

There's gold in that garbage

Science column by Alexander Dorozynski

In theory, a society that has reached demographic stability and a satisfactory standard of living, could continue under its own impetus to produce consumer goods without having to rely on any additional supply of raw materials. It would suffice that, as these products were consumed or worn out, their constituent elements be recycled. This implies, of course, sufficient energy resources to keep this perpetual recycling motion going.

In practice such perfect conservation is impossible, because the extraction of every bit of raw material from manufactured goods that are no longer needed is too costly. But the opposite — that is, the total abandonment of waste in municipal rubbish heaps (a 2,000 year-old Roman invention, by the way) — is also unthinkable. Some degree of recycling, has become a necessity in a world where the finite nature of our resources is becoming increasingly evident. As a result, the past few years have witnessed a spectacular expansion of a whole new industry: the recycling industry. Faced with a shortage of energy and raw materials, we are discovering wealth in humanity's garbage cans, and the many ways of utilizing this wealth. A few examples:

- American researchers have shown that a ton of household waste can yield 70 kilos of metal, 60 kilos of glass, and 80 kilos of combustible matter. Pyrolysis (decomposition by heat) can distill volatile matter, producing methane to ensure the thermal autonomy of the system. More than 150 litres of synthetic fuel oil can be produced from this ton of waste.

- A ton of recycled paper fibre saves a ton of wood — the equivalent of about one dozen trees, or the product of a quarter of a hectare or more of forest. This throws a new light on the problem of shortage of paper.

- In several countries, a third or more of the total production of copper, lead, aluminum, steel, zinc, comes from the recycling of products containing these metals.

- Elsewhere, it has been shown that used tires, instead of invading the landscape, can be submerged over unproductive sandy bottoms to serve as shelter for fish, that gather quickly to settle in this new habitat. Or else worn out tires may be used to make sandals, to stabilize river banks, or to

Recycling waste sugar cane for animal feed in Mexico.



Photo: Neill McKee

produce rubber powder.

- In India, farm refuse is increasingly utilized for the production of methane gas, a process which does not detract from its traditional role as fertilizer, but in fact improves it.

- In Egypt, several research projects have underlined the potential of recycling waste and various agricultural by-products to increase animal production (see article on p. 6).

Dozens of other examples could be given, including that of an experimental home, complete with modern comforts, that was built, cellar to roof, from recycled waste materials.

In the industrial West as well as in the developing world, the garbage and recycling business will know rapid growth in the years to come. And it is in the developing countries, where the Roman invention — hygienic perhaps, but polluting, wasteful and unsightly — has not been adapted yet, that time and money can be gained by designing, from the start, systems that are more rational and better adapted to existing conditions.

Leo Tolstoy, the author, who was an ecologist long before the word was known as it is today, used to say that garbage "is what nobody wants at the place where it is." Moved to where it should be, this by-product of civilization becomes a source of capital we won't be able to do without. It is true that recycling may not be the most prestigious of industries, but that does not detract from its importance, an importance that will continue to increase in direct proportion to nearly all of a country's production.

It is, as they say in big business circles, a growth industry.