

Retrospect and Prospect

Beginnings

Forty-two years ago, five enthusiasts met in Bangalore and resolved to form a Society devoted to the task of promoting the cause of advanced study and research in all branches of the geology of India. The task of drawing up Memorandum and Articles of the proposed Society was entrusted to Prof. L. Rama Rao. This draft was circulated among fifty prominent geologists of India with a request to join as Foundation Fellows. The response was encouraging and the Society was formally founded in Bangalore and registered on 28th May 1958 under the Mysore Societies Registration Act of 1904. The Society was fortunate in securing the services of D.N. Wadia, Geological Adviser to the Government of India to serve as its first President.

Inauguration of the Society took place at Delhi, at a function presided over by Sri Keshav Dev Malaviya, the then Union Minister for Mines and Oil, Government of India. He welcomed the formation of the Society with an all India outlook as it would provide a forum for the 'cooperation, communication and publication of the results of scientific research in the field of geology which are of great importance in the development of the country.'

The aims and objectives of the new Society were clearly spelt out in the Memorandum and Articles, the more important being:

- a) To promote the cause of advanced study and research in all branches of geology connected with India.
- b) To promote the cause of geological research in India through the publication of a Journal.
- c) To publish Monographs, Memoirs and Transactions, dealing with special problems of Indian geology.
- d) To organize meetings and conferences for the discussion of subjects of geological interest and importance.

The two ways in which the Society could proceed to secure the main objectives were, according to Prof. L. Rama Rao, firstly the holding of Seminars and Symposia on topics of current geological interest and thus to provide a common platform for the leading workers to review and discuss the latest advances in different branches of geological science, and to publish the proceedings of such conferences in the form of Memoirs. The second and the more important way of achieving the objectives was the publication of a Journal containing the best work done in the country in the field of geology and associated sub-disciplines.

The Journal

How far these objectives have been realized is for our discerning readers to judge. We refrain from listing the Society's achievements as it smacks of self-adulation and praise; others should come forward to undertake this exercise. Thanks to the good start given by Prof. L. Rama Rao, the first editor of the Journal, it became possible to set a high standard in the art of scientific communication. Starting in a modest way with the issue of only one annual number in 1959, the Journal has now grown into a monthly issue which reaches the hands of over 1600 Fellows and nearly 300 Institutions. It is available in the libraries of most of the Universities and Geological Institutions in India and abroad.

An important aspect of the Journal to which I must draw attention is its punctuality. In its long history, extending for over four decades there has not been a single occasion when the Journal failed to appear on the due date. This is an enviable record.

To ensure good quality, papers are subjected to peer review and it is gratifying to see many senior members rendering honorary service in evaluating papers and improving their quality. At present the reviewers of papers wish to remain anonymous, an attitude which is difficult to defend as the Journal can grow in stature if the names of reviewers appear at the end of the paper. There are some critics (fortunately few in number) who now and then pass sweeping comments complaining that the high standard is not being maintained. They generally forget that the Journal can only reflect the quality of research being carried out in the country – if there is little water in the stream it is the fault not of the channel, but of the source. The knowledge that competent referees will judge articles is itself a strong incentive to write well.

The work before us

Tracing the progress of the Society during the initial twenty-five years of its existence I had broadly indicated the several lines of activity to be undertaken by the Society:

"Excepting running of the Journal and holding of a few symposia, the Society has not ventured on any other useful activity. Field trips have to be organized. Monographic studies have to be initiated and published. Students are starved of textbooks and are leaning heavily on books published overseas, which have not taken note of the needs of the student community of India. There is, as yet, no up-to-date authoritative and informative account of the Geology and Mineral Resources of the country. This is especially so in respect of energy minerals – petroleum, coal and gas. Our scientists as well as the public have to be educated as to the adequacy or otherwise of our resources in respect of our mineral fuels. Detailed account of the geology of our sedimentary basins and their petroleum possibilities are necessary. Geological maps are not readily available. Society should take steps to satisfy these needs. Summer courses have to be run to provide special training in new concepts and techniques. Annual meetings of the Society have to be properly planned and programmed. They should be held in different centers of Earth Science. A healthy convention should get established whereby Geological Departments of Universities and Research Institutes extend an invitation to the Society to hold its Annual Meeting at their centres. The All-India character of the Society should be projected more effectively."

Although some attempts have been made in recent years to broad-base the activities of the Society there has not been significant progress in the types of activities that were envisaged. The dawn of the 21st century and the new millennium should provide the required impetus to make the Geological Society of India a service organization, devoted to satisfying the intellectual needs of the geological fraternity.

Publications

Whatever resources the Society has been able to mobilize have been earmarked for publishing activities. Special issues of the Journal and a number of Memoirs have been published. The historical formats of these memoirs have elicited praise from geologists within the country and overseas and they have proved to be particularly helpful in reminding our younger geologists of their scientific debt to older generations.

I am tempted to quote a 'recipe' offered by the veteran editor of 'Nature' to all authors of research contributions: 'A general understanding that articles will begin with a statement of the problem and a recitation of its antecedents, historical and otherwise, that it will continue with an account of what has been done and that it will end with some discussion of what has emerged – a conclusion The recipe has a beginning, a middle, and an end... When there is so much exciting discovery in all fields of science it seems a shame that so much of it should be buried because the recipe is not followed.' Brevity is a virtue, which most authors should do well to cultivate. The following advice given by the editor of an Australian Journal is worth repeating. "If you have anything to say, say it, then imagine you have to telegraph it to Australia at your own expense."

Encourage Field Oriented Studies

Geology, dealing with events long time past cannot, by its very nature, be quantitative like physics and chemistry. Based on its own reasoning geological science has been able to construct the past history of the earth extending back to more than 4000 million years. It has enabled the discovery of vast mineral resources whose exploitation has made our civilized existence possible. These are no mean achievements and while geologists should feel proud of their contribution to our knowledge about the planet Earth, they should concentrate more on understanding the morphology of earth, its land, its mountains and rivers and how they have evolved through vast periods of time. Historical geology, Stratigraphy, Petrology and Palaeontology are the core of our science and should receive greater emphasis. There is plenty of work to be carried out in these fields, which only geologists can attempt, and not physicists or chemists. "Geology has its own mode of reasoning and the cultivation of this reasoning will be critical to advancing understanding of the Earth..."

Geology cannot be learned by reading books and attending lectures. Involvement in direct observation is essential as it is there the student will come in contact with reality. 'If we wish to produce a new generation graduates and doctorate students in general, who are well rounded, balanced, critical and independently minded, field work is the proper training ground.'

It is a pity that those who are occupying seats of power prefer to acquire equipment costing enormous amounts of money rather than sanction adequate funds for field oriented studies. 'We have allowed the knob-twiddling of spectrometers to soak up vast amounts of resources and have sent geologists out into the field dressed in rags.'

'To be properly educated in geosciences requires a direct observational link with the Earth, which is best achieved through field work. Field work in particular promotes critical approaches, independent thought balance – all of the things required by our rapidly changing society' (Phillip Allen, Geoscientist, no.8, 1999). 'Our science has a vital role to play not only in understanding the Earth but in applying that knowledge to the well-being of society as a whole.'

Right to Information

India appears to be the only country in the world, which has put enormous restrictions in the usage of topographic maps and in sharing data acquired at public expense.

Geological Society of India has been fighting against these restrictive policies adopted by governmental organizations in denying access to information. In spite of repeated representations to give up this negative attitude the bureaucracy continues to remain unresponsive, self-righteous and unsympathetic towards meeting the needs of the researcher. We must continue to fight this injustice till all restrictions on sharing such information are removed and the scientific community

should redouble its efforts to make Governments see reason in this respect. If restrictions on the availability of topographic maps are not removed the country will fail to benefit from full utilization of remote sensing technology.

Awareness of geology and the role it has played in the advance of human aspirations and happiness has not been sufficiently projected especially among the student community, administrators and politicians. Primary task of the Society in the coming years should be to improve this position.

Educating the public and providing it with correct information as and when it becomes available should be our primary task during the years ahead. A good part of the Journal should be earmarked to encouraging research on understanding natural processes and the disastrous consequence of interfering with such processes. Basic data has to be collected and properly interpreted and the results of such studies should be immediately made available to the public at large and not withheld in the guise of secrecy.

Mineral Exploration and Utilization

There is a growing lack of interest in mineral exploration and the public generally are poorly informed about the mineral resources of our country. Valuable ores continue to be exported in the raw state, impoverishing the country of its precious resources. Smaller deposits are neglected, labeled as uneconomical and search continues for ever in the hope of locating large deposits with millions of tonnes in reserve. Half-hearted exploration without a clear cut aim continues and resources have remained only on paper; the will to produce and convert resources into useful products is lacking.

“It is the thin rocky rind of the planet – the crust of the Earth that is the source of all our energy and materials and it is the crust that must yield the ‘life blood’ to maintain our species” (W.T. Pecora, Director, USGS). Knowing our country and its full potential should take precedence over all other considerations.

Water Harvesting

The role of groundwater in assuring adequate water supply to our towns and villages has not been appreciated as the availability of this resource is taken for granted and is getting greatly abused. In most cases water is being pumped faster than nature can replace it. Everywhere water table is getting lowered and many open wells have dried up. Hardly any attention been given to replenishing the resource. Nowhere else in the world has groundwater been exploited so thoroughly as in India, especially in the hard rock areas of the Indian Peninsula. Geologists must bestow more attention to this subject. If corrective action is not taken in time the country will have to face a grim water crisis.

Good quality water is becoming a rare commodity with pollution spreading fast and once groundwater becomes contaminated it will be almost impossible to restore its potability.

Some sporadic attempts are being made at rural development by individuals like Anna Hazare, but such activities are few. Village level planning involving aspects such as water conservation, afforestation, groundwater development, soil conservation, terracing, contour bunding and water storage structures is conspicuous by its absence. Keeping the village as the base, plans have to be drawn for rural development and geologists will have a major role to play in this rejuvenation of rural India. Water will be among the biggest issues in the 21st century. The sooner we realise it the better for us.

Environment

Geologists should take greater interest in environmental aspects like global warming, ozone layer, preservation of biodiversity, preventing air and noise pollution, recycling, management of waste, water harvesting, development of renewable energy (solar and wind), preservation of green belt, natural hazards like floods, landslides, earthquakes, desertification and coastal erosion. Oil deficit country like India should be in the forefront in developing solar and wind energy.

Geologists have an important role to play in educating the public on such environmental aspects. They should provide the required leadership and involve themselves in public relation activities by providing essential information and the Journal should play a leading role in educating the public on these vital issues.

Coal Geology

Coal and lignite are major energy resources of our country. While commendable progress has been achieved in exploring and identifying fuel resources, the more important aspect of study of coal petrology has been neglected. There is hardly any research in the field of coal petrography. Larger issues like basin development, faunal evolution and palaeogeography must receive attention.

It is recognized that coal-bed methane can be an alternative source of energy and yet sufficient importance has not been given to the identification of this resource or for its exploitation. It can be an important substitute for oil and high priority should therefore be given to Coal-Bed Methane (CBM) research. The same argument holds good for research on gas hydrate – a possible major energy source for the future. I would like to see in each issue of the Journal articles on aspects of coal and hydrocarbon research, which should help to make the country self-sufficient in respect of energy resources.

Oil and Natural Gas

Sedimentary basins having good potential for oil cover an area of 140,000 km² on land and 720,000 km² offshore. This is an indication of the magnitude of work that awaits geologists and yet no concerted effort in basin research is evident. We seem to be waiting for others to come and do the job for us. The zeal and enthusiasm, which were in evidence at the time of the formation of the Oil and Natural Gas Commission (ONGC) are lacking today. Identification of fresh resources of hydrocarbons and natural gas should be high on any agenda of research in the immediate future.

Quaternary Research

Increasing attention also has to be given to Quaternary Research. Sediment cores from the continental slope of Western India have to be studied and the history of SW monsoon during the last 10,000 years requires to be traced. This is of vital importance to determine why carbonate growth ceased after 8300 BP. Geomorphology and surficial geology of the western continental shelf and slope of India need to be undertaken; these studies are of great relevance to our well-being. Delta development, sea level fluctuations; and creation of resource-rich environments were conducive to occupation and development of human culture. Augmentation of geological record with dated artifacts and similar studies are of great relevance and should be pursued with vigour. Accurate chrono-stratigraphic framework needs to be established with delta environments reconstructed and change through time evaluated.

Early human occupation of deltas has to be documented and for this the gathering and sifting of the evidence and reconstructing the course of past events are major tasks facing geologists.

The view that the peninsular Indian Shield has remained a rigid and undeformed mass subject only to subaerial denudation throughout geological history is so much ingrained in our mind that any suggestion of Quaternary tectonic activity in this region is viewed with disbelief. Great changes in drainage patterns have taken place and establishment of denudation chronology is a major task which only geologists could undertake. Unfortunately geomorphology is a much neglected branch of our science today.

Geochemistry and geophysics are no doubt powerful tools but they are of importance only to the extent they enable the geology to be understood better. They are required to support and constrain geological concepts and not dismiss them as irrelevant.

'If geology is just physics, chemistry and mathematics as applied to the Earth then its future will be a reduction to those more fundamental sciences. However, if geology has its own unique mode of reasoning, the cultivation of that reasoning will be critical to advancing the understanding of Earth, the home of all human kind.' (V.R. Baker)

Most of the thoughts summarized in the above paragraphs have appeared in previous editorials of the Journal. They have had a mixed reception. Some have welcomed these, saying that they eagerly look forward to their appearance every month while others have questioned the propriety of including them in a science journal. These notes, it must be admitted, have had least effect in modifying official policies but in spite of this discouraging prospect the urge to communicate and share my thoughts with like-minded individuals has continued unabated to the present day.

A new Century has dawned and with that younger blood, with new vision, has taken over the reins of the Society. The Journal is appearing in a new garb heralding several changes. Let us hope the Society will continue to register a steady growth in the coming years and will strive hard to fulfill the worthy objectives outlined by the founders nearly forty years ago.

Bangalore

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