

14THEUROPEAN MEETING
OF MEAT RESEARCH WORKERS

BRNO, CZECHOSLOVAKIA

AUGUST 26th - 31st 1968

SECTION

A 2

A. Ginsberg, Dr. med. vet., Ph.D., B.V.Sc., M.R.C.V.S.
Veterinary Adviser (Meat Hygiene), New Zealand High
Commission, London

The Changing Pattern of Meat Production

A famous British statesman once declared: "The health of the people is really the foundation upon which all the happiness and all the power of the state depend."

In his desire for meat, man has exposed himself to a wide range of hazards. The bactericidal action of gastric and intestinal secretions, specific immunities, sterilisation due to cooking and last but not least the increased awareness of hygiene, protect man from contaminated meat or meat products and indeed from all polluted foods he may consume from day to day. While awareness of the importance of meat and food hygiene has become increasingly evident during the last decade, drastic changes in feeding habits have taken place at the same time. The preparation of food has, to a great extent, moved from the home to the food processing plant and the communal kitchen. A great variety of foods, which naturally include meat, reach the consumer daily in a processed, semi-processed, unprocessed cooked or uncooked form. Most of these goods, and particularly meat, are essential to satisfy hunger and maintain life; nevertheless they may all conceal elements which could prove dangerous to the health of the individual or the community as a whole. If large quantities of meat are

handled, processed, transported or exposed for sale with no regard to hygiene, otherwise excellent nutrients may disable and even kill. While in some parts of the world ignorance, poverty or outdated customs favour the spread and multiplication of bacteria, particularly those from which food poisoning can develop, in other places laziness or carelessness on the part of those who process, prepare, handle, transport or serve the food contribute to the pollution of an essential commodity. Yet, on the whole, the overall standard of food hygiene has been raised substantially and man's expectancy of life has consequently been extended.

Food of animal origin plays a vital part in the existence of homo sapiens, and the dependency upon the flesh of tamed herbivores increases as living standards improve. Thus, if F.A.O. calculations are to be regarded as a dependable source, by the year 2000 the world's population will have more than doubled. To feed these millions on a minimum balanced diet, at least 1 milliard tons of food of animal origin will be required, which means that within the next 33 years the production of food of animal origin must be almost trebled. It is therefore logical that the last World Veterinary Congress held in 1967 included on its agenda such an important topic as "Present possibilities of increasing the world production of meat."

However, today, with our knowledge of zoonoses, and the requirements of hygiene and sanitation, it is not enough to talk about the possibilities of increasing the production of meat, but to make it available throughout the world to benefit those who live in areas where stock raising is difficult or uneconomical. Meat has to become a commodity which can be sent anywhere at any time. This, in my opinion, is a far more difficult problem than to bring about an actual increase in the production of meat. It is true that technically advanced countries now control

or have even managed to eliminate many diseases which were previously a hazard to mankind and healthy stock. But if most of these countries have not already reached their peak production of livestock they soon will. They are on the whole the centres of modern industry and not agriculture. Potential meat suppliers such as for instance Australia and New Zealand, the latter showing a unique and remarkable freedom from infectious animal diseases can still increase their production of meat. Even their most supreme efforts, however, would hardly be sufficient to meet man's need if that minimum balanced diet of at least 1 milliard tons of food of animal origin is to be achieved by the year 2000.

The task ahead in such countries as Africa and to a great extent South America is therefore tremendous. A liberal international trade with meat cannot be established by politicians or economists but must be warranted by freedom from animal diseases, efficient veterinary services and a reliable hygienic and up-to-date meat industry.

The time when the individual butcher bought an animal on the farm or stock market, killed and dressed it himself and offered the meat for sale in his own shop almost belongs to history. A transformation of the whole pattern of meat supply is being demanded by the greatest social, economic and scientific evolution since man's history began. Old established living habits and culinary practices have undergone many changes or have even become obsolete. The individual supply of food directly from the farm to the consumer's kitchen has now been replaced, particularly in developed countries, by mass production of food and the sale of partially prepared or ready to serve dishes in shops and supermarkets. The restaurant, cafeteria or staff canteen have to a great extent replaced the domestic kitchen and the home-cooked meal.

In the abattoir of the past the individual butcher regarded

the dressing of carcasses as a competitive art wherein little or no regard was paid to hygiene. By-products, valuable assets to the country's economy, were neglected and frequently ignored completely. Today with meat consumption steadily on the increase, the production rate in the abattoir has to be speeded up accordingly. With such profound changes in feeding habits, it is of paramount importance to enforce a high standard of hygiene throughout the entire process of meat production from the farm to the consumer's table. This is perhaps the main changing pattern in meat production.

There is no doubt that meat hygiene as such began in the early days of civilisation, when ancient food edicts proclaimed meat unclean and therefore unfit for human consumption. This judgement was, however, based on signs which transgressed sacred beliefs and was not intended, as it is today, to safeguard the physical well-being of the consumer. Fitness of meat for human consumption was not judged as at present by an intricate procedure established and backed by science. In up-to-date meat inspection the senses of sight, smell and touch still play an important part but are strongly supported by detailed microscopical and laboratory examinations. Today, in countries which can boast of a satisfactory animal health standard, the meat production plant is becoming more and more a diagnostic station in its own right. It is an increasingly vital factor in veterinary preventive medicine and a most important interceptor and indicator of zoonoses and other animal diseases. Meat inspection protects the consumer from harmful chemicals and drugs, insecticides and pesticides which may have reached the animal body while on the farm or during transport to the abattoir. Up-to-date meat inspection not only ensures that the meat the consumer purchases is wholesome, sound and fit for consumption but that its quality and grade, and consequently its nutritive value, conforms to the purchase price and that it is not

adulterated or interfered with in a manner designed to deceive the consumer.

However, to cope with the many factors involved, the necessary facilities must be available. The modern abattoir should not only satisfy economic and human considerations, but should uphold the vital fundamental principles of hygiene. It is of vital importance to prevent, or at least reduce to a minimum, the post-mortem contamination of meat and organs. It is this post-mortem contamination which is now responsible for far more meat-borne diseases than animal ailments transmissible to man, particularly in countries where the health of the domestic stock is well under veterinary control.

Prevention of post-mortem contamination can only be achieved if the abattoir offers all the necessary improvements which allow for clean and hygienic production, handling and storing of meat.

In the past, abattoir equipment was designed to cater for the individual butcher. Today, with the increasing production rate, methods of operation and procedures have been altered accordingly. Production lines have been curtailed, the handling of meat reduced to a minimum, and every effort made to move the carcass without delay into the protective temperature of the cold store or freezer. The lesser the degree of initial contamination of the carcass, the safer the meat will be and the longer its shelf-life.

The dressing of a carcass on the floor is not only in itself a repulsive practice but it encourages surface contamination. It has been lifted off the floor by the introduction of the factory dressing line principle, in which the carcass is elevated on to the overhead rail for bleeding and dressing. In this system a cycle of successive operations can be performed along a continuous line, thus eliminating stoppages or delays and ensuring a smooth flow in one direction, leading from the lairages to the cold

store. With working conditions, ventilation and lighting greatly improved, a satisfactory standard of hygiene can now be achieved throughout the entire production. But it would be misleading or even dangerous to assume that an up-to-date legislation combined with a modern abattoir is in itself sufficient guarantee. Without the demand of an enlightened consumer for a high standard of meat hygiene from the time of slaughter throughout the whole process of production transport, storage and sale and a reliable and knowledgeable meat inspection service, a satisfactory standard of meat hygiene cannot be achieved even with the help of up-to-date abattoir construction, equipment and lay-out.

Although great strides have been taken over the last decade in the development of abattoir equipment and machinery, two points are particularly open to criticism and demand further thought, namely flaying and evisceration which still fall comparatively easy prey to contaminating micro-organisms. There are of course some other minor points which do not altogether satisfy the perfectionist in meat hygiene but, as I have said many a time before, the dressing floor of an abattoir will never become an aseptic operation theatre. We cannot lose touch with reality, but there is no denying the fact that since the introduction of the factory line, both hygiene and economy have benefited greatly. There must, however, come a time to call a halt to demands for better and still better abattoir facilities. While progress must be encouraged, extravagance for the sole purpose of competition between individual townships, districts or even countries should be avoided as it may either affect the stability of the meat industry or increase the consumer's expenses with no additional return.

While the physical conditions of abattoirs have greatly improved in many countries over the last decade or so,

the handling of meat once it has left the abattoir is still open to criticism.

There can be no room for complacency in meat hygiene and so the need still exists to broadcast knowledge and understanding to those who are not yet aware of the fact that better meat hygiene helps to improve the wealth of the community; intercepts, prevents and assists in the detection of animal diseases and last but not least is a valuable asset to the nation's economy.