

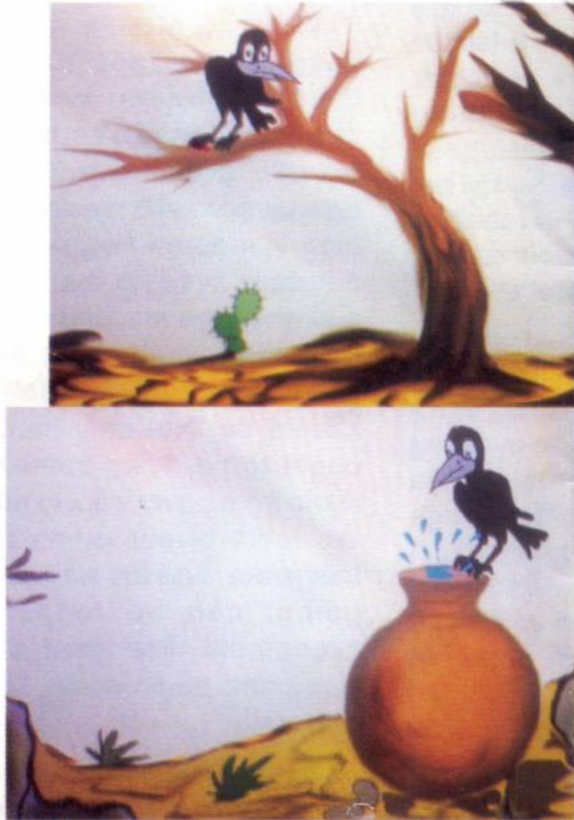


# DREAM 2047

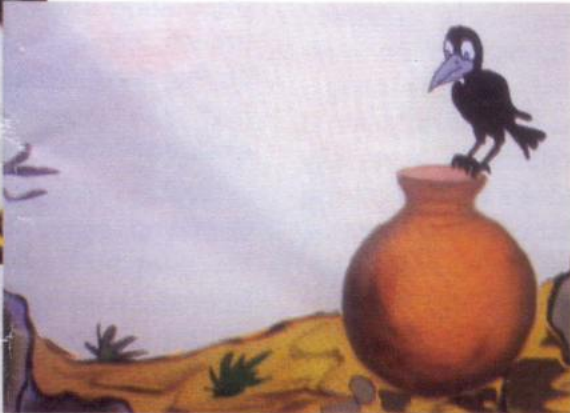
March 15, 1999

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A minute long animation video using the classical story of thirsty crow was produced on the occasion of the National Science Day on 28th February. With children as target audience this was an exercise to popularise an important element in method of science i.e. of asking questions.



## VP News

**“Bipanna Basudha” to go on air from 24 April 1999**

A popular science radio serial “Bipanna Basudha” (the endangered earth) will start from the All India Radio, Guwahati, from 24 April 1999. A Curtain Raiser introducing the themes, experts and overall objectives of the serial would be broadcast on 22 April 1999, which is also the World Earth Day. This 13-episode serial dealing with science & technology, environment & ecology, would be broadcast every Saturday by Guwahati and other relay stations during the prime slot of 8.00 to 8.30 pm. Every episode would start with a dramatised version of the theme and would be followed by quizzes, expert comments, interesting news clips, etc. for 10 minutes. Best of the Assamese science writers and thematic experts of Assam are involved in this AIR-VP joint project. A meeting of the Core Group looking after this project was held on 19.02.99 at RRL Jorhat under the Chairmanship of Prof. Sushil Goswami.

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... think scientifically, act scientifically ... think scientifically, act scientifically ... think scientifically, act ...

## Productivity and us Indians

Indians are known the world over for being very productive people. In fact our productivity in certain areas has left competitors far behind. On top of a list of such areas is 'progeny'. One only has to look at the growth of our population, to realise this truth. After this, you must be dying to find out about other entries in the list. The second entry is 'criticism' (and allied items such as fault-finding and complaining). Indians are the world's most productive criticsers, especially when it comes to something relating to other fellow Indians. Examples galore all around us. I am sure you wouldn't want me to tell you about other entries in this list. Okay I won't. What is the point in all this, did you say? Let me tell you.

Our large population is invariably projected by outsiders as the mother of all our woes — poverty, illiteracy, low standard of living, lack of hygiene and sanitation, and more — and many an Indian has also joined this bandwagon. This is so perhaps because data and statistics pertaining to several development indicators would appear to back that line of thinking. But statistics, it is said, is a double-edged weapon and in recent times the same set of data have been interpreted and often employed to support or back up diametrically opposite propositions. However, my contention is that it is not the size of our population, or even its rate of growth, that is doing us in. It is our per capita productivity -- or rather, lack of

it — that is responsible for our continuing dismal state. If, on an average, every Indian were to contribute far more to the Indian system (deposits), than he/she takes out of it (withdrawals), our large population would soon begin to appear as an asset instead of a liability. Our state and situation would not be different, I contend, even if we had a smaller population and a lower rate of growth, with our existing low per capita productivity -- resulting from our prevailing work culture, work ethics and attitudes.

We are like an individual in debt who, instead of wiping out his debt by generating extra income, seeks to do so by taking another loan. And this extra income can come only through increased productivity or through extra efforts aimed at additional resource generation compared to what was being obtained previously.

What should be matters of great concern to all of us do not appear to be attracting much public or media attention! While one sees topics such as globalisation, liberalisation, and privatisation being discussed everywhere (in newspapers, in the electronic media and in seminars/symposia) day in and day out, we are not at all discussing the vital issues and questions concerning productivity of citizens as reflected in work culture and work ethics; attitudes towards quality and standards, towards duty, responsibility and accountability, and towards misuse of and damage to public property; tolerance of shoddy

workmanship and non-serious work; callous attitude towards day-to-day work for which one gets paid, and late coming to and early leaving from the office despite attendance sheets/registers and without fear of being penalised; and more!

Why aren't we worried despite the fact that our country's future well-being depends on arresting the prevailing rot, reversing the present trend and reestablishing high standards and values in our daily lives no matter who and where we are, and what we do — and whether we are in government, or outside? We should be. Not only that, we ought to be doing something about it if we ever want to realise the India of our dreams! As things are, and the way we are going, can no longer be acceptable. We must break away and begin doing things differently.

A beginning has to be made. If it is not possible to do so as an organisation, or as a unit within an organisation, no one can stop you from doing so at your own individual level. If that turns out to be the only option, so be it. The next best thing would be to look for like-minded individuals in your own unit/organisation, or in other organisation(s), and network with them. One: this is better than doing nothing. Two: networking can lead to synergies and better prospects for other joining in.

Readers' views are solicited.

NKS

### VP to produce multimedia CD on eclipses

The spectacular event, glorified as the last total solar eclipse of the millennium to be visible from Indian soil is going to take place on 11 August, 1999. How does one prepare for this event? Seek out the eclipse track; plan a visit to the most appropriate spot in the path of totality; equip oneself with safe viewing gadgets/filters/goggles; plan a few experiments if possible and wait nervously for the D-day hoping to put the camera (with filters of course) to good use. But then, where does one look for information on the forthcoming eclipse? One source is the India Meteorological Department, which publishes the eclipse circumstances relevant to India. The other is to contact science popularising organisations (including Vigyan Prasar) and amateur astronomer's associations. But then what if all this and more is available on a platter? We are planning to do just that. Given the popularity of eclipses and many a myth and legend associated with it, one would like to have as complete as possible an understanding of the phenomena. Vigyan Prasar realised this need and initiated efforts to produce a multimedia CD on eclipses and related phenomena in time for the total solar eclipse of August 11th. The phenomena itself involves the movements of the Earth and the Moon in such a way that the Moon obscures the Sun, totally in some places and partially in some others. What are those circumstances that can bring about this situation, or what is the periodicity of such occurrences? What significance does this event have for the scientific community? These questions come naturally. Again one wonders about what impact

such occurrences would have had on the ancient humans. How were the innumerable questions pertaining to eclipses resolved? What about Indian astronomy? Did Indians contribute to the collective wisdom of the astronomers of the bygone era? Did they also envisage great interest in observing eclipses? Coming to more recent times, what were the noteworthy contributions of the Indian scientific community? What are their interests with regard to solar studies or atmospheric studies during eclipses? These are just a few examples of the questions that the CD would attempt to answer. The animations, videos and photographs no doubt would help in clarifying concepts and enhancing the visual experience. The CD will also have audio tracks of *Shlokas* from many of our ancient astronomical texts along with other usual interactive features. Material on lunar eclipses, transits and occultations will also be added for the sake of completion. What however needs to be mentioned is the sheer thrill that such a project can give to the team. The vast clientele and various user groups make it mandatory for the script writer to "have something for all". The animator's task in creating authentic and effective visual movements to clarify many a crucial concept, perhaps is an important one. Equally important is the ingenuity of the master author who weaves all the components -- graphics and animation, audio and video and the inevitable text together to provide that rich experience. Watch out for "The Great Celestial Show -- Eclipses, Transits and Occultations" in the coming months.

Vidya MS

## Science Section

### Scientific Institutions

A premier institution working towards excellence and technical competence in all crucial areas of Earth Science is the National Geophysical Research Institute located at Hyderabad. A CSIR constituent established in the year 1962, NGRI has acquired expertise in various areas including airborne geophysical surveys; application of Global Positioning Systems (GPS) to geophysics; groundwater exploration and management; exploration of gas hydrates, which are ice-like structures formed when methane gas molecules are caged in molecules of water present in marine sediment; etc. The institute has various state-of-the-art facilities for carrying out its programmes. It also offers consultancy for exploration

for minerals, oil and ground water; mining engineering, environmental hazards studies; and civil engineering investigations.

Airborne Geophysical Surveys play an important role in elucidating the geology, structure and mineralisation of a particular region and identify favourable zones for detailed exploration of base-metals, gold or uranium. The advantages of such surveys are the basic cost effectiveness and possibility of data acquisition in generally inaccessible areas such as forests, seas and hilly terrains. For most of the airborne surveys, NGRI has used a chartered Dakota DC-3 aircraft, while a Chetak helicopter of the Indian Navy was used for the first ever helicopter borne survey in Antarctica.

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Global positioning systems are based on satellite ranging, when a position on earth is determined by measuring the distances from a group of satellites in space. The satellites act as precise reference points. The latitude, longitude and altitude of a place can be computed by measuring ranges from these satellites. The International Association of Geology (IAG) was established in 1994 to support geodetic and geophysical research activities that use GPS techniques for geodynamics. In an Indo-German collaboration programme between NGRI, India and Geodetic Institute, University of Bonn, Germany, an IGS permanent tracking/reference station has been established at NGRI. This was done to facilitate study of the Indian plate motion. Results validate the hypothesis of major Indian landmass inching towards the Himalayas. Similarly, to understand the Indian Plate motion relative to a southernly point, a GPS programme was initiated in 1996 by establishing a permanent GPS station at "Maitri" in Antarctica.

NGRI also has comprehensive facilities to undertake all activities associated with exploration,



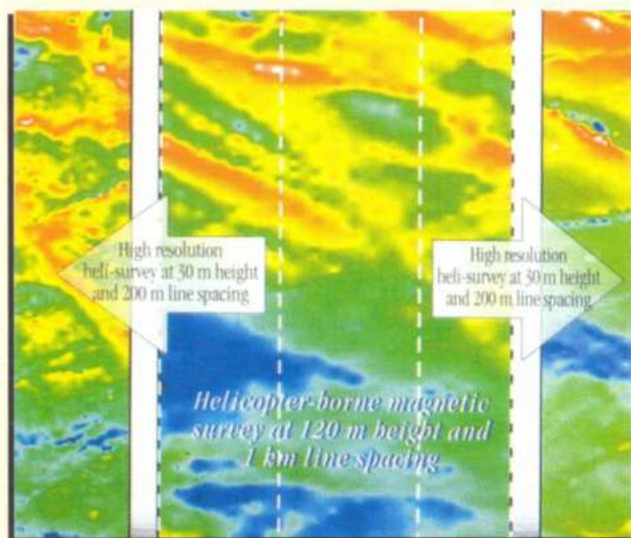
Helicopter-borne magnetic survey at Antarctica

assessment and management of groundwater, including groundwater pollution.

Exploration of the Earth's crust and its resources is done by employing the highly sophisticated technique of controlled source seismic (CSS) studies, in which the use of controlled explosions of known energy release are used to generate elastic waves in the Earth's crust. The reflection or refraction of these waves from different rock layers or discontinuities like faults is then an indication of the subsurface structure of the Earth's crust. This technique, initiated some twenty years ago has contributed to the assessment of hydrocarbon potential; study of deep crustal structure, etc.

Some of the projects highlighted above are a good pointer to the exciting opportunities that exist for a geophysical researcher and how S&T can be effectively used for the country's overall development.

Vidya MS



Helicopter-borne magnetic survey at 120 m. height and 1 km line spacing

Bookshelf

**Alternatives to Pesticides in Tropical Countries**

Sustainable Agriculture - Food Security with food Safety

A.T. Dudani

ISBN: 81-7480-047-6 (Hard Cover)

Publisher: Vigyan Prasar

Meeting the ever increasing demand for food is foremost on any country's agenda and more so in the developing countries. This has paved the way for increased usage of chemical fertilizers

and pesticides, which has unfortunately proved to be counter-productive in the long run, basically due to the steady contamination and poisoning of life and environment. Concern for reversing this trend has prompted efforts to look for viable and safer alternatives using both scientific and indigenous knowledge.

The book **Alternatives to Pesticides in Tropical countries: Sustainable Agriculture Food Security with Food Safety** is a consolidation of the search of the author

(Contd.)

Dr. A.T. Dudani who has been responsible for producing the first ever status report on pesticides and related problems in India in 1987. The book also attempts to highlight the dangers of genetically engineered tools that greatly depend on specific pesticides and threaten biodiversity.

Divided into 15 chapters, the initial chapter presents a background on the use of pesticides from early times to the present, tracing the gradual increase in both use and production. The Indian context is considered as a particular case. While outlining the hazards of overuse of pesticides, the author explains the importance of the FAO code and publicising related guidelines to prevent

unsuspecting users from succumbing to the misuse of advertising media, especially in countries with low literacy.

The book addresses issues such as sustainable agriculture; integrated pest management and technologies for effectively reducing the dependence on pesticides; organic farming; and vermicompost. Adequately highlighted are the consequences of the usage of pesticides leading to issues such as weakening food security, health hazards and environmental pollution. An extensive bibliography of over 780 references makes this a ready manual on the subject.

### About the Author

Dr. A.T. Dudani obtained his Bachelor of Science degree from Bombay University (1945) with distinction, securing the first position in Agricultural Microbiology. He obtained his Ph.D. from Iowa State University, Ames, U.S.A. in 1950. He worked at the Central Drug Research Institute, Council of Scientific and Industrial Research, Lucknow (1951-54), Indian Council of Medical Research (1954-59) and Indian Council of Agricultural Research (1959-82). From 1982 onwards the author has been involved actively in public interest affairs and consumer movements. He brought out a status report on the subject in 1987 sponsored by the Department of Science & Technology, Government of India, which is considered a landmark report on the subject. He has research papers in national and international journals and also presented papers at various national and international seminars and meetings.

The writer has worldwide interaction with activist (pesticides and environmental) groups and he was member of several committees appointed by the government on the subject. He has extensively written on a wide range of subjects including global warming, chemical pollution, food irradiation, hazards of artificial steroids BST/BGH in milk etc. He is the Founder President of the *Society for Citizen Concerns*.

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