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GEOGRAPHICAL VIEWPOINT

YOUR CAREER AND GEOGRAPHY

by

DOMINADOR Z. ROSELL[1]

In presenting this subject, it is not my intention to tell you to be a Geographer or study Geography for geography's sake or geography per se. Whatever profession you have planned, taking geography courses as many as your course of study can afford will be very good and useful investments in your career in the future. And if you have majored in geography during the undergraduate course — geography courses in your graduate study will be indeed easy for you and will profit you immensely as a career man. As a matter of fact, you will never realize how important geography education is until you have established yourself in your profession.

When I took geography study in University of the Philippines at Manila in 1933, I was already Assistant Soil Technologist in the Bureau of Science, being a graduate of UP College of Agriculture with Agriculture Degree in 1928. While in UP College of Arts and Sciences, I graduated with a Bachelor of Science Degree, major in Geography with Geology as a minor subject in 1935.

Working in the Bureau of Soils, Irrigation Service Unit (A Pump Irrigation Program) and finally Supervising Scientist and Chief of Agricultural and Natural Resources Research Division, National Science Development Board (1960-1968), my knowledge in Geography had given me advantages over those who did not have the knowledge of the subject.

WHAT IS GEOGRAPHY?

Geography is a science as wide as the world and about as general and broad as any body of knowledge can be. It is a so comprehensive

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and all embracing that this had been divided into as many as twenty or more disciplines or branches of sciences. The fragmentation of this science is grouped into physical science, biological sciences and social sciences. A student of geography has to take some of these sciences to enable him to analyze and synthesize geographic facts and factors in order to arrive at the desired objectives.

"Geography has been called the 'Mother of Sciences', since the fund of collective knowledge of parts of what the Greeks called Geography has been large enough to constitute discipline in themselves, such as biology, astronomy, geology, anthropology and others. New discipline have in turn developed from this making geography a grandmother but grandmother becomes more vigorous all the time." (1)

"One of the main objectives of geography is to interpret man's habitat and show his relationship to it. Analysis of human habitat shows that its nature result from the co-existence and inter-relation of host of different elements. Geography attempts to picture man's habitat at a given specific time through the study of arrangement of natural and human elements over the earth. **The effect of the past in creation of the present is recognized; the effect of the present on the future is implied.** Part of the task of Geography is to answer the general question: **What is, Where is and why and what difference does it make?" (2)**

To most geographers their subject is indeed, intriguing. As youngsters, some collected stamps; not only to satisfy that squirrel complex all children seem to have, but because each little magic scrap of colored paper conjured for them a picture of some far-off land. Most geographers were map lovers from days of youth, spending hours enjoying maps. Some folks may have stars in their eyes; but surely a geographer has places in his. And of course he always wanted to travel and probably read travel books. What young person doesn't. It was happy day when such person found he could make a living working with information, ideas and things he loved so well.

You may want to know about what a geographer does. Geography is an exceedingly large subject. It covers the earth and many aspects of it.

Because of its large dimensions, most geographers concentrate on some parts of the world and on some topics in the broad field. Some of the subdivisions are:

1. Agricultural Geography
2. Economic Geography
3. Political Geography
4. Climatology
5. Cultural Geography
6. Demography
7. Geomorphology
8. Bio-geography
9. Cartography
10. Oceanography

11. Industrial Geography
12. Marketing Geography
13. Historical Geography
14. Regional Geography
15. Resources Geography
16. Settlement Geography
17. Urban Geography
18. Rural Geography
19. Military Geography
20. Conservation of Natural Resources
21. Environmental Geography
22. Population Geography

Let us look at some of these in detail.

AGRICULTURAL GEOGRAPHY

There are many forms and problems that can be studied by geographers and some of them really did go into this field. Again it is a question of where and why and how and what of it. Where do crops grow, why do they grow there, and when are they harvested and where are they marketed? How will these crops support the farmers who grow them? Is the land wisely utilized both for present and future welfare? What economic and practical problems arise there from? (3)

Agricultural geography is a huge field in itself, with many different aspects. There are geographers who specialized in tropical agriculture and others whose prime interest is in the problems of farming at its poleward limits, in temperature regions and in tropical areas and on tropical crops.

Agricultural geographers find jobs in a variety of places. Many work in government agencies. Some teach in University and make agricultural geography their field of specialization.

If you want to be an agricultural geographer, you will have to take some courses in climatology, soils, statistics and agricultural economics, in addition to the usual subjects in geography.

URBAN GEOGRAPHY

This kind of geography has been attracting many geographers lately due to the need in the city administration, study of city planning and location of dwellers in heavily congested areas of the city.

What does an urban geographer do? He studies cities of course. But cities are many and their problems are varied, he is likely to specialize on certain aspects of cities or upon a particular city or group of cities. A few geographers are working at different problems of describing and defining the parts of a city accurately. Every one knows that a city has a central business district, but just how large is it in any particular city and what business does it contain? Others would like to know how to find which industries and businesses actually support the city and which ones are there merely because the people are there.

Some study the inter-relation of the city and its supporting region or hinterland. Finding the answers to these problem is intriguing, but difficult. Because of these, urban geographers find their jobs quite largely in city planning offices, though few teach in university and make urban geography their field of study.

What does urban geographer need to know? In addition to his regular geographic training, he needs to know all he can about cities — their physical, demographic and political structure, their engineering problems, their economic problems and their social problems. Economics, sociology and political sciences are all good additional training. (1)

MARKETING GEOGRAPHY

An increasingly large number of American geographers are using their geographic training in the business world. Every business firm whether manufacturers, wholesalers or retailers is faced with the where problems. Where will its raw materials come from; where should they be produced or stored; where can its yields and services be sold? Since geographers are specially interested in the where problem, their services can be particularly valuable in finding the answers to these questions. (1)

In a rapidly developing country like the Philippines, a geographer with expertise in marketing geography can readily find a good executive position in any company that produce consumer's goods.

A geographer who works for a chain store that wants to locate a new supermarket along a busy highway can really solve the problem. If it is to be a drive-in, the company is more interested in the population of the outlaying suburbs than of the immediate neighborhood.

Marketing geographer knows the world at large than the average employee. Products that can be distributed in other countries, the geographer can certainly pin point the places where there are potential areas for exports.

A would-be marketing geographer while still in school, should arm himself with basic courses in economics, accounting, marketing, marketing research and statistics. But he must be well trained geographer too, and he will need considerable imagination when it comes to using or making maps. (1)

REGIONAL, ECONOMIC AND CONSERVATION GEOGRAPHY

The specific divisions of Geography that are being given in selected public and private universities includes, economic, physical, regional, human, political and conservation geography. Some geographers use climate as the basis for regions, still others prefer to describe economic or human use regions.

In regional geography the factors of environment, such as location, climate, relief features, natural vegetation, soils, minerals, water re-

sources, etc. are considered by descriptions of agriculture, mining, manufacturing and other industries of man together with distribution of population, location and functions of cities, and problems of importance to various nations. Regional geography provides superior means of helping students learn about the races and countries of the world and the factors that influence the occupation and culture of people and the international relationships of countries. Political and military geography are founded on a firm foundation of regional geography. (4)

Economic or commercial geography is widely taught in higher institutions and may be the only geography course offered in a college or university like the Philippine Women's University. When the only course given is the economic geography, this is usually included in a school or department of Commerce or Economics. Economic geography has a high cultural value in making students conscious of the location and concentrations of industries and of varied ways man has of making a varied living. It will be of use to students all their lives in helping them to understand mankind and his ways, besides having the practical purpose for future business men of learning the facts concerning sources of materials, their utilization and factors affecting production, processing and marketing of goods. (4)

A course in the Conservation of Natural Resources is of great practical and social value to the future leaders of opinion in our country. There is a need of conservation measures which will help insure the maintenance of acceptable living standards for the people. In general, conservation is a cooperation between man and nature that will bring about the most efficient use of the world resources. The ideal of conservation is to have a proper balance or adjustment between man's utilization of resources and the environment so that the resources will be used without waste. Certain institution now require conservation to be taught in school and demand for trained teachers and accurate information about conservation is increasing. (4)

WHERE GEOGRAPHERS WORK

Geographers may be classified into three groups: One who teaches geography in colleges and universities, and the other who is actually employed as geographer or in other designation where geography education is used, and the third one who is employed in civil service or in private institution and teaches geography part time in colleges and universities. (It is in the third group where I belong)

There are not many of these groups in the Philippines, in fact you can count them with the fingers of your hands. At one time a soil technologist of the Bureau of Soil was teaching in the evening, Economic Geography at the Philippine Women's University. There are few cases where an employee with general training in geography find teaching part time position in college and universities.

WORKING FOR THE GOVERNMENT

What can a geographer expect to do in Metro Manila?

He may find work in the Department of National Defense, Departments of Agriculture, Natural Resources, Public Works, Transportation and Communication. Any career man with good background and grounding in geography certainly, everything being equal can fit well in any of these departments.

What does a geographer do in the various places? Perhaps more than half are engaged in map making, or in gathering information for maps or other classified matters, or acting as map librarian. Geographers, whether they are cartographer or not never get away from maps.

In the field of geographical service to governments, geographers can and some have done so, assist in such activities as conservation, use—classification of lands, highway planning, analysis of the geographic facts of the economy or of the distribution of component groups in the population or of the location and nature of agricultural and industrial enterprises. (5)

In scientific and research institutions like the National Science Development Board or National Research Council of the Philippines or the Philippine Council for Agriculture and Resources Research, geographer can always fit in such subject as: Agricultural geography, resource geography, regional geography, economic geography, in the job of planning, programming and evaluation.

Since geography is a synthesizing discipline, the geographer is always at home in the field where other are confused and lost in the middle of the problem. He can evaluate the physical and economic resources of the country and indicate reasons for its success or failure in the economic development. As a basic and foundation subject, it can be used by different specialists such as a physicist, oceanographer, economist, engineer, chemist, biologist, forester, climatologist, ecologist, military strategies, politicians and science promotion officer.

GEOGRAPHY IN GREAT BRITAIN

For the last four (1968-1971) years, geography has been one of the subjects most in demand, coming behind are mathematics and English but ahead of the other are humanities, science and social studies. As a result, geography departments have grown to be among the biggest departments; in some instances they are the biggest in British universities, graduating between 50 to 100 honour students each year, few are now graduate less than 25 a year. Thus geography is expanding its impact throughout higher education and is preparing people for an ever widening range of careers.

School teaching and town planning are important outlets and accounts for about a third each of the geography graduates from all universities. Environmental research and management, government research and administration and finance business are now taking an increasing numbers of geography trainers, from all universities and from a few the greater number of geography graduates enter one or other of these careers. During the last four years, many geography graduates have moved up into senior positions in universities and other educational institution and administration officials in government departments. In this way geography has come into its own in its power to shape decisions at the highest level. (6)

GEOGRAPHY EDUCATION IN THE PHILIPPINES

Geography education in the Philippines lost its glamour and position in our educational system that started during the Philippine Commonwealth Government in 1935, when nationalization of our government officials and educational institutions took place. American educators were substituted by American educated Filipino educators. They abolished geography and in its place, introduced several subjects under the heading of Social Studies. However, colleges and universities offered higher geography as elective subjects, thus depriving the students of fundamental knowledge of the basic elements of geography. (7)

However, the College of Arts and Sciences, University of the Philippines at Diliman offers undergraduate and graduate courses in Geography for BSc, MS and PhD degrees. Compared with other countries in America and Europe, United States has many as 35 state universities where undergraduate and graduate courses are offered. In the Philippines, the other universities that offered courses as elective subjects are the Philippine Women's University where Economic Geography and Earth Sciences (Physical Geography) are offered, Philippine Christian University offers Economic Geography and De La Salle University, Conservation of Natural Resources in Masteral Degree. (7)

The Philippine Geographical Society has been in existence for the last twenty-seven years and its official publication, the Philippine Geographical Journal, a quarterly publication is now in its 22nd volume, 1977. (8)

The National Committee on Geographical Sciences of the National Science Development Board (NSDB) was organized in 1968 when the Philippines became member of the International Geographical Union with the NSDB as the adhering organization. The Chairman of the Board, NSDB in creating the Committee established the terms of re-

ference of the Committee as per NSDB Office Order No. 09 Series of 1971 as follows:

1. "To promote and stimulate researches in geography as one of the effective instrument of nation-building;

2. To promote geographic knowledge to all sectors both government and private; and

3. To act as international liaison or adhering body to such international organization as the International Geographical Union and the International Council of Scientific Union."

The members of this National Committee attend congresses, conferences and seminars of the International Geographical Union and other international organizations. In June 1976, the Chairman and the Vice-Chairman of the Committee attended the Silver Jubilee Symposium Hongkong University on the subject of: Geography and Environment in Southeast Asia. (9)

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DEVELOPMENT PLANNING STRATEGIES FOR THE PROVINCE OF MISAMIS OCCIDENTAL (1978-2000)

by

JOSE O. JAUG[1]

AN OVERVIEW

It has been projected, whether we like it or not, that by the year 2000 there will be more Filipinos who will need more food, shelter, fiber, and space. These four items are vital factors that the government will have to consider in its planning efforts if it will mean the survival of this nation side by side with other advanced countries of the world in the years to come. We will not only live for the sake of survival but we have to strive to improve the quality of life in the countryside. We have to keep pace with the growth and development of other economies of the world to contribute our share in the attainment of world peace.

Eusebio (1975) states that food and space, among other things, are the major problems to be considered seriously at the end of this century. He averred that by the year 2000, each Filipino will need 2,410 square meters of arable land, and 950 square meters of non-arable land in order to live. The burgeoning New Society which is barely some five years old seems to be on the road to stepped-up economic and social progress never before experienced. By this will mean that all efforts toward all changes must be accompanied by an equally, if not more productive quality of economic endeavors in all sectors of Philippine New Society. We are not only concerned with the production of more and quality foods, but also the production of more fiber to provide adequate and comfortable clothing and low cost shelter. These efforts should be geared toward self-sufficiency for obvious reasons. The comforts and quality of life require the basic needs for food, shelter, clothing, and space. Modern man has learned to admire living in a way of life where convenience is the rule. Eusebio (1975) computed that by the year 2000, man's basic requirement for food repre-

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sented by energy (rice) will be 2,896 (therm) with a space of 1,768 square meters. His protein requirement represented by fish and pork will be 18.3 kilograms with an area of some 56 square meters; mineral (carrots), 2.2 kilograms with an area of 12 square meters. His clothing needs represented by cotton is 5 kilograms with an area placed in the neighborhood of 500 square meters. His shelter needs is estimated to be 50 board feet of lumber to be planted in 386 square meters of land. Also he will need energy calculated to be 794 of methane to be developed in some 56 square meters of floor space. These are what each modern man needs by the year 2,000. Each region of the country should poll its resources together to make up the whole requirements of the nation come the year 2,000 if the Pilipinos will continue their share in building a better world peace in the future.

Geographical Feature. — The Province of Misamis Occidental is a developing community ready to face the future with determined efforts for survival. It is located in Northwestern part of Mindanao bounded on the west by Zamboanga del Norte; on the south by Zamboanga del Sur; on the east by Pangil Bay and Iligan Bay; and on the North by Mindanao Sea. It has a land area of approximately 1,939 square kilometers, with adequate drainage systems. The province has some 18 waterways, 6 of which are considered more important ones. All these drainage systems empty into Pangil Bay and Iligan Bay.

Its topography is undulating to slightly rolling starting from a narrow strip of lowland along the coast, gradually rising to form the intermediate hills and rolling lands becoming progressively rough towards Mt. Ampiro with an elevation of some 771 meters and Mt. Malindang towering to a height estimated to be in the neighborhood of 2,450 meters. The widest lowland is found in the southern portion of the province.

The soils are considered geologically young and described as clay loam in the interior and sandy loam along the cost. It has a geographical advantage by being less visited by typhoons each year if none at all. Its rainfall belongs to the 4th type of climate which is more or less evenly distributed throughout the year. October rainfall average 300 millimeters and is considered the rainy month of the year. February through April are the dry months.

The temperature of the Province of Misamis Occidental during the 20-year period is considered very ideal. Its lowest is 21.8°C recorded during the month of February and its highest is 33.5°C which is observed during the month of April. Sunshine is placed at 6 from March-April; 7 for May, November, December; and 8 for January, February, June, July, September. Its relative humidity is 77 which is lowest observed during the month of April; and 84 which is highest recorded in June, July, November, December.

Economic Feature. — The irrigated rice lands of the province is estimated to be 6,812 hectares; non-irrigated is some 3,444 hectares. Upland rice land is placed at some 300 hectares. There are in the neighborhood of 12,001 hectares of cornlands; 90,000 hectares of coconut-lands; commercial forest 59,667 hectares; 11,392 hectares of non-commercial forest; 13,559 hectares of swamplands and mangrove.

There are about 63 per cent of the total land area devoted to the culture of economic plants. Coconut is the principal and commercial crop. Coconut is planted in all municipalities. Clarin, Ozamis City, and Oroquieta City are the leading coconut producers of the province. For obvious reasons copra and coconut by-products are sent to Cebu. Rice are consumed locally and the excess are exported to Cebu along with corn, bananas, fruits, etc. The other products of the province are oil, rubber, abaca, rootcrops, vegetables, and lumber.

In 1972 there were raised some 459,705 heads of livestock; 336,883 consists of chicken population. Pangil Bay, Iligan Bay, and Murcielagos Bay are considered rich fishing grounds. In 1970 fish caught totalled 147,010 kilograms. A total of 8 square kilometers of fishpond produced in the neighborhood of 231,140 kilograms of fish. Logging industry is not considered very important. Most of the sources of commercial timber are found in the interior. During the fiscal year 1972-1973, log production amounted to some 49,188 cubic meters.

Mining industry is not fully developed and exploited. Although there is evidence of the presence of manganese deposits in the beaches, this matter has not been looked into. Non-metallic minerals are confined in coral rocks, clay, sand, gravel, earth, stones, cabbles, and boulders. Extensive clay deposits are found in Lopez Jaena where crude pottery is manufactured. The province manufacturing industries are limited to processing coconut by-products and raw materials. The Red V Plant situated in Oroquieta City processes coconut into dessicated coconut meat of four standards, namely, macaroon, medium, coarse, and extra fine. It also produces fancy grades upon demand.

The government owned National Investment and Development Corporation Oil Mill located at Jimenez, Misamis Occidental produces oil out of copra which is exported as crude oil. Another factory is extracting coconut coir or bristle fibers from the husk for export and for the manufacture of local doormats of which the finished products are of excellent quality. This factory is located in Oroquieta City. This company, the Mindanao Development Authority produces carpets, mattresses from fibers of cocohusk. Of the small scale industries, pottery making, charcoal making, woodcraft, and rattancraft can be considered of commercial scale. Shellcraft is usually undertaken as a hobby.

Waterworks in the province serve the needs of some 76,920 inhabitants. There are 6 waterworks considered the more important ones.

The source of electricity in the province is found in Ozamis City, Oroquieta City, and other big towns of the province. They are operated by private companies with franchise. The source of energy are from diesel-fed engines. The Maria Christina Hydro Electric Power will soon furnish the province with electric power come 1978.

Social Feature. — The population of Misamis Occidental today is composed of the descendants of the original Visayan migrants. In 1970 the population was recorded at some 319,855 people. About 97 per cent of which claimed to be Cebuanos. Most of the centers of population are confined in the arable areas along the coasts. Whereas the interior uplands and tablelands are sparsely populated. In 1970, density settlements was 165 persons per square kilometer, much higher than the national average.

As early as 1903, the population have shown a fluctuating trend indicative of out-migration to other Mindanao frontiers. Females outnumber the male households population which account for 160,316 of the household population. The province has predominantly young population. The 24 years and below age group comprise 63 per cent of the total population.

It may be worth mentioning the fact that the province's population has consistently failed to keep pace with the national growth rate. Using the 1960 record as the base year, census reports in 1970 placed the provinces annual geometric growth rate at 2.51. It may be stated in passing that 16 per cent of the entire population are urbanized. The remaining 84 per cent are still rural. This much of the population are the target of the development goals to improve the quality of life in the countryside.

The rate of literacy is comparatively high having 83 per cent of the total population 10 years old and over are able to read and write. During the school year 1971-1972, enrolment in the elementary level totalled 62,830; 17,736 in the secondary level; and 5,736 in the collegiate level. Actual number of schools for school year 1972-1973 was 430. There were 340 schools offering the primary level; 191 offering the intermediate level; 45 offering secondary education; and 12 offering higher education.

The principal sources of income are from farming which accounted to 49,000 farmers in 1973; there are 7 commercial fishing operators; 7,000 employed in the government service; 24,000 privately employed; and 39,000 self-employed. The province has to this date 13 municipalities and 3 cities. These cities are Ozamis City, Oroquieta City, and Tangub City. The city of Oroquieta is the seat of the provincial government.

The Province of Misamis Occidental like other Northern Mindanao provinces experienced very strong Spanish contacts and influences.

Ozamis City was an early Spanish fortress settlement as evidenced by the presence of an old walled Spanish garrison (cota). It has also been in close contact with the Islands of Cebu and Bohol even before the Spanish colonization. Today, the province is oriented economically, culturally, politically, historically, religiously by the two island provinces aforesaid. Even its trade outflow and inflow are traditionally focused on Cebu City and Tagbilaran City.

The spoken and written dialect are predominantly Cebuano and Boholano. Roman Catholic is the dominant religious sect, a manifestation of the predominantly Catholic Cebu and Bohol. A splinter religious group are composed of Aglipayans, Protestants, Iglesia Ni Kristo, Muslems, Seventh-Day Adventists, and others belong to minor religious denominations.

As stated earlier, population seems fluctuating year-in and year-out. This is due in part, to limited arable lands coupled with population pressure and the love for adventures seeking more economic opportunities only available in other more progressive provinces of Mindanao. The tendency of population movement is two-way. Some go to other centers of population like Cebu and Manila for the love of a white collar job and seeking higher and better education. While others prefer to open new frontiers in the wilds of Mindanao. The province has an extensive road systems. Other public utilities such as ports, powers, and water resources are progressively being developed.

THE PLANNED GOALS AND OBJECTIVES

There could not be more enduring and gratifying results of any development plan than to see the life in the countryside filled with happiness, contentment, and abundant leisure and convenience. The continuing improvement of the ways of life and the reservoir of knowledge in every home is characteristic of modern and dynamic civilization. Therefore, the goals of this development plan for the province of Misamis Occidental are to seek and develop the quality of life of the people in a manner where happiness, contentment, leisure, economic and social aspirations, health and education, etc. make for the dominant features of every home.

To complement these goals is to mobilize the resources of the province to increase agricultural productivity; generate employment opportunities; to provide for a more equitable distribution of wealth; to promote agro-industrial and industrial development; to contain the incidence of communicable diseases, and to provide in every home with better nutrition.

To accomplish the aforementioned goals and objectives, there must be a program of development for more irrigation facilities; establishment of more drainage and flood control systems; more farm-to-market

road network; more rural electrification; more farm development; more marketing and distribution systems; sophisticated farm extension services; extensive agricultural research and development; fisheries development; forestry and wildlife program development; massive land surveys and tilting; thorough public education; launching of large-scale public health program; control of communicable diseases; construction of more hospitals and sanitaria; development of manpower skills; development of managerial skills; more human settlements program; establishment of cooperative education and organization, cooperative rural banking, development of cottage industry; the development and promotion of tourism; and man-power skills development.

There are many tourist spots of the province that should be looked into, such as: Lake Duminagat, Mt. Malindang, Pangil Bay, Murcielagos Bay and Bucagan Hill.

PLANNED STRATEGIES

Starting with the calendar year 1978, it is proposed to construct more irrigation facilities to irrigate some 100 more hectares at a cost of about ₱1,000,000 to be finished by December 1980, for the province to cope with planned agricultural output requirements. The National Irrigation Administration should be requested by the Provincial Government to take the lead. Of paramount importance to complement this program is the construction of Flood Control Work and Drainage Systems to save the foreshore and river banks from further destruction from the onslaught of flood water and ocean current and waves and to reclaim some 200 hectares of swamplands of the province. The Bureau of Public Works should with the assistance of the Provincial Government initiate the project until completed. This project is estimated to cost some ₱2,000,000 to be finished by December 31, 1979.

The plan envision to construct farm-to-market road network with a linear length of some 100 kilometers of secondary road and another 100 kilometers of tertiary or access roads to be finished in FY 1979 at a cost of ₱2,000,000 for secondary road and ₱3,000,000 for access road. The Bureau of Public Works should be requested by the Provincial Government to spearhead the project and implement its construction until completed.

The province will be totally provided with electric power by the end of the FY 1980 through the lead of the Rural Electrification Administration and the Maria Christina Hydro Electric System.

It is projected that all government agencies and the private sectors alike cooperate for the optimum development of the rice, corn, and coconut industries. It is suggested that the Provincial Government of Misamis Occidental should adopt an intensified 5-year Agricultural Develop-

ment Project which shall be implemented immediately with the whole hearted cooperation and assistance of the various executive departments of the national government notably ACA, NIA, DAR, PCA, DA, DNR, etc. These agencies should be requested to earmark necessary amounts for an honest-to-goodness fundings of their respective projects. In addition, the NGA-DA rice and feedgrains project shall all be implemented and vigorously prosecuted. To further support agricultural development activities, the Provincial Government of Misamis Occidental shall set up, establish, and operate an Equipment Machinery Pool which would service the needs for agricultural machinery of the farmers in the province.

To augment anticipated increased agricultural production, there should be organized and operated the "Misamis Occidental-Marketing Corporation" to be under the direct supervision of the Provincial Government of Misamis Occidental. This should be implemented starting January 1978. This marketing arm of Provincial Government shall provide the machinery for the marketing and distribution of goods and services needed for sustained growth and development of the province. The Province of Misamis Occidental should implement this planned strategy by January 1979, with tie-ups with the Food Terminal Incorporated and the private sectors or the operations and maintenance of its Trading Post.

The Province of Misamis Occidental should intensify and enlarge the scope of activities of the present Farm Extension Services by employing more highly qualified technical personnel to service the farming communities of the province as a means to improve the quality of life in the country side. The Provincial Office of the Bureau of Agricultural Extension in cooperation with the Bureau of Soils, Animal Industry, Plant Industry, and Agricultural Economics should be coordinated and adequately manned with competent and appropriately trained personnel and adequately equipped to be operational immediately and simultaneosly activated side-by-side with project "compassion". The respective appropriations of the aforesaid Bureaus should be increased for the adequate fundings of new projects in the Province of Misamis Occidental.

For sustained and continued economic progress of the province, the Agricultural Research and Development Activities of the province should not be overlooked for the purpose of solving local problems in agriculture. It is designed to conduct regional research under conditions obtaining in the province for the improvement of local technology and culture of the various economic crops, agriculture, engineering, soils, irrigation, and drainage, crop improvement through breeding and seed selection, plant introduction, etc. It also seeks to conduct research on livestock and poultry, feeds and feeding research.

Soils and irrigation management practices should be studied. In the fields of fisheries and aquatic resources, the local Bureau of Fisheries

and Aquatic Resources should conduct researches in all aspects of fish conservation, improve methods of fish capture, preservation of fish products and by-products, etc. The Provincial Government of Misamis Occidental should link its research and development efforts with all research agencies both private and public preferably with any college or university centers located within the province or outside the province, such as Xavier University at Cagayan de Oro City, or Silliman University located at Dumaguete City or Misamis University located at Ozamis City. This should be implemented and be operational by the beginning of FY 1978 at a cost of ₱500,000 per annum. The National Science Development Board project of the proposed "Nature Study Center and Wildlife Sanctuary" which should be based at Mt. Malindang, Mt. Ampiro, Murcielagos Bay, and Pangil Bay, must of necessity form part and parcel of the package with an appropriation coming from NSDB of which ₱3,000,000 has been earmarked and programmed for the calendar year 1977.

By and large, there is no denying the fact that research efforts are support to socio-economic development. With emphasis placed at regional level now, this piece of activity of the Agricultural Research and Development Project, should not be overlooked by the Provincial Government of Misamis Occidental. It is suggested that an "Agricultural Research and Development Center" be established immediately and maintained in Misamis Occidental, the province appropriating by public borrowing the sum of ₱1,000,000 beginning January 1979.

There should be in the Province of Misamis Occidental a "Fisheries Development Project" for obvious reason. It endeavors to develop the Marine and Aquatic resources of the province. The Provincial Government of Misamis Occidental should request the Department of Natural Resources for funding purposes leading to the development and implementation of this program starting January 1978. This will include the Pangil Bay Shrimp and Fish Hatchery Station to be located in Malaubang, Ozamis City. The development and operation of the Murcielagos Bay Marine and Fresh Water Station at Baliangao, Misamis Occidental should be enlarged in scope, functions, and operations, to include advanced training in fish technology from breeding to product handling, storage, marketing, processing and fish conservation, and culture. Instruction, research, and extension should be emphasized.

It is also proposed to undertake forestry and wildlife development project which is aimed at the conservation, utilization, and management of the forestry and wildlife resources of the province. Mt. Malindang has been declared by the Department of Natural Resources as Parks and Wildlife Reserves. A report and recommendation of the National Science Development Board Task Force under NSDB Special Order No.

206, series of 1975, was submitted to the NSDB Chairman, that at least 50,000 hectares located at Mt. Malindang, Mt. Ampiro, Murcielagos Bay, and Pangil Bay should become the NSDB's Nature Study Center and Wildlife Sanctuary where fundamental as well as applied researches in all aspects of our wildlife, that walk, crawl, swim, fly, etc. have to be undertaken, including their protection, perpetuation, and conservation. A program of research along this line has been presented in the NSDB report and recommendation of the NSDB Task Force. This project on forestry and wildlife development seeks periodically each year the establishment and operation of reforestation nurseries, picnic grounds, hunting in designated grounds on limited number of wildlife and bird species. Nature recreation areas also form part of the program. The establishment of a Multipurpose Woodland during the five-year period starting January 1978 should be given due course by the agencies concerned. In addition, a Forest Research Station shall be established and become operational under the Forest Research Institute beginning January 1978. Its purpose, among others, aims at determining the potentials, of the Province Woodlands leading to intensive development schemes for its maximum production and wise utilization.

For the production of surplus food, feeds, and fibers, it is proposed to the Provincial Government that starting January 1978 funds be made available for massive land surveys and issuance of land titles. Conflicting claims if there be should be adjudicated at the earliest time possible.

The Department of Education and Culture should endeavor to monitor and support the education program. There should be established more Experimental Barangay Rural as well as Agricultural High Schools, Trade High Schools and other Vocational Schools for Women and Men who are out-of-school. This should be implemented earlier than January 1978. In addition to this, there should be Social Services Centers for gifted young boys and girls. It is the paramount duty of the Provincial Government to appropriate some ₱50,000 for this purpose.

The Provincial Health Office of the province must enlarge its activities to widen its coverage of operations. The Department of Health shall increase its appropriation for the province.

The Province of Misamis Occidental is one place in Mindanao where incidence of communicable diseases are comparatively present at an alarming rate. Among the communicable diseases, tuberculosis still persists. This is due in part to the fact that the inhabitants are poorly nourished. The establishment of a sanitarium for the treatment of the disease and to house the afflicted should be given due attention. It means an appropriation of some ₱1,000,000 at the start of the work

which will commence in January 1978. The money will come from, partly contribution of the Philippine Tuberculosis Society, Philippine Charity Sweepstakes, Department of Health, and foreign borrowing. The Provincial Government should encourage the construction and operations of 30-50 bed capacity medicare hospitals for the indigent resident of the province. It should be attended to at the earliest time possible but not later than January 1978. The Philippine Charity Sweepstakes should assist the Provincial Government of Misamis Occidental by giving some ₱2,000,000 each year for 5 years.

It is proposed that there should be established and operated in collaboration with the NACIDA and NMYC an Integrated Manpower Training Center which should start in January 1978. It is suggested that this center should have an initial operating capital placed at ₱2,000,000 to be appropriated by the joint efforts of the Provincial Government of Misamis Occidental, NACIDA and NMYC. Small cottage industries shall be given appropriate and immediate attention.

The Center for Managerial Skills Development should be established with the aim in view of developing managerial skills for top executives for government and private sectors. Steps should be taken to establish and operate the Misamis Occidental Executive Development Academy. This training program shall be entrusted to Silliman University at Dumaguete City. This should start in January 1979.

It is suggested on the operations of cooperatives by establishing a Cooperative Education and Organization Project. The object of this project is the training of the labor force who are not gainfully employed for productive work. The Department of Local Government and Community Development, and Department of Education and Culture shall be requested to assist the Department of Public Information and NMPC in conducting a 5-year information-education project to be started in January 1978 at a total cost of some ₱500,000.

It is envisioned to organize, establish, and operate at least one cooperative rural bank in each municipality and city. The target is to establish one for coconut; one for rice and feedgrain; and a third for fishing. The mechanics is to organize workers and entrepreneurs into a cooperative which will finally be owners of the cooperative rural bank to the extent of owning 49 per cent of its stock, the remainnig 51 per cent being retained by the Government. The cooperatives rural bank for rice and feedgrains is projected to be established in January 1979; and the cooperative rural banks for fishing shall be established on or before June 1, 1978. To set up these banks, a capitalization of each in the amount of ₱6,000,000 or ₱2,000,000 is proposed. To start the ball rolling, so to speak the Government shall set aside, some ₱3,000,000 during the calendar years 1978 and 1979.

There should be established and operated as many cottage industry centers as there are cottage industries already established in areas where labor force and materials are available. The target date of establishment and operation at least one in each Municipality and City is calendar year 1979.

The are places in the province in which there is a strong felt need for human settlement program to be undertaken and administered by the Human Settlement Commission. If possible the project should start by January 1978 with an outlay of some ₱50,000. At present some 10,000 families of Subanons, given prior attention in putting this cultural minorities in settlement where they can enjoy the blessings of modern society's facilities and opportunities.

Tourism should be given high priority in the province program development because the Province of Misamis Occidental has rich scenic spots such as Lake Duminagat, Murcielagos Bay, Pangil Bay, Mt. Malindang, Mt. Ampiro, and Mt. Bucagan. The benefits to be derived from tourism cannot be gainsaid. It will help the economy of the province push up to a level where the money in circulation will be increased a thousand fold.

PLANNED EXPECTATIONS

For calendar years 1978-1980, these are expected results of the Development Plan:

a. The value of goods and services will increase by about 1.5 per cent from 1978 to 1980;

b. As a result, the revenue of the Provincial Government shall have been increased;

c. There will be a rising number of job opportunities;

d. The per capital income will be pushed up high to a level where the people will be happy, contented, and where there will be more leisure than work and conversely the quality of life in the countryside will be greatly improved: It is expected that some 50 per cent of the inhabitants will have the ability to purchase more goods and services.

It is assumed, but not admitting that the calendar years 1978-1980 is characterized as a take-off stage in the province's economy, although this take-off stage is already sustained and such stride cannot be stopped in the same manner that the airplane cannot be made to stop once it has already taken off. This take-off inertia should be further augmented. Therefore the calendar year 1981-1985 should be second phase of the take-off stage of the province economy. To sustain economic growth and development, the following strategies are proposed to the

Economic Development Council of the Province for implementation, to wit:

a. The physical infrastructures network should be maintained at such efficiency levels as would provide effective support to the agro-industrial projects of the province. By this period, steps will be taken to have the ports of Ozamis City, Oroquieta City, Jimenez, and Plaridel and the Labo Airport made into an A-1 condition to accommodate bigger volume of traffic for industrial, agricultural, and tourism purposes.

b. Intensified Agricultural, Agro-forestry, and Agro-industrial activities be undertaken vigorously side-by-side with applied research and better application of adopted technology and will have to be pursued in an honest-to-goodness manner with a view to keeping abreast with the advances in economic growth and development of other regions of the country. Towards this end and side-by-side with advances in technology, better extension services will have to be progressively pursued and implemented. Whenever and wherever possible transfer of technology, materials, and machineries of the province will have to be taken advantage of.

c. The Province Marketing Corporation, the Province Coconut Corporation, the Province Equipment Services Corporation, and the Province Trading Post Corporation should be given due attention leading to their establishment and operation.

d. The Natural Resources Development Program with emphasis on tourism and export-oriented fishery, forestry, and small and medium industries should receive prior attention. By this time the Province Multi-purpose Woodlands, Parks, Nature, Wildlife and Bird sanctuaries, together with her hunting and fishing grounds will have earned dividends and pay-of values.

e. There should be constructed and implemented as part of Social Services Program, more schools, playgrounds, medicare hospitals, plazas, moviehouses, and other social infrastructures.

f. Manpower and Managerial Skill Development Training will be implemented to provide the necessary skills requirement of the agro-industrial activities of the province.

g. Vigorous and sustained support shall be given due attention to the Human Settlements Project of the Human Settlements Commission. During this period, the targeted housing needs of the province should be realized and accomplished. Five thousand families of the cultural minorities shall have been settled and provided with a decent home per family.

h. The Cooperative Development Program as planned will be pushed through with dispatch. The target is to provide coop-education to the

remaining segment of the work force which have not as yet undergone training. The Rural Bank Project will likewise be given more attention in a manner that will create interest to provide financing arm of the different projects envisioned.

i. Cottage and Small-scale Industries will be supported to provide the needs of the people living outside the province. The target is to capture the attention of the foreign buyers. Towards this end, the management policies of the province should be supportive of this goal.

j. During this period of planning, there should be honest-to-goodness emphasis laid on environmental protection; nature disaster prediction control and moderation; population control and distribution; health and nutrition; education and communication; planning management and decision-making; food; energy; technology and science transfer and utilization; and housing and urban development.

For the calendar years 1981-1985 the following are expected:

a. Increased production of goods and services by 20 per cent;

b. Increased government revenues to provide and expand social services;

c. Increased number of jobs generated with an average of 500;

d. Increased per capital income in order that each inhabitant of the province can buy more goods and services and have adequate time for leisures. By this time markets for agro-industrial products will have expanded to further raise the GNP.

e. All these are expected to further improve the quality of life in the countryside.

For the calendar years 1986-1990, the province's economy is expected to have gained momentum in its take-off stage and must have obtained a cruising altitude. For sustained growth, the following will have to be emphasized;

a. Consolidation of whatever gains have been acquired and in turn apply these gains in order to further increase the pace of development;

b. Implementation of policies that will lead to the promotion of horizontal and vertical farm and industrial diversification, integration and export-orientation;

c. Programs of Social Services will have taken final shape;

d. The industrial project will have been fully implemented;

e. Growth and development for agro-industrial project will have been underway and reach its peak of implementation;

f. Further emphasis will have been laid on environmental protection; nature disaster prediction control and moderation; population control and distribution; health and nutrition; education and communica-

tion; planning management and decision-making; food; energy conservation; technology and science transfer and utilization; and housing and urban development.

For calendar years 1986-1990 it could be expected that there will have been an increase in agro-industrial production of goods and services by 2.5 per cent; increase in government revenues to have or support expanded social services; increased job opportunities or about 500 additional jobs every year; increased per capita income to be used in purchasing more goods and services and derive more leisures and further improvement of the quality of life in the countryside.

During calendar years 1991-1995, the Province's economy will have reached the cruising altitude.

It is therefore incumbent upon the Provincial Authorities to adjust the Province economic policies and activities to support the cruising growth and development by creating economic environment directed towards further consolidation of gains; programming and implementing plans for expansion of agro-industrial activities and greater emphasis on finding new markets and developing existing ones; pursuing and development programs with greater vigor in an ever-expanding scope; expanding the coverage of the social services program of the province now offering new horizons for trade and commerce and areas of activities which will accordingly be seriously considered as part of the expansion program; provincial planning policy formulation, and implementation to consider the problems of growth and expansion and accordingly take desired direction for further growth, and therefore, in consideration of this expectation high priority be given to environmental protection, natural disaster prediction, control, and moderation, population control and distribution, health and nutrition, education and communication, planning management and decision-making, food, energy, technology and science transfer and utilization, and housing and urban development.

During the calendar years 1991-1995, it is expected to increase the production of goods and services by about 3.0 cent; to increase government revenue to support expanded social services and maintenance of pleasant and ideal environment, health, education and recreation; to increase job opportunities. During this period, there will be another increase in per capita income which means that the need for expansion is to be met with and therefore, must be dealt with more resolutely. Also, this means that unless new markets are developed and old ones further exploited it is feared that there will be a depressed agro-industrial activity; and a need for further improvement of the quality of life in the countryside.

For the calendar years 1996-2000 the economic situation will be very bright. Population of the province is expected to be not exploding and production is much higher. Therefore, there is a need for an aggressive but rational expansion of activities: New markets must be developed, new products should be created; forward looking research and development should be pursued; and initiation of improved technology with much vigor. It is expected that the province will now have to operate agro-industrially to the extent of being more industrial rather than agricultural. Meanwhile, more social services projects will have to be undertaken to the extent that the Social Services funds of the Province of Misamis Occidental will be able to absorb. Provincial policies shall accordingly be geared toward greater flexibility to ensure the promotion of such atmosphere conducive to economic growth and development. It is hoped that there will be increased production of goods and services by 3.5 per cent; attainment of more job opportunities; increased considerably government revenue; the rise of per capita income which means that the economy of the province has improved to a forward-looking stature and therefore there will be expected more money in circulation. All told the quality of life of the countryside will be better at the end of the century. HAPPINESS, CONTENTMENT, AND LEISURE WILL BE VERY PRONOUNCED.

STUDY OF RURAL SETTLEMENT DISTRIBUTION INDICES IN A PART OF MIDDLE GANGA VALLEY (INDIA)

(A Quantitative Approach)

by

ANIL KUMAR AND JAGADISH SINGH[1]

Through the present paper an attempt is being made to search out some salient features of statistical indices pertaining to several attributes of distributional patterns of rural settlements. For the purpose of present analysis two indices i.e., the hypothetical spacing (D) and nearest neighbour statistic (R_N) have been considered. Further R_N statistic has been correlated with other statistical indices. The analysis based on these indices may provide a better understanding of the distributional pattern of settlements and spatial organization of the area.

THE STUDY AREA

Ballıa district (25°33'-26°11' N and 83°38'-84°39'E with an area of 3137.7 km² and 1588935 population) is a part of the Middle Ganga Valley presents a level and fertile alluvial plain. The nature of the settlement distribution in the district is more or less uniform due to uniform physico-cultural condition in general but somewhere this pattern is being disturbed by differences in physiography, locational attributes, varying fertility of soil and characteristics of streams etc. The distribution of settlements is also governed by the behavioural constraints as well as various socio-economic factors. In the present analysis development blocks have been considered as the viable areal units.

SPATIAL ANALYSIS

The concept of spacing in rural settlement geography is defined as 'locational arrangement of villages with respect to one another' (Singh, 1974 p. 114). In fact, any statistical technique does not provide perfect vision of distributional pattern because every unit has its own trend and identity (Singh et al., 1976), pertaining to socio-cultural and spatial characteristics. The geographers working in different coun-

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tries like Sweden, Poland, France etc. have used fixed spacing as a unit for their analysis to measure the trends of dispersion and concentration (Stone, 1968), but there is a lack of any universal suggestion. A generalized formula for transformation of density into spacing has been developed firstly by Robinson and Barnes (1940) but it has some computational mistake i.e., they have assumed that the area around the settlement to be a circle or polygon but in this arrangement empty or overlapped spaces will certainly grow up. This mistake has been corrected by Mather (1944), adopting the Christaller's concept of hexagonal arrangement of settlements which is measured as

$$D = 1.0746/\sqrt{d}.$$

Where D represents theoretical distance between points in hexagonal arrangement and d is the density of points per unit area. On the basis of above equation, the results thus obtained for each block has been grouped into four classes which reveal the following features of the grass pattern of spacing (Fig. 1).

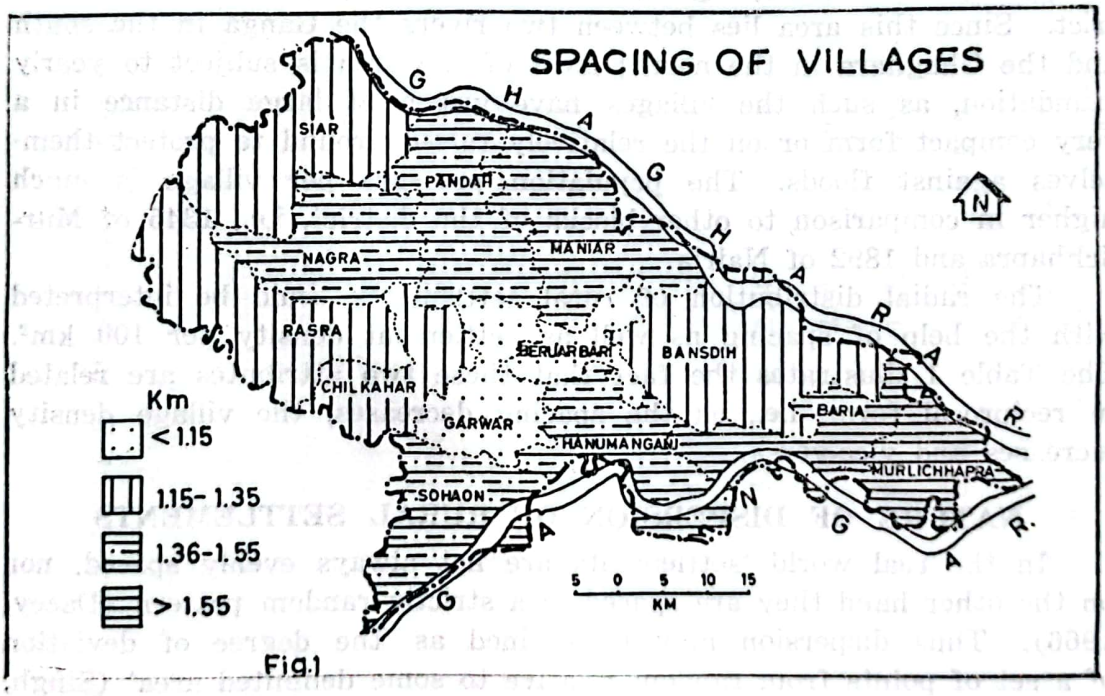

Fig.1

(i) *Least Spacing* (< 1.15 km.)—Two blocks, i.e. Garwar (1.07) and Beruarbari (1.11) record such characteristics, covering 9.56% of total area and 10.92% of population of the district. Population pressure per village for Garwar and Beruarbari is 574 and 625 respectively.

(ii) *Low spacing* (1.15-1.35).—Covering most of the western part of the district with an exception of Bansdih Block, which lies in the north-eastern part. This includes four blocks, i.e., Siar, Rasra, Chil-

kahar and Bansdih having 1.30, 1.23 and 1.31 km of spacing respectively. It covers 36.36% of area and 34.25% of population of the district. The population pressure of this zone ranges between 567 and 748. The highest per village population pressure is in Siar (748), while the lowest is Rasra (567) lying in north-western and western part respectively.

(iii) *Moderate Spacing* (1.36 — 1.55 km). — It consists of five blocks i.e., Sohaon (1.39 km), Hanumanganj (1.36 km), Manihar (1.46 km), Pandah (1.44 km) and Nagra (1.43 km), spacing values. It covers 40.92% of area and 39.71% of population of the district. Four of the five blocks (except one, i.e., Nagra block) lies along the rivers Sohaon and Hanumanganj along the Ganga and Maniar and Pandah along the Ghaghara. The population pressure per village for Block Sohaon Hanumanganj, Maniar, Pandah and Nagra is 730, 880, 862, 851 and 757 respectively.

(iv) *Moderately High Spacing* (>1.55 km). — It is recorded only in two blocks of the eastern part, known as Doaba region i.e., Murlichhapra and Bairia with 1.83 and 1.85 km of spacing values respectively. It covers 13.14% of area and 14.72% of population of the district. Since this area lies between two rivers the Ganga in the south and the Ghaghara in the north; most of the area is subject to yearly inundation, as such the villages have grown at large distance in a very compact form or on the relatively raised ground to protect themselves against floods. The population pressure per village is much higher in comparison to other blocks of the district, i.e., 1345 of Murlichhapra and 1892 of Nairia.

The radial distribution of rural settlements could be interpreted with the help of spacing as well as settlement density per 100 km². The Table 1 illustrates the fact that these two attributes are related in reciprocal form, i.e., as the spacing decreases, the village density increases and vice-versa.

NATURE OF DISPERSION OF RURAL SETTLEMENTS

In the real world 'settlements are not always evenly spaced, nor on the other hand they are spaced in a strictly random pattern (Dacey, 1966). Thus dispersion may be defined as 'the degree of deviation of a set of points from random relative to some delimited area' (Singh, 1974, p. 117). The concept of nearest neighbour statistic (R_N) has been adopted for this analysis, which is developed by plant ecologists Clark and Evans (1954) for the analysis of point distribution in space. Taking basis of the random distribution according to Poisson Probability Law, the Law, the R_N value may be calculated through the mathematical expression as:

$$R_N = 2 ro \sqrt{d} \quad \because R_N = \frac{ro}{rE} \quad \text{and} \quad rE = \left(\frac{1}{2}\sqrt{d}\right)$$

TABLE 1. SPACING AND NATURE OF DISPERSION OF RURAL SETTLEMENT IN BALLIA DISTRICT

S.No.	Blocks	d/km²	D	r0	rE	R_N	V	6rE	C
1	Murlichhapra	0.341	1.837	1.344	0.876	1.534	0.2002	0.0516	9.069
2	Bairia	0.337	1.850	1.036	0.860	1.204	0.2025	0.0562	2.064
3	Hanumanganj	0.630	1.363	0.984	0.639	1.567	0.1083	0.0250	14.200
4	Garwar	0.990	1.079	0.905	0.503	1.802	0.0689	0.0195	20.666
5	Sohaon	0.597	1.390	1.168	0.641	1.808	0.1143	0.0302	17.284
6	Bansdih	0.669	1.313	0.876	0.611	1.433	0.1020	0.0216	12.268
7	Beruarbari	0.931	1.113	0.786	0.518	1.513	0.0733	0.0261	10.268
8	Maniar	0.537	1.465	1.104	0.681	1.621	0.1271	0.0311	13.890
9	Pandah	0.550	1.448	1.109	0.674	1.645	0.1241	0.0295	14.745
10	Siar	0.681	1.301	0.947	0.605	1.565	0.1002	0.0232	14.741
11	Nagra	0.557	1.439	1.088	0.669	1.626	0.1225	0.0276	15.181
12	Rasra	0.751	1.239	0.968	0.576	1.680	0.0908	0.0196	20.000
13	Chilkahar	0.662	1.319	1.063	0.613	1.734	0.1031	0.0264	17.045

For symbols see the text

Where d is the density of settlements and r0 is mean intervillage straight line distance.

This R_N statistic indicates the degree to which any observed distribution of points deviates from what might be expected in random distribution. The value of this statistic ranges from 0.0 (complete concentration) through 1.0 (random) to 2.15 (perfectly uniform).

For further correlative analysis of this index, variance, i.e., V (Dacey, 1965) has been calculated which is expressed as:

$$V = (4-\pi)/4\pi d = 0.0683086/d.$$

If the V is equal to rE, the distribution is termed random, when rE value is larger than V, the distribution is termed regular and if rE is less than V; it is termed clustered. In the case of study area rE is always greater than variance (Table 1); it shows that the distribution is more regular than expected random pattern.

The test of the significance of rE was made with the help of standard error (σrE), i.e., the standard error of the mean distance to nearest neighbour in a randomly distributed settlement of density d (Clark and Evans, 1954), which is calculated as:

$$\sigma rE = 0.26136/\sqrt{nd}$$

where n = total number of villages in the areal unit and d = density of villages per unit area. In addition to these measures, normal curve of standard variate i.e., C (King, 1969) has also been calculated which can be obtained as:

$$C = (r0 - rE)/\sigma rE$$

with the help of C, the significance of departure of r0 from rE can be tested.

To fix the upper and lower ranges of random matching at 95% probability level, following equation has been adopted.

$$= (2\sigma rE \pm rE)/rE$$

In the study area no example of pure random as well as pure clustering is noticeable. In general the trend is moving towards the regularity (Fig. 2).

Table 1 shows the results of the different indices computed in reference to the nearest neighbour analysis. On the basis of R_N value, the dispersion pattern of villages existing in the area has been grouped into the following four arbitrary categories (Fig. 3).

(i) *Least uniformity* (< 1.401 R_N).—Only Bairia development Block (1.20 R_N) comes in this group, which covers 6.09% of total area and 8.04% of total population of the district. The observed intervillage distance is 1.036 km and the village density is the lowest in the region, i.e., 33 villages per 100 km².

(ii) *Low Uniformity* (1.401 — 1.600 R_N).—This group records 38.68% of area and 39.64% of total population of the district, and consists of five blocks, i.e., Murlichhapra (1.534 R_N), Bansdih 1.433 R_N), Hanumanganj (1.567 R_N), Beruarbari (1.513 R_N) and Siar (1.565 R_N) and 34, 66, 63, 93 and 68 density of villages per 100 km² respectively. The observed intervillage distance of the Blocks ranges between 0.786 km (Beruarbari) and 1.344 (Siar).

(iii) *Moderate Uniformity* (1.601-1.800 R_N).—This group covers an area of 42.65% and 39.30% population of the district. It comprises five blocks, i.e., Maniar (1.621 R_N), Nagra (1.626 R_N), Pandah (1.645 R_N), Rasra (1.680 R_N) and Chilkahar (1.734 R_N), where the density of villages per 100 km² ranges between 53 (Maniar) and 66 (Chilkahar).

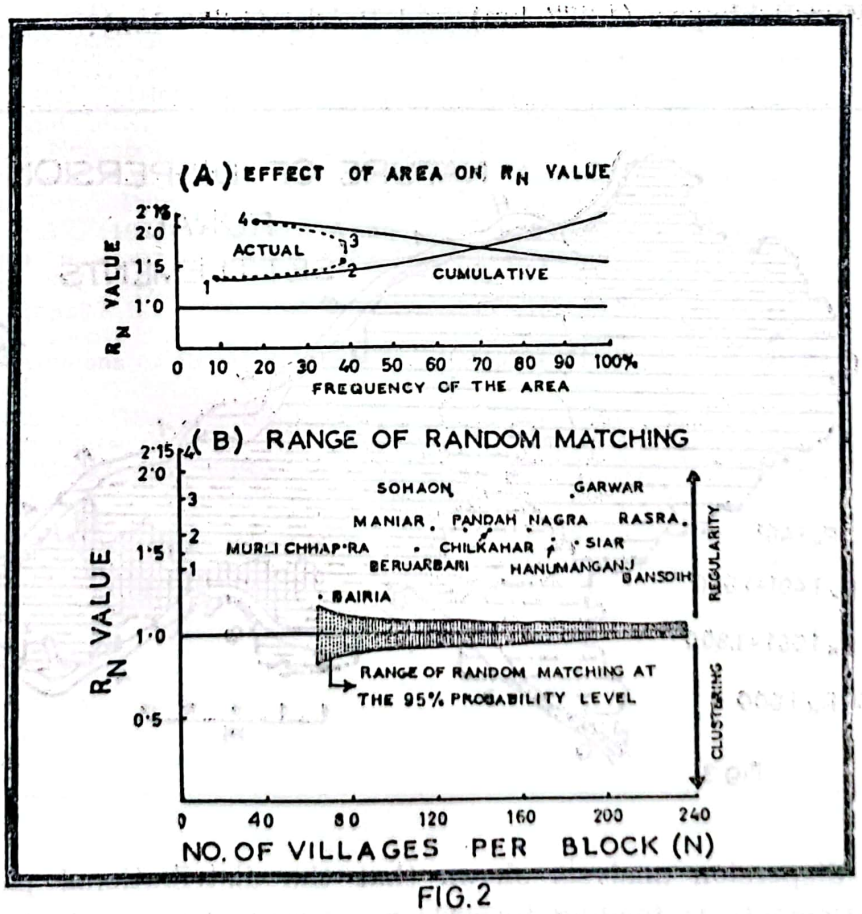

FIG. 2

Except Rasra (0.968 km) everywhere the inter village spacing is higher than 1.0 km.

(iv) *Moderately High Uniformity* (>1.800 R_N).—This group consists of two blocks, i.e., Sohaon and Garwar having 1.808 and 1.802 R_N value and 59 and 99 density of villages per 100 km² respectively. It covers 12.58% of area and 12.94% of total population of the district. The observed intervillage distance for the Sohaon and Garwar Blocks is 1.168 and 0.905 km respectively.

The concept of frequency distribution by groups can be statistically tested with the null hypothesis and $\times^2$ test. The calculated value reveals that at 20% probability level and 3 degree of freedom, the $\times^2$, value (4.32) is approximately equal to the probability value (4.64). This indicates that environmental factors have not played an important role concerning the distribution of rural settlements. This trend can be clarified with the frequency distribution curve, which shows normal type of distribution.

CONCLUSION

It is observed from the preceding discussion that hypothetical spacing between the villages comes less than 1.50 km in most of the blocks except Muralichhapra (1.837 km) and Bairia (1.850 km).

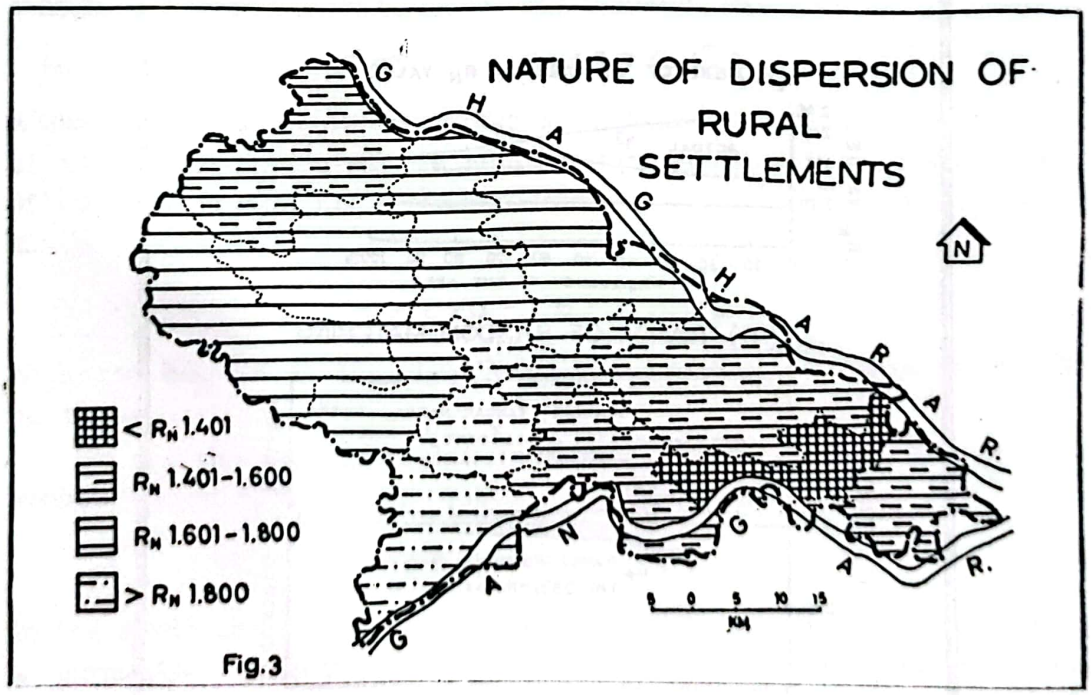

Fig.3

The dispersion analysis shows that the distributional pattern of rural settlements is tending towards regularity, comparable to that of Saran Plain (Singh, 1974) and Jaunpur district (Singh et al, 1976). Similar to the above regions, the present study area also records the in-

creasing trend of R_N value corresponding to the areal extension of unit studied (Fig. 2A). As such, it denotes a reverse condition to that of Pinder & Witherick's conclusion (1972), which is only applicable in the areas of inhomogeneous environment like Eastern Gujrat as done by Kumkum Mazumdar (1976).

ACKNOWLEDGMENT

The authors offer their sincere and heartfelt thanks to Dr. R.L. Singh, M.A., Ph.D. (London), Retired Professor and Head, Department of Geography, Banaras Hindu University, for his constant inspirations and valuable suggestions.

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A SHORT NOTE ON INDIAN TOURISM RESEARCH
A Bibliographical and Geographical Perspective

by

DEVENDRA KUMAR JAIN[1]

In the twentieth century human knowledge has greatly increased in all branches. Each discipline has a chance for full growth and an interdisciplinary approach is being adopted in study of many problems. Tourism too, a recent sprout of Recreation Geography cannot be studied and developed in the void as a separate entity and naturally is interlinked with many aspects which come under different disciplines. Tourism is essentially a post-war phenomenon and is today a highly organized business. Tourism is one of the most productive and one of the fastest growing industries of the world. This is the only industry which earns foreign exchange without dissipating national resources.

Since time immemorial tourism has been a way of life in the form of pilgrimage or travel for recreation, and means of intercourse with fellow-men for an individual and for the Government it was a source of information. But in recent days it has become a means of learning for an individual and source of economic gain for the state. Since tourism is a 'Space Consuming' activity dealing with land-use, landscape, area development, zoning and land aesthetics, ecology, Geographers in applied field can contribute substantially. Tourism and Recreation Geography have now begun to make its major claim (both in 21st International Geographical Congress, New Delhi and 22nd I.G.U. at Montreal world Geographers meet) a commission on Tourism was proposed. A separate commission on "Geography of Recreation and Tourism" has been set up in 23rd International Geographical Congress which has just concluded at Moscow (August 1976).

In Fifth Five Year Plan there is a Scheme to establish an Institute of Tourism and Travel Management in India. Tourism today needs specialised services. It is no longer sufficient for the tourist personnel to be willing workers with general education. They should be well equipped and trained persons in accommodation, Catering, transportation, hospitality, Sales methods, tour operation and the like. India, unfortunately, has not felt the need of such education and training centres. Most touristic countries overseas have come up with under gra-

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duate/Post graduate courses. Tourist Education is a state responsibility in Italy (IUOTO) culminating into International Centre for Advanced Tourist Education (CIEST) in Turin (IUOTO). Lebanon has a tourist research Institute. Tourist education is a State responsibility in Spain also, and the Government has established a tourist training school (STE) whose operation are defined by Law. The Spanish Institute of Tourist Studies grants fellowships to deserving candidates. Spain alone has 15 official hotel training schools. Thirteen of them are administered by the Ministry of information and tourism. India unfortunately has not felt the need of such education and training centres. A large number of institutions have been created in the country to meet the manpower needs of hotel industry and infrastructure development. There is however, no planning institute here which specialised in tourism planning. Nor we have adequate schools for specialised education research facilities in India which train researchers for tourism industry.

S.N. Chib writes in his article on a very detailed Plan, prepared by the Dean of the School of Tourism of Michigan University points out that this institution was prepared to set up a major institution of International standards in India but for lack of finance the plan has not got off the ground. Meanwhile institutions of this stature are being established in Manila, Japan and Hong Kong, besides a well established institution called East-West Centre in Honolulu. Quite a few universities have been able to establish over the last 10 years first rate Faculties of Tourism, e.g. Massachusetts, Buffalo, Michigan, Florida, Surrey, Vienna and Heidelberg.

Tourism today is one of the largest and most lucrative industries of India. We earn foreign exchange worth rupees sixty to seventy crores every year. Considering India's rare tourist spots made up of long history, archaeology, geography folkculture and life-style, we have a rich and unmatched tourism promise. But tourism receipts do not come as windfall. If touristic countries of the west earn fabulously, it is not by mere chance or accident. They have groomed tourism into an industry, prepared tourist inventory, built tourist profiles of the region, went in for altitudinal and motivational studies of their visitors and correctly quantified demand for the supply.

Despite our promotional inputs of the two and half decades, we have been able to convert this unique tourist market of India into an industry. Tourism promoters and planners are imprecise or too optimistic about the outputs. This is unfortunate that this technically complex trade is largely handled by a personnel having meagre or inadequate training in catering, research and planning. The Indian Government too is investing crores of rupees every year to renovate the

old and the new tourist spots and constructing different classes of hotels to allure foreign tourists. In this context too, Geographers can very well guide and suggest the Government about the already developed and developing tourist centres in their broad regional contacts.

The tourism resources of India are so vast and varied that the opportunities for the growth of tourism industry in the country are indeed unlimited. As we enter in a new era of tourism expansion, we must become more deeply involved to make sure that it makes the best possible contribution to national development process[2]. But we have never harnessed this field of resources neither we had a past planning for tourism resources nor at present we have any tourism planning and research in tourism. Even today no serious attempt has been made in our country to under take systematic planning of recreational resources. If we don't have research in tourism. 'It is like driving a car blindly in wilderness' says T.V. Singh[3]. Tourism research (Macro-Meso-Micro and local levels) help planners taking correct decisions for short and middle term planning. The University should take up both multi-disciplinary as well as single disciplinary competitive and non competitive markets and field researches: the ideal situation would be to seek collaboration with various inter related interested institutions viz. University centre of tourism and recreation studies, the department of tourism research unit, travel agencies, such as The Pacific Area Travel Association (PATA) California has done model travel researches e.g. Pacific visitor Survey, 1967 in collaboration with National Geographic, Time and other agencies.

Tourism research is basic to tourism development. Unfortunately, in the present state of tourism industry in the country, attention is either diverted to providing accommodation to high income tourist or to transportation facilities from them. Tourism research gets a marginal attention, if at all. So long as this industry was considered unimportant, research was really uncalled for. But now when so great a premium is placed on this and its multi-dimensional impacts are being better appreciated, it is important that the research input in the industry is increased.[4].

Tourism in India come under the aegis of the Department of Tourism and its associate the India Tourism Development Corporation (ITDC). Both are concerned with the promotion of Indian tourism abroad, with the development of facilities for tourism, such as trans-

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[2] Mishra, R.P., "Towards sound Tourism Promotion in India." Tourism Research Vol. 1, 1976, pp. 9-14

[3] Singh, T.V., "Planning For Tourism Promotion in Uttrakhand." Transport & Tourism Journal, Vo. 8, 1975, pp. 12-18.

[4] Mishra, R.P. "Towards sound Tourism Promotion in India." Tourism Research, Vol. 1. 1976 pp. 9-14.

port and communication, accommodation and with the opening up of new areas to tourism.

Tourism Research in India could be counted from 1960. Dr. T.V. Singh is the pioneer Geographer who published his first paper "Prospects of Tourist Industry In India" in the 21st International Geographical Congress in India (New Delhi, 1968). Another Indian Geographer — M.K. Dutta — too contributed his paper "Tourist Industry of North Bengal" in the same congress. Two foreign Geographers the American and Japanese did not lag behind in the field with their papers in the same issue. A considerable enthusiasm was expressed 20 years ago by Dr. S.L. Kayastha with his paper on "Tourist Industry of Kangara Kulu and Mandi" which was published in National Geographical society of India, Varanasi. He was firm on his doctoral work on tourism but for want of suitable guidance, it could not materialize. Dr. T.V. Singh has published many worth while papers on Tourism within a short span of time. His reflections have featured in the topmost papers, periodicals and Journals of India. He took Ph.D. degree from the Kanpur University on "The Geographical Basis of Tourist Industry in Uttar Pradesh". Dr. Singh has made several sample case studies of U.P. tourist centres in his work. His efforts are, perhaps, singular in India in the field of tourism. He has won appreciations of many, Indian and foreign Geographers. His work have been complied in book form in 1975. "Tourism Research" a journal published by him adds to his keen interest in tourism. He has at present accepted the chairmanship of the Garhwal University and there he is bound to open still new horizons of tourism in India." Studies in Tourism and Recreation" is his forthcoming study in the press. Mrs. Jagdish Kaur his wife — has also contributed many papers in the field of tourism. She is actively working for her Ph.D. in the field of tourism.

Tourism is merely an aspect of recreation[5]. Very few Geographers in India have shown interest in this field. Chief among others are Professors S.L. Kayatha, Professor R.P. Mishra, Professor M.M. Anand, Dr. D.K. Mittra, K. Tangamani and Devendra Kumar Jain who have contributed this new emerging field of Geography. Dr. R.P. Mishra, Director, in the Institute of Development Studies and Professor of Geography is a wellknown figure in Indian Geography, who feels the necessity of tourism research in this country. Though he has not contributed much in the field of tourism and recreation Geography, but perhaps he was chief among Indian Geographer who emphasised much on tourism research and recognised the economic value of tourism for the developing countries like India. Professor Mishra made his

[5] Robinson, H., A Geography of Tourism" Macdonald and Evans London, 1976.

contribution in the field of tourism and recreation planning by sponsoring a Post-Graduate diploma course in Recreational Planning in his Institute. He feels that more centres of tourism marketing research and planning should be established in different meso tourism regions of the country with a National Institute of Advanced tourism studies at the apex, having associations with world Tourism Organization and other International Centres of tourism research." Unless we do this, we can hardly convert this vast market in to an industry" says Dr. Mishra.

Professor M.M. Anand who was previously on the faculty of Management Studies, University of Delhi has now joined as Professor of Marketing, National Institute for Training in Industrial Engineering Bombay. He has come out with his book on "Tourism And Hotel Industry in India: A study in Management". In fact this book had its origin in a thesis submitted by him for the Ph. D. degree on an empirical study carried out both in India and the United States. The main aim of the study is to examine the reason for the poor tourist traffic in India which in the tote world market constitutes not more than 0.2/. . . This study is really useful for the students offering courses on management in Tourism and Hotel management and Catering and other specialised institutes, offering similar courses.

Dr. Dilip Kumar Mittra, a young man, full of life and enthusiasm, Assistant Librarian in National Library, Calcutta took up Tourism for his Ph. D. thesis in 1971, and completed it in 1975. His work is based on Questionnaire field observation and spot study. His work could not come out in lime light before the academicians, but whenever it be published it will definitely be a guideline for future researcher in the field of tourism. Dr. Mittra too has contributed a paper at 23rd International Geographical congress at Moscow in 1976.

As late as 1974, Devendra Kumar Jain, Lecturer in Geography registered himself on the topic "Tourism in Madhya Pradesh: A Geographical Study" under the able guidance of Professor Dr. S.L. Kayastha of Banaras Hindu University. He has published and contributed a paper' Tourism as an Industry A Geographer's viewpoint' which was published in 'Philippine Geographical Journal', apart from this, he contributed about a dozen papers in Indian Science Congress and Madhya Pradesh Vigyan Academy, Tourism and Wildlife Journal and so on.

Of late Miss K. Tangamani, a Research Scholar at the Institute of Development Studies, University of Mysore has also shown her interest in the field of tourism. She is pioneer to step farther in the field focusing on tourism economy, its impact on local economy and its contribution towards area development. At present, she is working on the topic "Tourism Economy and Area Development: A case study of selected tourist centres of Tamilnadu". She has published a numbers of papers on tourism.

For the development of Tourism in India, the National Atlas Organization of Calcutta has prepared a Tourist Atlas which has contributed immensely to this new discipline. This Atlas is of great use to those who have undertaken to take up research projects in the allied fields of tourism, recreational geography of India, study of pilgrim centres of India, and Archaelogical sites in the country. The Tourist Atlas of India was prepared by the National Atlas Organization Calcutta in 1960. This was a work which could have provided very prospective guidelines for research by Indian Geographers. But unfortunately no Indian scholar in Geography could utilise the material in this work, at that time. Also social scientists and others connected with tourism and allied aspects could not think of using this important publication. A comprehensive tourist Atlas of India to meet the requirement of general public, particularly tourists contains 25 plates depicting all sorts of transport network and places of pilgrim centres, tourist interesest and archaeological sites. The road system has been classified into national highways, state highways, major district roads etc. Bus routes, petrol pumps, rest houses, distances between different places roads bridges have been shown. Various other information relating to physical, and historical aspects of the country have also been vividly elaborated.

Among those centres which have undertaken research work and studies on tourism, mention may be made of Institute of Development Studies, University of Mysore, Garhwal University, Kumaun University. Among those which offer the subject — Geography of Tourism & Recreation, at the Post-Graduate level B.H U. Varanasi and A.P.S. University, Rewa are prominent. The Institute of Development Studies has tried to contribute its own to systematic planning of recreation by way of planning facilities for training and research. The diploma course in recreation planning and tourism is a part of this contribution. The course treats recreation and tourism as two sides of the same coin. It aims at training personnel in integrated approach to recreation and tourism and tourism planning. The course comprises of aspects like recreation resources, landscape planning, development of parks, wildlife sanctuaries and waterfronts, methods of estimating recreation demand, planning for community recreation, appreciation of nature, art and architecture, development of recreational and tourist facilities are also studied. Garhwal University has started a course on Tourism Education for the Under-graduates. The University has also proposed a faculty of tourism and courses for Master's degree are being framed.

For the development of Tourism in India few Geographers and Universities have made their contributions and offered new directions in research techniques. These two journals namely Research in Tou-

rism and Tourism Research did not lag behind in the field of tourism. These are the two journals on India devoted to interdisciplinary recreational researches and promotion of skills evolved in India and abroad. The following two periodicals have also contributed much to the progress of research in the field of tourism:

a. **Research in Tourism:** Published in Calcutta (Annual)
b. **Tourism Research:** Published in Lucknow (Half Yearly)

The former, coming from Calcutta, has not been able to gain fame or has been able to exert greater influence when compared with the Lucknow publication which has earned much reputation among scholars and even trade circles. It has also wide circulation. This has been due to the efforts of Dr. T.V. Singh who not only edits the publication but otherwise pays great attention to all related aspects.

The Institute of Town Planners in India had organized a seminar on Tourism in 1970 at Srinagar (Kashmir). The seminar had its major theme on "Planning For Tourism". Large number of delegate from all parts of India had participated in this seminar. Almost all aspects of planning for tourism were discussed in the seminar viz. tourist infrastructure, Urban Planning, tourist traffic, and transportation and role of tourism in regional development. This seminar was graced by Geographers, Historians, Archaeologist, and town Planners discussing various problems of tourism in India. More than 200 academic papers were presented and contributed by participants. This seminar was the first of its kind in India where a large number of social scientists assembled to discuss the matter on tourism resources.

In India market researches on tourism have not been properly taken up. However, findings of the Indian Institute of Public Opinion Sample Survey Report (Expenditure, Composition, and Reaction Pattern of Foreign Tourist, 1969) revealed that, of the total per capita expenditure of Rs. 1367.91 a tourist on an average, spends 42.1 percent on 'hotel sector' 26.3 percent on internal travel, 28.2 on shopping and 3.4 percent on miscellaneous items. Average mesurement of tourists stay in India was 22 days. From the affluent countries the U.S.A. spent Rs. 1714 in 21.8. days, U.K. Rs. 142972 in 29.5 days Eastern Europe and Soviet Union, Rs. 177027 in 22.4 days. Countries from the South and S.E. Asia spent the lowest amount Rs. 85068 in 38.1 days.

Since tourism is a commodity sold in highly competitive foreign markets a good 'turnover' can never be a chance or sheer accident[6]. In touristic countries abroad, research is the main spring-board for marketing. Practically every region has a well equipped tourism research

[6] Singh, T.V., "Tourism and Tourist Industry (in U.P., India)" New Height, New Delhi, 1975, pp. 251.

cell which prepares inventory of tourist attractions, makes exhaustive enquiries into the holiday habits of the visitors, takes up surveys of market prospects and develops a tourist profile of the region. Today Hawaii and California tourism industries are thriving on their home market, particularly with repeat visitors. Most of the countries have come up with programmed tourist education and tourism as a subject has been introduced in the diploma and degree courses of the Universities. Postgraduate and research facilities are also provided by a few countries. Should India be anxious to promote tourism, it is high time that she must encourage uncompetitive market researches into present and future tourism demand.

CONCLUSION

Tourism countries abroad have set up commissions on outdoor recreation resources, and recreational planning and decision making is done on the development worthiness of the place among the central places. It is hightime India should follow suit and set up a commission to frame regional programmes for tourism promotion, keeping in view short and long term needs. With the upcoming supersonic transport promotion of tourism would be a big challenge, planning aspects of great dimension would be required at our ports of disembarkation, facilities in lift inload and tourist carriers, and terminal facilities have to be visualized from now, lest the mass tourist explosion of the 80s of this century should overtoke us unprepared and unplanned.

ACKNOWLEDGMENT

The author of this research paper acknowledges his indebtedness to above all Professor S.L. Kayastha of Banaras Hindu University, Varanasi (India) who kindly helped him in the preparation of this Bibliography and also emphasised the value of such a bibliography for research scholars in this particular field. The author also has benefited from the fruitful discussions he has had with Dr. Dilip Kumar Mittra of the National Library, Calcutta. He is also thankful to Dr. T.V. Singh for constant constant encouragement in the preparation of this Bibliography.

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NATIONAL RESEARCH COUNCIL OF THE PHILIPPINES 44th ANNIVERSARY AND SCIENTIFIC CONGRESS

by

AURORA S. TOLENTINO

The National Research Council of the Philippines (NRCP) celebrated its 44th Anniversary and Scientific Congress on the theme: NRCP Research and National Development, on December 8-9, 1977. It was held at the Philippine International Convention Center, Roxas Blvd., Metro Manila.

The celebration started with an invocation by Fr. Bienvenido F. Nebres, S.J., a regular member of the Council.

Dr. Gregorio Y. Zara, Acting Chairman of the NRCP, formally opened the celebration with a short note on the "role which our scientists and technologists play in the development of our country."

Dr. Onofre D. Corpuz, President of the University of the Philippines, stressed in his keynote speech the relevance of NRCP and its scientific activities to national development along the disciplines of science and technology. He was later inducted to regular membership in the council and awarded a plaque of appreciation.

Out of the twenty (20) living charter members only twelve (12) were able to attend and receive gold pins and the plaque of appreciation given by the Council for their invaluable contribution to their respective fields of specialization.

1. Dr. Tomas P. Abello
2. Dr. Felipe T. Adriano
3. Dr. Manuel V. Arguelles*
4. Dr. Tranquilino G. Fajardo
5. Dr. Francisco M. Fronda*
6. Dr. Pablo I. de Jesus*
7. Dr. Pedro S. Lantin, Sr.*
8. Dr. Casimiro B. Lara
9. Dr. Hilario Lara*
10. Dr Faustino Q. Otanes
11. Dir. Domingo B. Paguirigan*
12. Dr. Eduardo Quisumbing*
13. Prof. Hermenegildo B. Reyes*
14. Dr. Alfredo Santos*
15. Dr. Francisco O. Santos*
16. Dr. Agerico B.M. Sison
17. Dir. Florencio Tamesis*
18. Dr. Vidal A. Tan
19. Dr. Nicanor G. Teodoro
20. Dr. Juan P. Torres*

* Charter Members who were able to attend.
** Regular Members who were able to attend.

The Silver Jubilarians, numbering thirty-one (31) in all, were also honored with silver pins for their twenty-five (25) years of regular membership in the Council.

1. Prof. Arturo Alcaraz
2. Dr. Gonzalo F. Austria**
3. Dr. Julian Banzon**
4. Dr. Miguel Cañizares
5. Dr. Jose M. Capinpin**
6. Dr. Silverio M. Cendaña**
7. Dr. Paterno S. Chikiamco**
8. Dr. Anacleto B. Coronel**
9. Dr. Amando M. Dalisay**
10. Dr. Francisco J. Dy
11. Dr. Leon G. Gonzales
12. Dr. Andres O. Hizon**
13. Mr. Hilarion Henares, Sr.**
14. Dr. Zacarias de Jesus
15. Dr. Antonio Isidro**
16. Dr. Cecilio Lopez
17. Dr. Calixto Mabesa
18. Mr. Manuel Mañoza
19. Dr. Geminiano de Ocampo**
20. Atty. Gil O. Opiana
21. Dr. Dioscoro H. Rabor**
22. Dr. Emeterio Roa
23. Mr. Pedro A. Rodrigo**
24. Hon. Filemon C. Rodriguez
25. Dr. Jose N. Rodriguez
26. Dr. Casimiro del Rosario
27. Prof. Dominador Z. Rosell**
28. Dr. Ignacio S. Salcedo
29. Dr. Juan Salcedo, Jr.
30. Prof. Marcelo Tangco**
31. Dr. Gregorio T. Velasquez**

The afternoon session of the first two (2) days celebration was highlighted by the presentation of four scientific papers.

The National Research Council of the Philippines Executive Board is composed of the following:

Dr. Florencio A. Medina	Chairman and Member-at-Large
Dr. Gregorio Y. Zara	Acting Chairman
Dean Faustino T. Orillo	Member-at-Large
Dr. Domingo C. Salita	Secretary
Dr. Manuel O. Hizon	Treasurer
Dir. Ricardo C. Cruz	NSDB Representative

CHAIRMEN OF DIVISIONS

I.	Dr. Gregorio Y. Zara	— Government, Foreign & Educational Relations
II.	Dr. Manuel O. Hizon	— Physical and Mathematical Sciences
III.	Dr. Paulo C. Campos	— Medical Sciences
IV.	Dr. Bienvenido O. Juliano	— Chemical & Pharmaceutical Sciences
	Dr. Julian Banzon	— Immediate Past Chairman
V.	Dr. Gregorio T. Velasquez	— Biological Sciences
VI.	Dr. Alejandro R. Apacible	— Agriculture & Forestry
	Dr. Francisco M. Fronda	— Immediate Past Chairman

VII.	Dr. Perfecto K. Guerrero	— Engineering & Industrial Research (on leave)
	Dr. Meliton U. Ordillas	— Acting Chairman, Engineering & Industrial Research
VIII.	Dr. Domingo C. Salita	— Social Sciences

The following highlight the history of the National Research Council of the Philippines:

December 8, 1933	—	Approval of Act No. 4120 creating the National Research Council of the Philippine Islands for the Promotion of Research Work along Scientific Lines.
March 23, 1934	—	Induction of Charter Members by the Acting Secretary of Agriculture & Commerce (first meeting).
April 3, 1934	—	Organization of the NRCP (2nd meeting). Adoption of the Constitution and By-Laws. Election of the Members of the Board.
April 6, 1934	—	Meeting of the First members of the Board.
April 13, 1934	—	Election of Officers of the Board
February 28, 1935	—	First Annual Meeting of the Council
January 28 to June 4, 1938	—	Sponsored the first gravimetric survey of the Philippines ronducted by Rev. Pierre Lejay, S.J.
July 30, 1947	—	Re-activation of the National Research Council of the Philippines after World War II.
August 21-25, 1949	—	The NRCP hosted the Philippine promotion of the Round-the-World Tours Meeting, organized by the Pacific Science Association, a major cultural, social and educational event.
July 6, 1951	—	The Council assisted the Danish Deep Sea Expedition frigate "Galathea" under Dr. Anton Fr. Bruun, in exploring animal life of the ocean particularly that of the Philippine Deep.
June 20, 1952	—	Worked for the creation of the Commission on Volcanology under House Bill No. 2218, entitled: "An Act of Safeguard Life and Property Against Volcanic Eruptions and Danger," resulting in the enactment of R.A. 266, an Act creating the Commission on Volcanology under the NRCP.

November 16-28, 1953 — Hosted the Eight Pacific Science Congress and the Fourth Far-Eastern Prehistory Congress held in the Philippines, attended by 1,592 delegates. Twenty-Four (24) countries were represented.

February 26, 1955-1956 — Created the NRCP Division of Social Sciences. Worked for the passage of R.A. 1606, creating the National Science Board (NSB) which is the forerunner of the National Science Development Board.

1957 — Elected as Participating Member of the International Science Foundation.

1958 — Participated actively in the Amendment of R.A. 1606 which led to the enactment of R.A. 2067 known as the Science Act of 1958 creating the National Science Development Board.

February 28, 1964 — 30th Anniversary Celebration of the National Research Council of the Philippines.

August 30, 1968 — Participated actively in the enactment of R.A. 5448 which led to the creation of the Special Science Fund.

October 22-26, 1973 — Holding of the First Regional Seminar on Philippine Ecological Problems in Davao City. The Regional Seminar has become since then, an annual scientific activity of the Council to bring science closer to the people.

July 7, 1975 — Transfer of the NRCP Headquarters from U.P. Diliman Campus to the Science Community Complex in Bicutan, Tagig, Metro Manila.

October 19, 1977 — Signing of the Contract between Dr. Gregorio Y. Zara, Acting Chairman, representing NRCP and Francisco L. Ramos representing F.L. Ramos Construction Co., Inc. for Construction of the NRCP Administration and Laboratory Building (Phase I).

MAYON VOLCANO IN TEN-YEAR CYCLE

Commissioner GREGORIO A. ANDAL of Commission on Volcanology and Member of the National Committee on Geographical Sciences of National Science Development Board and of the Philippine Geographical Society reports on the activity of Mayon Volcano recently. He made the following observations as follows:

A sudden deterioration of Mayon Volcano's condition was noted in the early morning of March 7, 1978 with the sudden increase in intensity of crater glow observed at the volcano's summit. This phenomenon was followed by ejection of ash-laden clouds and incandescent volcanic materials of light volume at about 0340 a.m. This activity was recorded by the Commission on Volcanology seismograph at the Mayon Volcano Observatory, 2,500 ft. above sea level.

All concerned were advised to follow strictly the precautionary measures advocated under "OPERATION MAYON" which calls for a 6 km. radius from the summit as a permanent buffer danger zone. Inside this buffer zone, permanent residence is prohibited. People living outside this danger area but situated at the foot of the volcano should always be on the alert and ready to evacuate when the condition of the volcano so warrants and the modification of the danger zone is further given.

After March 7, 1978 when the above activity was manifested, there was a gradual improvement on the condition of the volcano, although the possibility of an eruption is still present and considering that Mayon follows a 10 year cycle between eruption. The last eruption was on April 21, 1968 and the Commission on Volcanology had given the public the notion that 1978 is a critical year for Mayon it being the 10th year after the 1968 activity.

DR. EMILIO B. VENUS

by

AURORA S. TOLENTINO

Dr. Emilio B. Venus, Supervising Planning Officer II of the Project Development and Evaluation Division, NSDB, and member of the Philippine Geographical Society died on March 8, 1978, ending a government service that spanned more than three decades.

The late Dr. Venus obtained the degree of Doctor of Veterinary Medicine, University of the Philippines in 1941 and passed the Veterinary Board and Veterinary Civil Service Examinations. He earned his Master's Degree from the Graduate School of Public Administration, Araneta University. He was a Philippine participant to the first FAO/WHO International Training on Abattoir Management & Operation in Copenhagen, Denmark and underwent an in-service training on Supervisory Development and Public Administration in the Department of Agriculture and Natural Resources and Araneta University.

After 22 years of service in the Bureau of Animal Industry as Livestock Extension Officer, Provincial Veterinarian, Animal Husbandman, Senior Parasitologist, Senior Research Veterinarian, in succession, he retired from government service and was employed subsequently in the Araneta University. During his three years stint in the Araneta University, he held the position of Associate Professor and Head, Department of Physiology & Pharmacology in the Institute of Veterinary Medicine of the Araneta University.

Dr. Venus was appointed Assistant Scientist for Natural Resources in the NSDB in view of his educational background, training and professional experience until he got his present position as Supervising Planning Officer II.

The deceased is survived by his wife, Mrs. Felicitas Balbin Venus and five children, namely: Lorna, B.S. in Music; Dante, Catholic Priest; Orland, Commerce graduate, Emilio, Jr., TV Musical Director; and Nestor, Medical Student.

Society News

Dr. WILLIAM L. THOMAS and his wife Mrs. Loida Thomas were guests of the Philippine Geographical Society and the National Committee on Geographical Sciences, National Science Development Board (NSDB). Prof. Rosell of the Society and the Committee brought the distinguish couple on the CABALAG Tour for a day visiting important tourist spots of the Provinces of Cavite, Batangas and Laguna. This area is the Southern volcanic regon of Luzon where you can experience the Tagaytay Ridge overlooking Manila Bay, Taal Lake and Taal Volcano and also Laguna de Bay. Visited the sugar plantation of Nasugbu Sugar Central and the Balayan Sugar Central in Batangas. In this province also are two oil refineries — the Caltex at Bauan and the Shell at Batangas City. In Laguna, visited the Sampaloc Lake University of the Philippines at Los Baños and the International Rice Research Institute.

Dr. Thomas is Professor of Geography and Southeast Asian studies, California State University at Hayward, California, U.S.A. on sabbatical leave in the Philippines, September 1976 — June 1977 as visiting Research Associate, Institute of Philippine Culture, Ateneo de Manila University, Loyola Heights, Quezon City.

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Dr. T.W. FOOKES, Senior Lecturer in Geography, University of Waikato, Hamilton, New Zealand, and member of the World Society of Ekistics and Dr. NEIL ERICKSON of the same unversity were guest of the Philippine Geographical Society and the National Committee on Geographical Sciences, National Science Development Board. Prof. Rosell, Professorial Lecturer in Geography, University of the Philippines at Diliman, Quezon City and Philippine Women's University at Manila brought these two New Zealand geographers to CABALAG — the provinces of Cavite, Batangas and Laguna. They saw the beauty of the countryside, i.e., Tagaytay Ridge, Taal Lake and Taal Volcano, Sampaloc Lake, University of the Philippines at Los Baños and the International Rice Research Institute on November 27, 1977.

It is recalled that Dr. Fookes' article on Ekistics was reprinted in the Philippine Geographical Journal. The two geographers came to the Philippines to attend the Seminar on Environment and Settlement sponsored by the WHO, Manila.

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Officers of PGS to NRCP

Two members of the Philippine Geographical Council were re-elected to the Executive Board of the National Research Council of the Philippines. Dr. Domingo C. Salita, Vice-Chairman of the Philippine Geographical Society was re-elected Chairman of Division of Social Sciences, while Dr. Alejandro R. Apacible, Director of the Philippine Geographical Society Council was re-elected Chairman of the Division of Agriculture and Forestry. These two scientists are also incumbent Vice-Presidents of the Philippine Association for the Advancement of Science PHILAAS) — Dr. Apacible, Vice President Division A-Agricultural Science and concurrently Executive Vice-President of the PHILAAS and Dr. Salita, Vice-President Division E-Earth and Social Sciences.

AUTHORS

Prof. DOMINADOR Z. ROSELL was Supervising Scientist and Chief, Division of Agricultural and Natural Resources Research, National Science Development Board, Republic of the Philippines, Manila, now retired.

Before this, he was Chief Soil Scientist, Division of Conservation Survey, Bureau of Soil Conservation up to September 30, 1952. On Oct. 1, 1952 he became Administrator of the Irrigation Service Unit & Program Director of the Pump Irrigation Program of the Philippines up to November 5, 1960 when was appointed Supervising Scientist, National Science Development Board.

Prof. Rosell is a well travelled man. As a government student in United States in Soil Technology he travelled throughout United States and visited fifteen universities in the Eastern, Southern, Central and Western States before staying at the Iowa State University at Ames, Iowa. He attended a number of International Conferences and Congresses, such as in Bangkok, Thailand, in Madrid, Spain, in Rehovoth, Israel, in Montreal, Canada, and in New Zealand and then in Hong-kong University. He visited several geographical associations and institutions in Europe, United States and Southeast Asia.

Presently he is a Professorial Lecturer in Geography, University of the Philippines, Diliman, Quezon City and Philippine Women's University, Manila; President of the Philippine Geographical Society; Chairman, National Committee on Geographical Sciences of the National Science Development Board (NSDB); President, Volunteer for International Technical Assistance, Philippines, Inc. (VITAPHIL, INC.); Member of the Pool of Consultants, NSDB; and Consultant, Technology Resource Center, Manila.

He was the Organizing Chairman, Philippine Geographical Society on December 8, 1950 and presently Editor-in-Chief & Business Manager, Philippine Geographical Journal since its publication in 1953. Prof. Rosell is member of the International Honor Society of Phi Kappa Phi, U.P. Chapter and of the Honor Society in Agriculture, Gamma Sigma Delta, U.P. Los Baños Chapter.

Mrs. AURORA S. TOLENTINO has a Bachelor of Science in Chemistry and is presently Planning Officer of the Project Development Evaluation Division, National Science Development Board. A very active lady in Science and Technology, she is associated in many scientific organization, i.e. Associate Member of the National Research Council of the Philippines; Fellow of the Philippine Association for the Advancement of Science; Member of Soil Science Society of the Philippines; Member, Philippine Society for Animal Science and Volunteer, Volunteers for International Technical Assistance Philippines, Inc. Presently she is Treasurer of the Philippine Geographical Society and Assistant Editor of the Philippine Geographical Journal and Executive Secretary, National Committee on Geographical Sciences, National Science Development Board.

Mr. JOSE O. JAUG was Acting Chief, Planning and Programming Division, National Science Development Board (NSDB), Republic of the Philippines, now retired. Before joining the NSDB he was Assistant Soil Technologist, Bureau of Soil Conservation (Now Bureau of Soil), then Assistant Farm Organization Specialist in the Irrigation Service Unit and the Pump Irrigation Program of the Philippines. He is a member of several scientific and learned organizations, i.e. Fellow, Philippine Association for the Advancement of Science, Member, Soil Science Society of the Philippines, Philippine Society of Animal Science, etc. Presently Mr. Jaug is Secretary of the Philippine Geographical Society and formerly Managing Editor of the Philippine Geographical Journal. He is also a member of the Honor Society in Agriculture — Gamma Sigma Delta, U.P. Los Baños Chapter.

Mr. SHRI DEVENDA KUMAR JAIN is Lecturer in Geography in the Post-Graduate and Research Department of Geography, Govt. T.R.S. College, A.P.S. University, Rewa, Madhya, Pradesh, India. Educated in Saugor University, Mr. Jain took his M.A. in Geography in 1969. He started his career as lecturer from "Daly College" Indore — a college meant for Indian princess. He is a Geographer by profession and currently is working on his doctoral project: "Tourism in Madhya Pradesh: A Geographical Study," under the able guidance of Prof. S.L. Kayastha of Banaras Hindu University Varanasi. Young and energetic, a great tourism enthusiast, Mr. Jain is a Geographer by training and also by inclination. He possesses qualities of head and heart and has been working with zest and zeal. Tourism being his passion he has dedicated himself to this new field of academic discipline. A widely travelled young man, Mr. Jain has the credit of representing Govt. Colleges of M.P. at the International and National Geographical Conferences at Banaras and Nagpur 1975 and 1977 respectively. His association with a number of Geographical Societies and organizations in India and abroad as well as the regular publication of his articles in Indian and foreign magazines has made him popular among Geographers. Among the Journals to which he regularly contributes a special mention may be made of the Philippine Geographical Journal.

His future plans include a study of the National Parks and Wildlife Sanctuaries in Madhya Pradesh. Academicians interested in Wildlife may kindly get in touch with Mr. Jain. This will be highly appreciated by the young geographer.

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