

# SCIENCE

## Madras uncovers perspectives in entropy

### Anderson Lookkin

Many of the words in today's vocabulary hold their roots in the world of science. Entropy's one of the newest words from the science world to acquire a status in the social sciences.

Dr. Sam Madras in his recent lecture for the Unit for Science, Technology and Society attempted to give a little insight on this evolutionary occurrence.

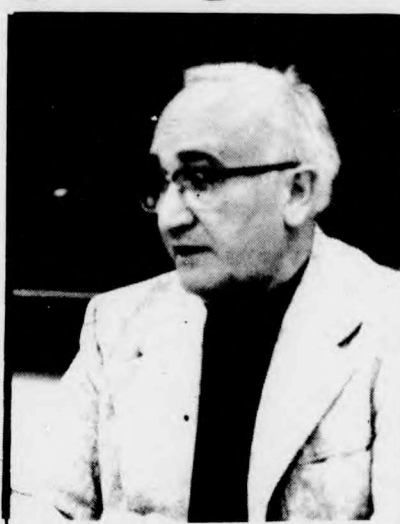
### its ability to transform energy

Given the first law of thermodynamics which states "Energy can neither be created nor destroyed only transformed" the non-scientific minded individual would naturally ask, "why then, an energy crisis?" Well, in order for an energy transformation to take place a potential difference must exist between the quality of the two states of the energies involved. As time progresses the macro level of the potential difference approaches zero. When this

happens the universe will lose its ability to transform energy and eventually be exhausted. As the bumper sticker in my old chemistry lab informed us, "Old chemists don't die they just reach equilibrium".

Equilibrium is another word taken from the science world that has found a permanent place in the vocabulary of the social sciences. All things and events are in the process of reaching equilibrium. If mankind is lucky, the potential difference will asymptotically approach zero as time approaches infinity. It may as well be infinity as far as our life time is concerned.

Entropy moves from the orderly to the disorderly, from the useful to the useless. This is the law of entropy. Society as we know it is definitely moving in a direction similar to this description of entropy. To put this law into perspective, society's demands are far greater than its efforts can supply. Today's society is gradually heading towards a state of



Dr. Sam Madras of Chemistry.

York University's Unit for Science, Technology and Society

equilibrium. Unfortunately this also means chaos.

Individuals, says Dr. Madras, are demanding more than the society is physically capable of sustaining. Madras used an

example which most of us encounter everyday, "you pick up the phone and dial only to get a busy tone and when you do get through you are put on hold."

### means chaos

The cause of this is too many people using the telephone system at the same time. The reaction of the telephone company would be to install more phones. Some of the common folk would even imply that a new technological breakthrough would solve the current problems. However technology is comprised of different forms of energy, hence discoveries that apparently save energy require greater amounts of energy to establish in the first place.

This applies to both the energy potential difference, which literally makes the world turn, and to the social structures by which we live. This of course will continue until equilibrium.

All of these "temporary" solutions are only overcrowding the present system leading to its eventual collapse. According to the law of entropy the world is slowly but surely winding down.

There in a test tube is a presentation of entropy and its place in the social sciences.

## Science Writers Needed

Those interested should direct their enquiries to science editor Dubinsky.

667-3201.

## Koehler wrapped up in the nature of things

### Richard Dubinsky

What does a waterproof frog, a piano, particle physics and a York Physics professor have in common? They were all seen on David Suzuki's CBC program *The Nature of Things* last Wednesday at 8 p.m.

Opening the show was a fascinating study of a nocturnal desert frog that drinks water through its skin. The descriptions and film footage were extraordinary.

The second part of the show dealt with the fabrication of a piano. A physicist's interest in this instrument involves the complexities of its operation, the tonal quality, pitch, sounds, etc. as well as its evolution from more primitive instruments.

### complex area

The assistance of the Electronic Music Studio here at York University and Dr. Roy Koehler brought particular relevance to this program especially for those students taking Dr. Koehler's Natural

Science NS 172.6 course. Dr. Koehler described the complex physics of how a piano works in simple and understandable dialogue. For those enrolled in NS 172.6 and conducting experiment 2 in vibrating strings, the explanation should have been clear. The importance of beating (interaction of two similar notes) was described as being essential to the proper tuning of a piano.

### physics of piano

Unfortunately neither Suzuki nor Koehler mentioned that this modern and complex area of physics had actually originated as an ancient Chinese ritual known as "tooning", which dates back to the time when musical instruments were first invented.

*The Nature of Things* is on television every Wednesday evening at 8 pm on CBC, for those interested in science it is highly recommended.



Roy Koehler in his Electronic Music Room.

## Hey, you, get off of my cloud

### By Wendy Wizinowich

So what can I say. My name is Rosa Raviola. I'm a 53 year old graduate student in Italian Cuisine, about to put an end to my life by jumping off of the G.S.L. Lounge balcony. Original.

The usual crowd is gathered to cheer me on. "Come on, jump. Chicken, etc." Suddenly I hear the annoying rustle of plastic to my right. There stands the always charming, acne scarred, E.C. Neics.

"So, there are a few clouds in your life, so what!" he declaims knowingly. "Don't you know you control your own clouds. I shall demonstrate."

With that he pours half a cup full of hot water into bag. Then he lights a match. Oh good, I think, a last cigarette. But no, he blows the match out and places it in the bag, being careful not to touch the plastic. When the smoke is trapped in the bag he removes the match. I am absolutely terrified — what kind of a maniac am I sharing this ledge with?!

Oblivious to my qualms he secures the mouth of the bag tightly with a rubber band. E.C. holds the bag up to me as if it were a love offering. Abruptly he pulls away his right hand. Its amazing, I can actually see a cloud forming inside his little bag. Then he squeezes his bag with both hands and the cloud disappears. Intrigued, I push his hand away from the bag and the cloud reforms.

E.C. removes his coke-bottle bottomed glasses and pointing them in my general direction, he gives me a lovely, lopsided, cross-eyed grin and



in an atrocious accent says, "Regardez, ma cherie—C'est facile!"

In the face of such indisputable logic, not to mention good horse sense, how else can I respond...aa

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SPLAT!!

Editor's Note: The plastic bag had everything required to form clouds: hot water to create a vapour, air to receive the water vapour and smoke particles on which the water vapour can condense. The squeeze warms the vapour inside and causes more water to evaporate. Releasing the bag causes the air to expand and the temperature drops, causing water vapour to precipitate on the smoke

particles. Too bad Rosa couldn't appreciate it.

This article was written in answer to an earlier article done by the irrepressible E.C. Neics, where he seduces a young lass with the aid of a copper coil (*Excalibur*, Sept. 17, 1981). The writer of this story feels she should have equal time on her experience with E.C. Neics.



### SCIENCE MILESTONES

- November 7, 1867  
Marie Curie born. Won Noble Prize for studies on radioactivity.
- November 12, 1842  
Lord Rayleigh born. Co-discovered the rare gas, Argon. Explained blue sky by scattering sunlight.
- November 13, 1831  
James Clerk-Maxwell born. Worked on theory of electromagnetic radiation.
- November 14, 1797  
Sir Charles Lyell born. Popularized the idea of the slow evolution of the earth's geological features.
- November 14, 1891  
Sir Frederick Banting born. Canadian won Nobel Prize for discovery of insulin.
- November 15, 1787  
Sir William Herschel born. Astronomer, discovered the planet Uranus.
- November 18, 1883  
Standard time adopted.
- November 27, 1895  
Will of Alfred Nobel established the Nobel Prize.

### STEACIE SCIENCE LIBRARY

## Physics Seminar

The Department of Physics presents Professor D. Favro, Wayne State University, Detroit, Michigan, talking on Photoacoustic Spectroscopy.

Besides outlining details of his experiments, Professor Favro will discuss the Green's function analysis that he and his colleagues have applied to detect the presence of defects in opaque solids.

Thursday, November 12, 1981 at 4:00 p.m. in Room 317, Petrie Science Building. Refreshments will be served in the tea room at 3:45 p.m.