

Food for rumination

The rumen is an important part of the digestive tract of ruminant animals such as cattle, buffalo, sheep and goats. It contains large numbers of micro-organisms whose function is to break down fibrous feed materials such as grass and straw and convert them to products that can be used by the animal to produce meat, milk, wool or draught power.

To study the microbial population of the rumen under controlled laboratory conditions, Dr. J.W. Czerkawski of the Hannah Research Institute, Scotland, U.K., developed an "artificial cow". The "cow", named **RUSITEC** (from the acronym of "Rumen Simulation Technique") is today being used as part of a project to analyse different feedstuffs being carried out by the Food and Agriculture Organization of the United Nations (FAO) and the International Atomic Energy Agency (IAEA) at their joint Agricultural Laboratory at Seibersdorf near Vienna, Austria.

In the artificial rumen micro-organisms can be indefinitely maintained by feeding a normal ruminant diet each day and providing the correct physiological conditions in terms of temperature, pH and flow of saliva. As **RUSITEC** chews its way through different feeds, scientists use radioactive tracing techniques to compare their digestibility. (The higher the digestibility of a foodstuff, the higher the nutritive value that can be derived from it.) By analysing the quality of different feeding materials in this way, scientists are seeking to propose improved diets for domestic animals in the developing world. Photos on this page show **RUSITEC** at work. Below, the vessels representing the rumen, where microbial fermentation of diets takes place; right, the rumen simulation technique in operation; below right, analysis of the end products of fermentative digestion.

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Rusitec the cow

