automatic Chemistry analyzer, Binocular Laboratory Microscope, Trinocular Microscope, Whole Blood Platelet Aggregometer, Deep freezer, Flame Photometer, etc.
Microbiology Lab.	Deep freeze, Binocular research microscope, Dark field microscope, Inverted microscope, Trinocular microscope, Centrifugal lyophiliser Freeze Drier, High Speed Cold Centrifuge, etc.

Division	Main Equipment List
Immunology Lab.	Turbidimeter, ELISA Platelet Reader
Pathology Laboratory	
Histopathology and Cytology Lab.	Automatic tissue processor, Automatic staining machine, Auto embedding centre, Sledge microtome, Cytocentrifuge, Binocular research microscope, etc
Haematology Lab.	Haematological analyzer, Research fluorescent microscopy, Video system for microscopy, Multi type coagulometer, Whole Blood Platelet aggregometer, etc.
Blood Bank, etc.	Blood storage refrigerators, Refrigerated centrifuge, Deep freezers, Cryobath, circulating, etc,
Maintenance Workshop	Lathe Machine, Radial Drilling Machine, Double Ended Grinding Machine, Oscilloscope, I.C. Tester, Digital Multimeters, Pulse Generator, Vacuum Cleaner, Automatic Coil Winding Machine
Dep. of Ophthalmology	Argon Laser Eye Treatment Unit, Slit Lamp with Tonometer, Operating microscope, Operation Table for Eye Treatment, Fundus Camera, etc.
Dep. of ENT	ENT Treatment Table, Operation Microscope, for ENT Endoscopic sinus surgery
Dep. of Dental Surgery	Dental Unit, Dental Instrument Set with Cabinet, Dental Laboratory Module, Dental x-ray Unit, etc.
Dept. of Obstetrics & Gynecology	Delivery Table, Ultrasound scanner, Cardio-tocograph/Fetal Monitor, Fetal Heart Detector, Vacuum Extractor, etc.
Dept. of Pediatrics	Operation Theatre light, Treatment Table for Pediatric minor Surgery, Bronchofiberscope for pediatric, Gastrointestinal-Duodenofiberscope for Pediatric, Laparoscope for Pediatric, Cysto-Rectoscope for infant and pediatric, Video System for fiberscope, Ventilator, etc.
Nursing School	Vehicle, Chase doll of adult size, Obstetrical training kit, etc.
Dept. of Radiology	Whole Body Computer Tomography X-ray Equipment, Ultrasonography Scanner, Cobalt 60 Teletherapy Machine

Division	Main Equipment List
Dept. of Endoscopy	Esophago Fiberscope, Gastrointestinal Fiberscope, Colono Fiberscope, Choledoco Fiberscope, Video Endoscopy set with Camera, Lecture Scope for Fiberscopes, Endoscopic Illuminator, etc.
Section of Nephrology	Hemodialysis Machine, for acute dialysis, Revers Osmosis water plant for the hemodialysis.

The implementation body of the project will be the Ministry of Human Resource Development. The director of the IMS will take the overall responsibility for the carrying out of the work, and the maintenance workshops will be in charge of maintenance of the equipment after its procurement.

The project has selected equipment which the existing maintenance setup is able to cope with, or the local agents are able to handle, so it is thought that no major problems will arise concerning the setup for maintenance and upkeep after completion of the work. Moreover, the Institute is operating a revolving fund in order to cover maintenance costs, and in the case of equipment which incurs high operational and maintenance costs, a system of charged treatment is running to cover the costs, so in this case, no problems also should be encountered.

As for the Indian side contribution regarding this project, the proposed equipment is the renewal of existing items, and power and water supply and drainage facilities are already in place, so no more facility improvement costs should arise. Maintenance costs are estimated to be at around 4.99 million rupees (about 17.46 million yen) per year, but because the costs include medical gas charges and consumption costs, and the equipment being procured is for the replacement of obsolete existing equipment and supplementation of broken and unusable equipment, it is thought that the current budget for medical supplies and materials of 2,700,000 rupees per annum and 3,500,000 rupees of the revolving fund made by Radiology department should cover such costs. However, since the warranty period for

some of the high level medical equipment will be one year, therefore the estimated cost of about 300,000 rupees (about one million yen) for binding maintenance service contracts for future maintenance will need to be carried by the Indian side. However, since the maintenance service contract is being maintained at present for the Head CT Scanner X-ray Equipment and Cobalt 60 Teletherapy and 571,000 rupees is being paid. So there is no fear for the payment ability.

In case this project is carried out, it is hoped that the Institute will recover its functions as a top level medical institution which provides services ranging from the basic to the advanced, services and that a huge effect will be seen in the medical staff education and medical service. In specific terms, the 30 million people (3.5% of the whole population) living in and around Varanasi will be blessed with the opportunity of receiving high quality medical service, and some 100 million people living in eastern Uttar Pradesh, Bihar State and eastern Madhyar Pradesh will be able to receive high level and suitable medical care from the general medical institution. Furthermore, over 150 students currently enrolled at the university medical department will be able to learn using the latest medical equipment, and a great contribution is expected to be made in the training of medical personnel. The scale and scope of medical activities are also expected to be broadened at the proposed hospital through the procurement of new equipment.

Therefore, in light of the expected wide range effects stated above, and the fact that maintenance is possible, the implementation of this project is considered to be appropriate.

In order to enhance effectiveness of this project, it is important for the India side to take the following actions:

- 1) Among the equipment scheduled for procurement under this project, there are some high level medical items for which consumable parts will need to be imported, and maintenance checks done through maintenance service contracts with the manufacturer will need to be

carried out. Furthermore, increase in operational costs due to rises in the number of patients and the expansion of medical activities are expected. It is, therefore, suggested that the Indian side establish a necessary and effective hospital management system in consideration of these circumstances.

- 2) This project aims to, as its objective, renew and supplement the equipment and at the time of the installation of equipment, appropriate training for the maintenance personnel will be conducted. Therefore, technological transfer to the maintenance personnel of the proposed hospital is not necessary. However, it is recommended for Indian side to consider that the maintenance personnel from the proposed hospital are sent to Japan in the future to carry out more effective and efficient operation of the equipment.



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## Chapter 1 Introduction

## Chapter 1 Introduction

The BANARAS HINDU UNIVERSITY (BHU), INSTITUTE OF MEDICAL SCIENCE (IMS), SIR SUNDERLAL HOSPITAL (SS HOSPITAL) is ranked as the leading medical institution offering from primary and secondary medical care to tertiary advanced medical services. The Hospital is located in the south of Varanasi district. It takes a very important role as medical facility for its research activities, its medical activities as high referral hospital, and for its training system of medical students of BHU and nurses as teaching hospital. However, the Hospital has experienced great difficulty in providing adequate medical services due to the obsolescence of the facilities and equipment at the Hospital and under the existing financial constraints it has not been possible to upgrade the facilities and renew or supplement equipment to a satisfactory extent.

Under these conditions, the Government of India established a National Health Plan under the 8th Five Year National Development Plan and had been aiming at restructuring medical facilities including this hospital and re-strengthening of the functions of these facilities. However, economic recession of in India makes this objective difficult to accomplish. In view of the conditions as they are, the Government of India requested Japan's grant aid for the procurement of equipment of urgent need which are not procurable by India itself.

In response to this request, the Government of Japan decided to conduct a basic design study and the Japan International Cooperation Agency dispatched a study team for this Project to India for 29 days from 15 August to 12 September, 1993. The Basic Design Study Team led by Dr. Minoru Tanabe, Department of International Cooperation, National Medical Center Hospital. The Basic Design Study Team carried out its survey on the current situation by checking and conferring with Indian officials about the background details of the plan and the contents of the request for the confirmation of project implementation. Explanations were given to the Indian officials about the system and the procedures for the grant aid system of the government of Japan. In the course of these discussions, it

was also confirmed the matters to be undertaken respectively by the Japanese and Indian Governments when the Project should be implemented. On the basis of the results obtained from this field study, a detailed analysis of the project was made to determine its feasibility and justifiability and to examine its contents. A draft final report was thus prepared to lay down the suitable framework for the execution of this Project, including the basic design for the medical equipment, the calculations of the overall project costs, and a maintenance and management plan. Following the preparation of this draft report, a explanation team was sent to India again under the leadership of Dr. Seiki Tateno of Bureau of International Cooperation, International Medical Center of Japan to explain and comment on the draft report for 10 days from 13 January to 22 January, 1994. As the result, the basic design study report has been compiled. The Appendix Materials give details of the schedule for the explanation team, the members list of the team, and the minutes of the discussions.

## Chapter 2 Background of the project



## Chapter 2 Background of the Project

### 2.1 Outline of India

#### 2.1.1. General Description of India

India is situated on the south of the Asian Continent between lat. 8°4' and 37°6'N. and from long. 68°7' to 97°25'E. The Tropic of Cancer roughly crosses the central part of the country and the meridian crosses over Madras. To the north-west is Pakistan; to the north are Nepal, China and Bhutan; to the east lie Bangladesh and Myanmar; to the south-east is the Bay of Bengal; to the west is the Arabian Sea; and on the south side lies the Indian Ocean.

Geographically speaking, the country can be divided into three main geographical areas. First there is the Himalayan region which forms a huge, natural barrier between the Indian sub-continent and the rest of Asia. Next is the fertile and economically developed Indus and Ganges plain region which covers most of northern India and is dominated by the three rivers: the Indus, the Ganges and the Bramaptra. Then there is the Deccan region which to the north is composed of plains in which the Maharnadhi and Nalmada Rivers flow, and to the east-west is a triangular plateau of altitude 1,220 meters surrounded by coastal plains.

As is not surprising for a country which stretches 3,219 kilometers north to south, the climate varies from the tropics of the south to the Himalaya region which is snow bound for twelve months of the year. Temperature and rainfall thus vary greatly over the country, but in general, the three seasons of cold lasting from November to the end of February, heat lasting from March to the middle of June, and rain lasting from the end of June to the end of October can be discerned.

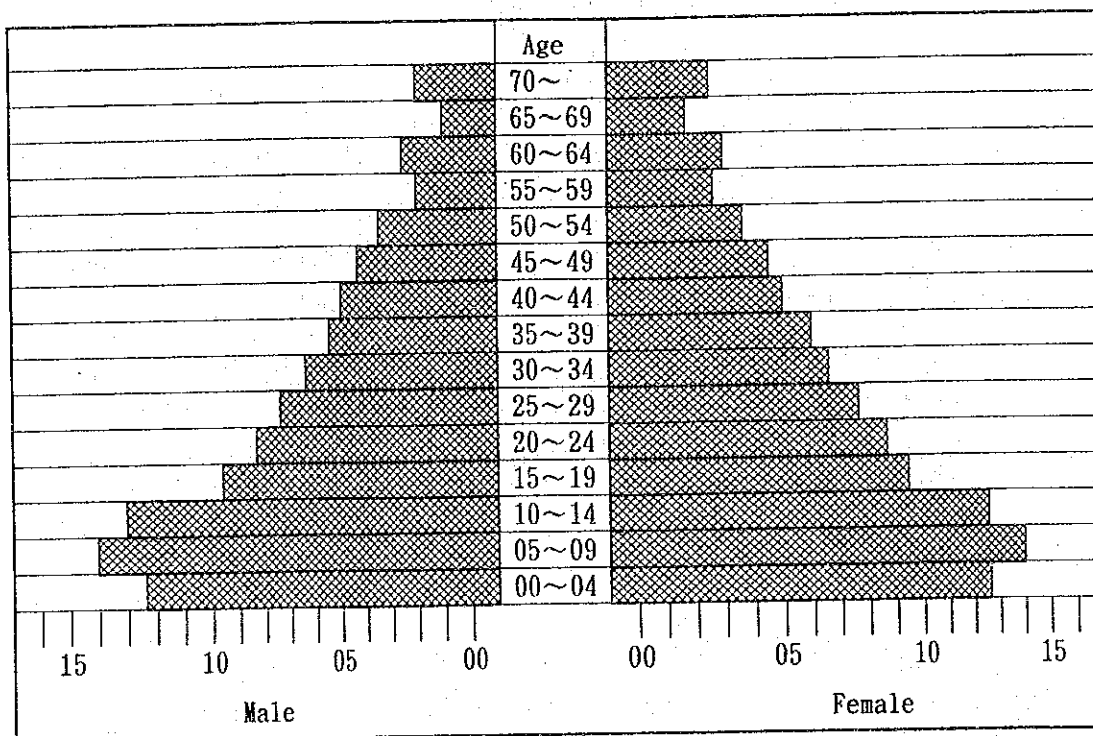
The school system is divided into primary education lasting five years, secondary education lasting three years and senior education lasting another three years, although compulsory education is only for five years. There are some 540,000 primary schools providing education

to 86.4 million students and the attendance rate is 93.09% (as of 1986).

### 2.1.2. Population

The composition of the population in India as demonstrated in Figure 2-1 is typical of a developing nation in that minors (0 to 14 years old) account for just under 40% of the total, and the supporting burden of the workforce is rather high.

Figure 2-1 Population Pyramid 1981



Source : Statistics 1993

(Unit : %)

The following Table 2-1 and Figure 2-2 illustrate the population in each state and the trend in population size by year.

According to 1991 statistics, the total population is about 840 million which is a doubling over the past thirty years. The ratio of people living in cities was 23.3% in 1981, and the population density is 267 per square kilometer. The area with the highest density is



Kerala which has 747 people per square kilometer. The increase rate in population between 1971 and 1980 was 2.2% per year.

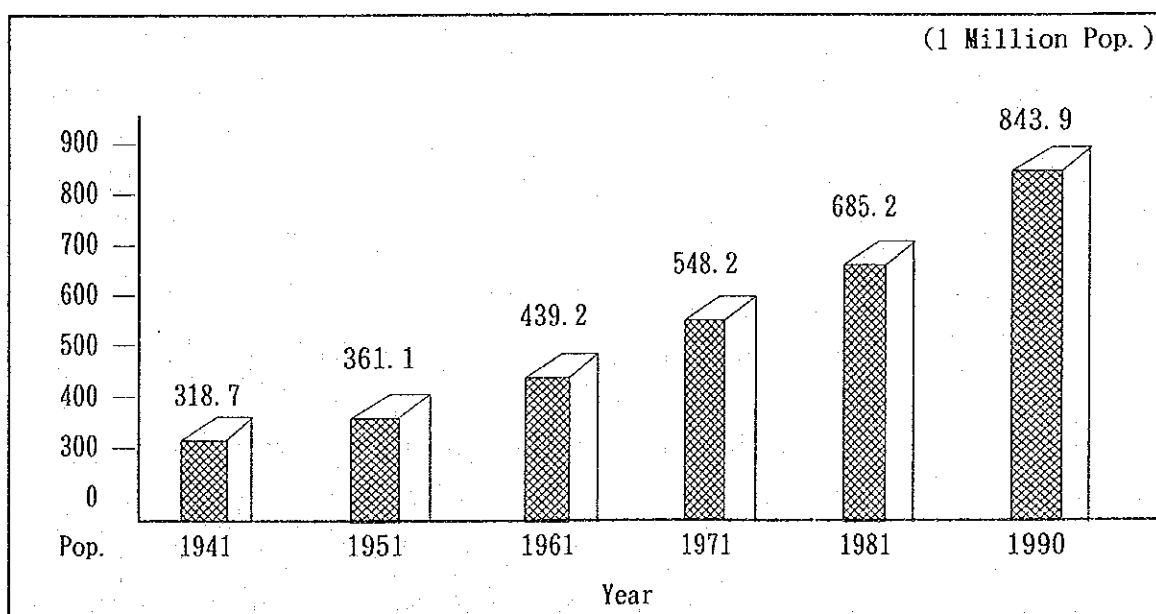
Table 2-1 Population in Each State

(1 Million Pop.)

State	1981	1991	State	1981	1991
Uttar Pradesh	111	138	Orissa	26	32
Bihar	70	86	Kerala	25	29
Maharashtra	63	79	Assam	20	22
West Bengal	55	68	Punjab	17	20
Andhra Pradesh	53	66	Haryana	13	16
Madhya Pradesh	52	66	Others	17	20
Tamil Nadu	48	56			
Karnataka	37	45	United Area :	10	15
Rajasthan	34	44	Delhi	6	9
Gujarat	34	41	Total	685	844

Source : National Census 1991

Figure 2-2 Trend in Population Size by Year



Source : National Census 1991

### 2.1.3. Economics and Finance

Agriculture lies at the hub of the Indian economy and indeed 35% of the national income comes from this sector. Starting in 1951, the government of India implemented total of six 5 year economic development plans designed to raise production in agriculture and to stimulate industrialization, and under the first, 5th and 6th plans the intended economic growth was more or less achieved.

The 7th Five Year Plan which started in 1985 emphasized productivity, increase in food production and employment and had economic growth of 5% as its target.

On the trade front, imports continue to be in excess of exports and the trade deficit is increasing. The future worsening of the international balance of payments is feared due to a reduction in money sent home from those going out to work in the Middle East, and rises in interest payments to be made on commercial loans and of return payments to be made to the IMF. Despite this, the foreign reserve is being maintained at around six billion dollars.

Table 2-2 Trade Statistics

(Unit : 1 Million Rs.)

	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92
Export & Re-export (FOB Base)	125,500	157,200	202,800	276,810	325,270	388,100
Import (CIF Base)	200,600	223,400	276,930	345,120	431,700	427,840
Trade Balances	- 75,100	- 66,200	- 74,130	- 77,310	-106,430	- 39,740

Source : India National Bank

(F. Y. : April~March 1991~92 : Tentative Value for April to Feb.)

The major issues confronting the Indian economy are given as agricultural production being dependent on the climate; a shortage of materials for production; a low working ratio in industry; unemployment; a weak infrastructure and excessive government control in

the economy. Concerning economic relations with Japan, Japan started showing an excess of exports over imports from 1981, and a diversification in India's export goods is desirable. In 1984, Japan ranked as India's third largest trading partner. Exports to Japan include iron ore, prawns and diamonds and imports from Japan include machinery, steel and chemicals. The total amount of economic aid being made to India (given amount) is 801.6 billion yen as of November, 1986, and also technical cooperation such as accepting Indian trainees is being actively promoted.

#### 2.1.4. National Budget

The table 2-3 illustrates the national budget for 1992. Revenue is divided into tax and non-tax revenue and expenditure is divided into planned and unplanned expenditure. The health related budget as will be shown later is around 2% and is included as one of the items transferred to state government.

Table 2-3 1992 National Budget

(Unit: 1 Billion rupees)

Revenue item	amount	ratio	Expenditure item	amount	ratio
Tax revenue (net amount from each state's consumption taxes)	564.6	47.4	Planned expenditure	346.1	29.1
Non tax revenue (including foreign aid)	192.3	16.2	Unplanned expenditure	844.8	70.9
Capital revenue	380.1	31.9	Defense	175.0	(14.7)
Liabilities	53.9	4.5	Interest payments	320.0	(26.9)
			Transfer to state gov's	83.3	( 7.0)
			Major grants	79.8	( 6.7)
			Administration	186.7	(15.6)
Total income (including liabilities)	1,190.9	100.0	Total expenditure	1,190.9	100.0

Source: Ministry of Finance [Central Government Budget]

Ordinary expenditure tends to exceed revenue and investment expenditure and show an annual deficit of around 2% of net national income. The main reasons for increasing expenditure are defense, benefits for civil servants, grants (export, chemical fertilizer, food cereals etc.) and interest payments for domestic liabilities. The government has cut down on real investment and through raising revenue by increasing prices controlled by public corporations, has somehow managed to stop the increase of an uncontrollable deficit caused by the sudden rise in expenditure.

## 2.2 Overview of Indian Medical and Health Sector

### 2.2.1 Health Conditions in General

The following table shows a comparison of health indicators between Asian developing countries. According to 1991 UN statistics, India's population was second largest in the world at 853.1 million; its average rate of population increase was 2.1% (Asian average: 1.8%); its birth rate was 31 per 1000 people (Asian average: 27 per 1000); its death rate was 10 per 1000 people (Asian average: 8 per 1000); and its average life expectancy at birth was 60 years (65 for Asian average), all of which demonstrate an unfavourable situation. As can also be seen from an infant mortality rate of 88 per 1000 (64 per 1000 in Asia), large scale improvements in the medical, health and sanitation fields are necessary.