

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
МИКОЛАЇВСЬКИЙ НАЦІОНАЛЬНИЙ АГРАРНИЙ УНІВЕРСИТЕТ
ФАКУЛЬТЕТ КУЛЬТУРИ Й ВИХОВАННЯ
Кафедра іноземних мов

Англійська мова

Методичні рекомендації та навчальний матеріал
для аудиторної роботи здобувачів вищої освіти ступеня «Магістр»
спеціальності 204 «ТВППТ» денної форми навчання

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ПЕРЕДМОВА

Запропоновані методичні рекомендації та навчальний матеріал з англійської мови призначені для здобувачів вищої освіти ступеня «Магістр» спеціальності 204«ТВППТ» денної форми навчання. Методичні рекомендації допомагають здобувачам оволодіти лексико-граматичним матеріалом зі спеціальності в обсязі програми для закладів вищої освіти.

Метою методичних рекомендацій є:

- вдосконалення знань здобувачів з англійської мови;
- збагачення їх словникового запасу;
- розвиток навичок читання, перекладу і спілкування;
- повторення і закріплення граматичних конструкцій в поєднанні з фаховою лексикою.

Методичні рекомендації складаються з 7 розділів, які розраховані на 30 годин.

Методичні рекомендації укладено на основі тематично-ситуативного та комунікативного принципів навчання англійської мови. Вони містять:

- активний тематичний словник;
- тексти зі спеціальності, які наочно демонструють функціонування у мові лексичних одиниць, що вивчаються;
- комунікативні тренувальні вправи для засвоєння лексики, укладені на основі фахових текстів;
- вправи для закріплення граматичних конструкцій;
- тести зі спеціальності.

За кожний розділ здобувач може отримати від 1 до 4 балів (всього 28 балів)

TOPIC 1

Text 1. MILK

Milk is a liquid secreted by the mammary glands of female mammals as food for their young. The milk of the cow is most widely used by humans, but the milk of the mare, goat, ewe, buffalo, camel, ass, zebra, reindeer, llama, and yak is also used. Milk, an almost complete food, consists of fats, proteins (mainly casein), salts, and sugar (lactose), as well as vitamins A, C, and D, certain B vitamins, and lesser amounts of others. Commercial dairies sometimes supplement the natural vitamin D with a vitamin D concentrate. The mineral content of milk is chiefly calcium and phosphorus. The composition of milk varies with the species, breed, feed, and condition of the animal. Jersey and Guernsey cows produce milk of high butterfat content; Holsteins produce larger quantities of milk but with a lower butterfat content. Milk prepared for sale is often homogenized; in this process it is pumped under pressure through small openings to break up the milk fat globules, thus ensuring an equal distribution of fat throughout the milk rather than permitting it to rise to the top as cream. In most countries where milk is a commercial product, it is subject to regulations concerning its composition, i.e., the proportion of butterfat and other solids; its nonadulteration; and its purity, with sanitary measures in force that cover milk handlers, herds, plant, and equipment; dairy herds are also commonly disease tested. Pasteurization (partial sterilization by heating) checks bacterial growth, thereby making milk safer to drink and increasing its keeping qualities and range of transportation. The consumption of concentrated milk, both whole and skim, has steadily increased since its commercial production was inaugurated. A patent was issued for the production of dried milk in Great Britain in 1855, and for concentrated milk in the United States to Gail Borden, in 1856. The two types of concentrated milk

are condensed and evaporated; condensed milk is a sweetened product (over 40 % sugar); while evaporated is unsweetened. The latter is preserved by sterilization, the former by the high sugar content. Dried, or powdered, milk is made by passing a film of partially evaporated milk over a heated drum or by spraying it into a heated chamber in which the particles dry as they fall to the floor. Malted milk is a dried mixture made of milk and the liquid from a mash of barley malt and wheat flour. Skim milk is valuable in fat – free diets; although much of the nutritive value of milk remains, most of the vitamin A is removed in the cream.

Notes

mammal	ссавець
mare	Кобила
ewe	Вівця
camel	Верблюд
ass	Осел
reindeer	Північний олень
yak	Як
phosphorus	Фосфор
globule	Крапля, кулька
concerning	Відносно, щодо
solid	Суцільний
to adulterate	Підмішувати
to condense	Згущати(ся)
to evaporate	Випаровувати
sterilization	Стерилізація
film	Плівка
drum	Барабан
to maly	СОЛОДИТИ

TEXT 2..THE COLD FACTS ABOUT ICE CREAM

The sun beat down on the lawn of Mount Vernon on a summer day. Women dressed in layers of petticoats sought shade beneath a nearby tree. Their host, George Washington, soon appeared, holding the grand finale to the afternoon picnic: pewter pots heaped high with pink and white ice cream. But people had been enjoying chilly treats long before that warm day in 1790.

The first evidence of any kind of frozen confection is from Alexander the Great in the fourth century B.C. Legend has it that this mighty leader enjoyed ice drinks. Once, he even had thirty trenches filled with snow to chill drinks for ladies' refreshment. Roman emperors savored wines, fruit pulps, and juices flavoured with ice and snow. Nero Claudius Caesar, who reigned from A.D. 54 to 68, demanded that these "ices" be served regularly at royal feasts. But retrieving snow and ice from the far away Alps was a challenge. Strategies to keep the ice from melting were planned months in advance, and relay runners raced across hundreds of miles to get their loads of ice to Rome. They had good reason to be quick – legend has it that once, when the snow melted before it reached Nero's table, the emperor executed the general – in – command. While the Romans were busy carrying all that, ice from the mountains, ancient Chinese, Indian, Persian, and Arabian banquet – goers were enjoying similar concoctions of fragrant fruit juices mixed with ice. When Marco Polo returned to Europe from his famous explorations of China in 1295, he told of exotic kings who savored these strange frozen delicacies. To prove his story was true, he produced recipes. By the year 1500, cream had been added to the recipes, and Italian nobility couldn't get enough "cream ice". "Cream ice" was brought to France in 1533 with the help of Catherine de Medicis of Italy. When she married King Henry II of France, she installed her personal chefs and dessert makers in the royal palace. For more than one hundred years the recipes were a closely guarded secret. Even royalty couldn't keep a

secret like ice cream, and by the 1770s every one was clamouring for a taste of the dessert. Cafes specializing in such exotic ice cream flavours as macaroon and rum sprang up all over Europe. In 1794 even the great composer Beethoven noticed the ice cream craze in Vienna, Austria. He wrote, "It is very warm here. The Viennese are afraid it will soon be impossible to have any ice cream, for...ice is rare". When was America first treated to a taste of ice cream? The year is a mystery. However, William Black, a dinner guest of Governor Bladen of Maryland, provides a clue. In 1744 he wrote, "We had dessert no less curious...some fine ice cream, which, with the strawberries and milk, eat most deliciously".

Some of our most famous presidents have gotten their licks in, too. Thomas Jefferson once returned from a trip to France with an eighteen —step recipe for ice cream. He added fresh figs from his own yard for flavour. George Washington enjoyed the frosty dessert so much that, during the summer of 1790, he ran up an ice cream bill of 51 English pounds almost \$2,2000 in today's money!

President Washington must have relished a dinner invitation from Mrs. Hamilton, wife of the first secretary of the treasury. She held elegant parties where "pyramids of red and white ice cream with rose and cinnamon" were the centre of attention. A few years later, First Lady Dolley Madison created a national sensation when she served "a large shining dome of pink ice cream" at James Madison's inaugural ball in 1812.

Few regular citizens ever tasted ice cream, for it was an elite treat only the wealthy could afford. But two inventions, eventually scooped ice cream out of the hands of the wealthy and plopped it into the lives of ordinary people: the refrigerator, invented in 1803; and the first hand – cranked ice cream freezer, made in 1846. Ice cream shops immediately spread across the country, and soon ice cream was available daily. What once was the food of kings and presidents could now be enjoyed by all.

From "Highlights for Children"

Task 1.

Complete the following sentences in your own way:

Example: The man crossing the street is ...

The man crossing the street is a friend of mine.

1. The girl cooking dinner is ...
2. The boy going to the factory canteen is ...
3. The girls waiting for me in the snack – bar are ...
4. The man drinking coffee is...
5. The man serving tea is ...
6. The men discussing their monthly budget are ...
7. The women sitting at the next table are ...
8. The person driving a car is ...

Task 2.

Group the words below under the following headings

Cereals

Dairy products

Fish

Fruit

Herbs

Meat

Vegetables

bacon	gooseberry	parsley	sole	dill
blackberry	grape	peas	thyme	herring
beans	lamb	plaice	trout	mustard
basil	maize	rabbit	wheat	pear

chicken	mint	rye	yoghurt	rice
cream	mutton	sage	aubergine	sausage
flour	onions	salmon	barley	veal

Task 3.

Make a questionnaire. Find out what people in your group eat and what they don't eat or drink (What is the favourite food in your group? What food does your group hate most?).

Task 4.

Describe the verbs used in the kitchen

Skewer	mash	roll	carve
Knead	pour	grate	sift/sieve
Mix	spread	crush	chop
Sprinkle	peel	whisk	dip
Dice	squeeze	slice	drain/strain

to knead – to press dough (a mixture of flour, water, eggs and fat for making bread) many times with your hands.

Task 5.

Choose the right answer

- I'm afraid that the herring we had for supper has given me ...
a) indigestion b) indisposition c) infection d) sickness
- The delicious spread of sweets made the child's mouth
a) cold b) dry c) water d) wet
- Please put some more water in my coffee, because it is too ...
a) black b) dense c) strong d) thick
- I loved the ice – cream, but the cake was a bit too sweet for my ...
a) appetite b) desire c) flavour d) liking

5. If there is one thing I don't like, it is...tea.
a) delicate b) light c) pale d) weak
6. I wouldn't eat those gooseberries if I were you, they don't look...to me.
a) formed b) ready c) ripe d) underdone
7. The dinner was excellent; the dessert was particularly
a) delicious b) desirable c) flavoured d) tasteful
8. Her pastry is as light as a
a) breath b) cloud c) feather d) leaf
9. Those vegetables are very tasty; I'm sure you would like them if you only... them.
a) examined b) proved c) tested d) tried

Task 6.

Read the text without the dictionary and discuss it

Milk Products and Alternates

Products derived from fluid whole milk or products that imitate milk's flavour and nutrient content may be consumed in addition to or instead of fluid whole milk. Some people cannot digest fluid whole milk. However, many of them can tolerate fermented products such as cheese, yogurt, or buttermilk, in which the lactose has been converted to lactic acid. Some of them can also drink a small amount of milk. Many children are actually allergic to milk, although some can become accustomed to the product if they drink gradually increasing amounts over a period of time. When some dairy products are used in place of fluid whole milk, there are important nutritional considerations. If low – fat, skim, or non-fat milk is used, the intake of vitamins A and D and essential fatty acids may be low. If available, products fortified with these two vitamins are preferred. Also, chocolate milk has more calories than an equivalent amount of regular fluid milk.

DO YOU KNOW THAT... ORDERING AN ICE-CREAM
CONE

The prototype for modern American ice cream was the Roman concoction of cream mixed with berries and alpine snow. The treat made it to America in the 1740s and soon took off rapidly in the colonies, By the 19th- century America was thoroughly taken in with the treat. It first appeared on a cone when a vendor at the St. Louis World's Fair ran out of (the dishes in which he was serving the ice cream and began serving it in cone – shaped waffles, which he obtained from a vendor of *zalabia*, a Persian – style waffle. There is nothing more American than an ice – cream cone, or a hot dog, and a Coke at a sports event or theatre.

Have a laugh

"Mother", said Johnny, "is it correct to say you "water a horse" when he's thirsty?"

"Yes, quitecorrect"

"Then (picking up a saucer), I'm going to milk the cat."

TOPIC 2

TEXT 1. DAIRYING

Dairying is an industry concerned with producing, processing, and distributing milk and milk products. Ninety percent of the world's milk is obtained from cows; the remainder comes from goats, buffaloes, sheep, reindeer, yaks, and other ruminants. In the United States, 20 % of the gross national income from agriculture is derived from dairying; Wisconsin, Minnesota, and New York are the most important dairy states. About one third of the milk produced is used for butter, almost as much for market milk, and the remainder is devoted to farm uses and the making of cheese, concentrated milks, ice cream, and by – products such as dried milk solids (e.g., lactose and casein). Commercial dairy products are processed or manufactured and then marketed by creameries, some of which, especially in Denmark, are farmers' cooperatives. Modern dairying dates from 1850, its development paralleling the growth of urban populations. Large – scale dairying was stimulated by the invention

of specialized machines, notably the cream separator; by research in chemistry, physics, and bacteriology; by the discovery of pasteurization; by the introduction of the test devised by American agricultural chemist S. M. Babcock for determining the fat content of milk; by the improved refrigeration and transportation; by the increase in output resulting from the scientific study of the breeding and feeding of cattle; by the greater consumption of dairy products resulting from increased knowledge of their nutritional value; and by the discovery of new uses for the by – products of factory operation.

Notes

Dairy	молочарня
to process	обробляти
ruminant	жуйна тварина
creamery	маслоробня; молочний магазин
to devise	придумати, винаходити
breeding	розведення
cattle	велика рогата худоба
nutritional	харчовий

TEXT 2. A VARIETY OF AMERICAN FOOD

The French are famous for their sauces, the Kalians are praised for their paste, the Germans are celebrated for their sausages, but is there anything unique to eat in the United States? When you get rid down to it, there's nothing quite us un American as American food. Because the United States is made up mostly of immigrants, there is an amazing variety of foods, from clam chowder in Boston to Chile con carne in Houston. The United States is a vast country influenced by many cultures and climates, and the traditional food 01 one area is often totally unlike that of another. New Mexico and Massachusetts are good examples of states that have very different traditional foods.

To understand and appreciate the food in any one region, it often helps to know the area's history. For example, New Mexico was once the home of the Pueblo Indians who lived in villages and grew native crops such as corn, beans, pumpkins, and squash. Later, Spanish settlers arrived in this area. These two groups exchanged ideas and customs and passed these customs on to their descendants. This intermingling of cultures is evident in the food of New Mexico. New Mexican meals make much use of corn, which is served in a variety of ways – baked as tortillas, served fresh as corn on the cob, blended into soups and sauces, and mixed into salads or with other vegetables, especially red and green peppers. Native blue corn is quite surprising when it is served as blue corn bread, chips, or tortillas. In the markets of New Mexico, you can still find *chicos*, or sun-dried grains of roast sweet corn. *Chicos* last a long time, but when soaked and boiled, they taste almost like fresh corn. Many recipes also contain *pinon* or pine nuts, the small sweet seeds of the southwestern pine tree, once a staple food in the Pueblo diet.

A Spanish influence can be found in the sweet, anise – flavoured cookies sold in New Mexico bakeries. They are prepared much like they were made in the kitchens of 17th century Spain for the Christmas feasts.

Some traditional foods of New Mexico that show both a native American and Spanish heritage include enchiladas (corn tortillas stuffed with cheese, onions, tomatoes, and chillies, and sometimes chicken or beef), pinto beans, black beans, and hot and spicy salsa, an uncooked vegetable sauce.

Take a trip to Massachusetts, however, and not a chilly pepper nor a tortilla will you find in a traditional meal. Influenced by the cold climate and the English – speaking people who settled there, the New England kitchen gives off aromas of soups and stews and of meat that is roasted for hours in the oven. Potatoes, carrots, and turnips were popular because these root vegetables grew well in the region and could be stored all winter long in the days before the supermarkets and refrigerators. English

– style puddings and pies are traditional desserts rather than the fresh fruit one often gets in the Southwest.

Whereas beef and chicken appear in many New Mexican recipes, in Massachusetts fish is very popular because of the nearby seacoast. New England is famous for its clam chowder, lobster, cod, scallops, and fish cakes, English herbs and spices are the seasoning used in New England dishes, which might taste rather bland to people accustomed to hot and spicy New Mexican food.

Each region of the United States is unique, Louisiana has a French influence. Many Germans populate the Midwest. In travelling around America, a tourist has the opportunity not only to visit a variety of places and see diverse landscapes, but to taste a variety of foods as well. Some may be very different. Others will taste just like home.

From "Making Your Point"

Task 1.

Learn some common ideas about food

Eating carrots is good for the eyes.

Fish is good for the brain.

Eating cheese at night makes you dream. Garlic keeps you from getting colds.

Drinking coffee keeps you from sleeping.

Yoghurt makes you live long.

Warm milk helps you go to sleep. A cup of tea settles your stomach.

An apple a day keeps the doctor away.

Task 2.

What sort of shop are they in?

I. A Can I help you?

B Yes, I'd like some Cheddar.

A Is it for cooking?

B No, it's to have with biscuits..

A Then I recommend this one. It's mature and quite strong.

B Could I try a little, please?

A Yes, of course.

B Mmm, very nice. I'll have half a pound, please.

A Anything else, sir?

B No, that'll be all, thank you.

II. A I'd like some nice lamb chops, please.

B English or New Zealand?

A Is there much difference in price?

B The New Zealand is a little cheaper, but of course it's not quite the same quality.

A Could I have a look at the New Zealand?

B Of course.

A They look fine. Six, please.

B Two pounds thirty, please.

A Thank you,

Task 3.

What will you do if

you've found out that there is no flour in your ladder; you're expecting guests for dinner;

you want to make meat salad;

your husband asked you to cook fish for dinner;

the doctor's advice is to eat much fruit and vegetables;

Task 4.

Choose the right answer

1. There is nothing more on a warm day than a glass of ice-cold fruit juice.
a) freshening b) quenching c) refreshing d) relaxing
2. The smell of the burnt cabbage was so that it spread to every room.
a) diffuse b) effusive c) extensive d) pervasive
3. Miss Greedy ... her lips at the thought of eating the delicious – looking cake.
a) pursed b) smacked c) struck d) watered
4. The taste of the apple pie sin my mouth for a long time after dinner.
a) insisted b) lingered c) loitered d) prolonged
5. It was during my stay in India that I ... a taste for very hot curry.
a) acquired b) gained c) got d) received
6. Mr Hot... some pepper over his steak.
a) spat b) sprayed c) sprinkled d) squirted
7. Mr Forgetful didn't put the milk in the fridge so it
a) went back b) went down c) went off d) went out
8. The ... of the pudding is in the eating, (proverb)
a) control b) probation c) proof d) trial
9. This cheese has gone You'll have to throw it away.
a) contaminated b) decayed c) mouldy d) stale
10. The steak looked tender, but it was as tough as
a) a belt b) a saddle c) old boots d) rubber
11. We couldn't use the milk because it had ... bad..
a) been b) come c) gone d) made
12. The smell was so bad that it completely ... us off our food.
a) got b) put c) set d) took

Task 5.

Answer the questions

1. What dishes is your country famous for? What kind of food is eaten a lot?
2. Do you prefer your own country's food or other kinds of food?
3. Do you like to eat a lot of food every day?
4. What foods do you love?
5. What foods have you tasted which you will never forget for the rest of your life?
6. Do you like milk – based dishes? At what time of the day are they recommended?
7. What dairy products do you know?

Task 6.

Read the text without the dictionary and discuss it

Dairy Products

Cheeses are popular substitutes for fluid milk. However, cheese is manufactured from the curds of skim or whole milk, Cottage cheese prepared by acid coagulation should not be used as the sole substitute for fluid whole milk, since the content of calcium in this kind of cottage cheese is low and the drainage of whey reduces the water-soluble vitamin content. Cottage cheese is nevertheless a good source of protein.

Ice cream is made from milk, milk solids, cream, flavourings, and sweeteners. Nuts and fruits are sometimes added. Ice cream is higher in calories than milk.

Yogurt is made by fermenting milk (whole, skim, or low – fat milk or milk solids) with different strains of bacteria. Most commercial yogurts are low in fat and

high (20 %) in galactose. But more than half the weight of some yogurts consists of added sugar and fruits. Dairy or related products also include filled and imitation dairy products (for example, filled cheese). Most filled products contain milk solids and non – butter fat; they come in forms such as cheese and canned milk. An imitation dairy product is one that resembles real milk products, especially in flavour and cooking characteristics, but does not contain any milk solids. Instead, it contains nondairy ingredients.

In the last few years, the consumption of dairy products has declined for various reasons. Technology has created a large number of nutritious beverages other than milk that, cater to the taste and preference of some consumers. The threat of high blood cholesterol and obesity has also played a role; many consumers use dairy substitutes instead. In addition, many people are still ignorant about the value of milk.

DO YOU KNOW THAT...

AMERICAN -STYLE ICE CREAMS, now commonly available in this country, can contain more fats and calories than burgers and pizzas. In August 2003, researches in the US calculated that Ben & Jerry's waffle cone dipped in chocolate and filled with a single scoop of Chunky Monkey ice cream contains more saturated fat than a pound of spare ribs.

Have a laugh

A woman was testifying in behalf of her son, "that he had worked on a farm since he was born." The lawyer, who cross-examined her, said:

"You assert that your son worked on a farm ever since he was born?"

"I do."

"What did he do the first year?" 'he milked'.

TOPIC 3

TEXT 1. *BUTTER*

Butter is a dairy product obtained by churning the fat from milk until it reaches a solidified form. In most areas the milk of cows is the basis, but elsewhere that of goats, sheep, and mares has been used. Butter was known by 2000 B.C., although in ancient times it was used less as a food than as an ointment, a medicine, or an illuminating oil. At first it was rudely churned in skin pouches thrown back and forth or swung over the back of trotting horses. As butter became a staple food, various sorts of hand churns were devised, including rotating, swinging; and rocking containers operated by plungers. Butter – making on the farm consists of allowing the milk to cool in pans, letting the cream rise to the top, skimming the cream off, and letting it ripen by natural fermentation; it is then churned. Exclusively farm made until about 1850, butter has become increasingly a factory product. The centrifugal cream separator, introduced into the United States about 1880, and a method devised in 1890 by Stephen Moulton Babcock to determine the butterfat content of milk and cream gave impetus to large-scale production. The application of principles of chemistry and bacteriology facilitates the making of butter of uniform quality. The percentage of fat extraction and the time required for churning depend on the composition of the butterfat; the temperature, acidity, richness, and viscosity of the cream; the speed and motion of the churn; and the size of the fat globules. Commercial butter usually contains from 80 % to 85 % milk fat, from 12 % to 16 % water, and about 2 % salt. Sweet, or unsalted, butter is favored in Europe, but other markets prefer at least 2 % salt. Rancid or process butter is made from rancid or inferior butter' melted and refined, then re churned. Whey butter, made from cream separated from whey, is usually oily and of inferior quality. The natural color of butter' derived from the carotene of green plant fodder, ranges from pale yellow to deep gold. Australia,

France, West Germany, New Zealand, and the United States are the leading producers; Denmark, New Zealand, and Australia, the chief exporters, and Great Britain a heavy importer.

The major production centers in the United States are in the North Middle West, especially Minnesota, Iowa, and Wisconsin. Clarified butter, butterfat with the milk solids removed, is useful in cooking and has good keeping qualities. It is made in quantity in Egypt and in India, where it is known as ghee. The high dietary value of butter is due to its large proportion of easily digested fat and to its vitamin A and vitamin D content.

Notes

to obtain	одержувати
to churn	збивати масло
solidified	затверділий, твердий
pouch	торбинка, мішечок
to swing	коливати(ся)
to trot	бігти рясю
to plunge	пірнати, занурюватися
fermentation	бродіння
centrifugal	відцентровий
impetus	імпульс, поштовх
globule	крапля, кулька, пілюля
viscosity	в'язкість
to renovate	обновляти
rancid	згірклий
whey	сиворотка
fodder	фураж, корм
dietary	дієтичний
to digest	засвоювати, перетравлювати їжу

TEXT 2. FOOD OF THE FUTURE

YOU ARE WHAT YOU EAT. BUT DO YOU KNOW WHAT YOU ARE EATING?

Next time you take a bite out of a juicy red tomato, stop and think. Did you grow it in your own garden? If so, you're lucky. Or did you buy it at the supermarket? The chances are that soon, that tomato could be a genetically modified tomato. Many products on the shelves of our supermarket already contain genetically engineered ingredients, and many more are ready to be introduced over the next few years.

WHAT IS GENETIC MODIFICATION (GM)?

In an attempt to create nicer – looking, longer lasting, more nutritional foods, scientists have played around with the genetic structure of foods such as fruits and vegetables, soya and corn. GM food is created by taking DNA from one organism and putting it into another. Many people feel that there has not been enough research done into this genetic change, and that our entire food chain could be in danger. A leading geneticist, Dr. Michael Antoniou said, "Once released into the environment, genetic mistakes cannot be cleaned up, but will be passed on to all future generations indefinitely".

READ THE LABEL?

Between 60 and 70 per cent of the processed foods we eat contain soya. 16 per cent of soya from the US is genetically engineered. No one is sure how much of this is used in our food, but many thousands of different types of food will soon be in our supermarkets, and very few will have labels which tell you exactly what the food contains.

DO WE WANT IT?

A recent poll in Europe suggested that 70 per cent of consumers did not want GM food, and in Denmark 95 per cent of consumers wanted labelling of any GM food. Why? Because our natural crops are being crossed with bacteria, viruses and

genes from fish and animals to make them bigger, stronger and better, potatoes have been engineered with chicken genes to increase resistance to disease, and tomatoes have had fish genes added to make them less delicate in the cold temperatures of fridges.

What does the future hold? No one really knows just what the long – term effects of these "experiments" will be. A senior scientist with the Environmental Defence Fund, Dr. Rebecca Goldburg said, "Genetic engineers are producing foods that have never been eaten by human beings. Consumers should not be guinea pigs for untested food substances". GM food could help us achieve a better environment, improve our health and stop world hunger. However, it could also threaten farming, ecosystems, and our health. Scientists fear that if genetically modified organisms get into the natural food chain, our natural species will be in danger imagine a GM fish which was 50 per cent bigger and are 50 per cent more food.

LEAVE IT TO NATURE

Of course there are positive arguments for GM food. Even anti – GM campaigners "Pure Food Campaign" see the advantages of producing more nutritious and healthy food, "vegetables with more vitamins, rice with more protein, lower fat French fries and crisps made from potatoes that don't soak up as much oil". Many scientists argue that genetic engineering is just like speeding up nature. But some people feel that as nature has controlled our genetics successfully for the last 3 billion years, we could be moving just a little too quickly.

YOUR CHOICE

If you want to avoid GM food, eat organic foods and cut down on processed foods. You can also check with individual companies, who may supply you with a list of their products which contain genetically modified ingredients.

Task 1.

Make up tag questions by adding tags to the statements

1. She is fond of cooking, ...?
2. Nick didn't object to going to the restaurant, ...?
3. The English are very particular about their meals, ...?
4. They usually have breakfast from any time until 9 o'clock, ...?
5. They serve a very small amount of soup, ...?
6. Both supper and dinner are evening meals, ...?
7. He doesn't eat green vegetables, ...?
8. After dinner they'll go sightseeing, ...?
9. She has cooked some national Ukrainian dishes, ...?
10. They have already had supper, ...?

Task 2.

Disagree with the following statements. Make use of the words given in brackets. Use the phrases It's not quite so, I'm afraid you are wrong, etc.

Example: She is fond of cooking (to read)

-It's not quite so (I'm afraid you are not quite right). She is fond of reading.

1. We like having dinner at restaurant (to have dinner at home).
2. He is fond of having lunch at a canteen (to go to a restaurant).
3. She enjoys having square meals (to have a small dinner).
4. She prefers eating potatoes, bread and desserts (to slim).
5. He thought of inviting his friends to dinner (to have dinner at his friends').
6. We were busy discussing the list of dishes to order (to discuss the prices on food stuffs).
7. She thanked me for inviting her to dinner (to give her a cup of coffee).

Task 3.

Fit the meaning and the word

- | | | |
|-------------|---|---|
| 1 hamburger | A | a soup made with beets, that you eat hot or cold (usually plural) – a long thin piece of soft food made |
| 2 sandwich | B | from flour, water, and eggs, that is cooked in boiling water |
| 3 borscht | C | a type of pasta in very long thin pieces, that is cooked in boiling water |
| 4 noodle | D | a thin dry Oat piece of potato cooked in very hot oil and eaten cold |
| 5 spaghetti | E | a piece of meat or fish without bone |
| 6 seafood | F | a type oi sandwich made from bee! thai has been formed into a Hal circular shape and cooked, which is eaten between pieces oi round bread |
| 7 chip | G | animals from the ocean that you can eat |
| 8 fillet | H | two pieces of bread with cheese, meat etc. between them |

Task 4.

Choose the right answer

1. Having ... the table, Mrs Goodhousewile called the family for supper.

- a) completed b) laid c) ordered d) spread

2. Aunt Betty gave me a ... of her home – made strawberry jam.

- a) bottle b) can c) pot d) tin

3. Yvonne ... the cups and two of them broke.

- a) dropped b) tell c) let tall d) spill

4. It wasn't my ... that the plate broke.

- a) blame b) error c) fault d) mistake

5. I put the milk ... back to the fridge.
 a) flask b) holder c) jug d) vase
6. Dinner will be served ... but we have time for a drink before then.
 a) actually b) cyrrtently c) lately d) presently
7. Put the lid back on the tin so that the biscuits ... crisp and fresh.
 a) become b) bring c) get d) stay
8. Just put the dirty dishes in the ... We'll wash them up later on.
 a) bath b) bucket c) sink d) tub
9. The plate was right on the ... of the table and could have been knocked off at any moment.
 a) border b) edge c) margin d) tip
10. When you pour the coffee, be careful not to ... it in the saucer.
 a) lead b) spill c) spit d) trip

Task 5.

Answer the questions

1. Do you agree that eating habits change from generation to generation?
2. What did people believe before scientists learned about vitamins?
3. What did a good 18th. century meal consist of?
4. What were the Romans famous for?
5. What will probably happen by the your 2100?
6. Do you believe this will really happen?

Task 6.

Read the text without the dictionary and discuss it

What will People Eat in Future?

Eating habits change from generation to generation. Before scientists learn about vitamins and other ingredients of food, people believe in eating large quantities

of food and didn't pay attention to a balanced diet. A good eighteenth century meal consisted of as many as twenty courses, The Romans were famous for their great feasts and big appetites.

In the year 2100 people's eating habits may be just as surprising but in a very different sort of way. Probably there will be an end to food as we know it today. Meals as we know them may become the thing of the past. Food and vitamins will be taken in the form of capsules, tablets and pills. Maybe this idea is not very pleasant but it may be the answer to food shortages and world famine.

DO YOU KNOW THAT ...

TUNA, that staple of the American supermarket sandwich, went off the menu for pregnant women and breast-feeding mothers in March 2003, following a warning that mercury in the fish could be passed on through the umbilical cord or breast milk. The Food Standard Agency recommended a maximum weekly limit of two medium sized tins of tuna, or one tuna steak.

Have a laugh

- I can't find any chicken in the chicken soup!
- Well, you won't find any horse in the horseradish either!

TOPIC 4

TEXT 1. MARGARINE

Margarine is a manufactured substitute for butter. It consists of a blend of vegetable oils or meat fats (or a combination of both) mixed with milk and salt. It was developed in the late 1860s by the French chemist Hippolyte Mege – Mouries in a contest sponsored by Napoleon III for a butter substitute. Beef fat, known as oleo oil, was chiefly used at first, but later was supplemented by pork and other animal fats and by vegetable oils such as coconut oil, olive oil, and cotton – seed oil. At present, most margarines contain only vegetable oils; the margarine produced in the United States is usually made from corn, cottonseed, or soybean oil. The oils, refined, deodorized, and

hydrogenated to the desired consistency, are churned or homogenized, usually with cultured skim milk, then chilled and reworked to incorporate salt and remove excess water. Margarine is similar in composition to butter, yields practically the same number of calories, and is easily digestible. It is commonly fortified with vitamin A and vitamin D. In the 1960s a new type of margarine was developed made of polyunsaturated fats. Margarine is sometimes called oleomargarine.

Notes

margarine	маргарин
blend	суміщ
to supplement	ДОПОВНЮВАТИ
pork	свинина
coconut	КОКОСОВИЙ ГОРІХ, КОКОС
olive	оливка
Soy	соя
consistency	КОНСИСТЕНЦІЯ
calorie	калорія
digestible	легкотравний
to fortify	укріпляти

TEXT 2. GENETICALLY MODIFIED FOOD

You didn't ask for it, and you might not know about it. But you've probably already eaten some of it. It'd genetically engineered food. Perfectly round tomatoes all exactly the same size, long straight cucumbers and bug fat. chickens are now a normal part of our diets. They are made that way genetic engineering – not by nature. Their genes have been changed.

Every living thing has genes. Genes carry information. They are passed on from generation to generation. That make sure that humans give birth to humans and cows give birth to cows. They also make sure that a dog cannot give birth to a frog, or an elephant to a horse. Genetic engineers lake genes from one species – for example, a scorpion, and transfer them to another – for example, corn, in this way a new life is created. These new life forms have been described as a "real – life Frankenstein ".

Genetic engineers put duck genes into chickens to make the chickens bigger. They put hormones into cows to make them produce more milk. They put genes from flowers into soy beans, this doesn't make them cheaper, tastier or healthier.

It makes them easier and faster and for the farmer to grow.

The effects of genetic engineering on our health are not known. Many of the genes which are used – such as those oi scorpions, rats, mice and moths are not part of our diet so we do not know how dangerous they may be. For example, people can develop allergies to food which has been genetically engineered. The effects ol genetic engineering on the natural world may be disastrous. The engineers may create life forms – monsters – that we cannot control. The new life forms have no natural habitat or home. They will have to find one, light for one or kill for one. It may be our land they fight for or you that they kill. Moreover, the effects of these experiments can often be cruel. In America, pigs were given human genes to make: them bigger and less tatty. The experiment tailed. The pigs became vary ill and began to lose their eyesight.

Creenpeace is trying to prevent all such food experiments. Some but not all food companies are refusing to use genetically engineered foods. Some but not all – supermarkets are telling I heir customers which foods are genetically engineered, We must all be aware of what is happening.

Some people believe, though, that genetic engineering could be the solution to the problem of famine. Plants which grow faster, or cows which produce more milk, can save the lives of starving people. We would all like a better, healthier and longer

life, and genetic engineering might give us this. On the other hand, it may be a dangerous experiment with nature. In the story, Frankenstein created such a terrible and dangerous monster that he had to destroy it. We must make sure that it remains a story arid no more than that.

Task 1.

Read the sentences and fill the missing words

1. Every ... thing has genes.
2. Genetic engineers put duck genes into chickens to make chickens.
3. The effects of genetic engineering on our health are not
4. The engineers may create life forms – monsters – that we cannot ...
5. Greenpeace is trying to ... all such food experiments.
6. Genetic engineering could be the solution to the ... of famine.

Task 2.

CLUB spoke to people on the streets of London to find out what they thought about the dangers of genetically modified food. Discuss these points of view with your group and express your own thoughts (What are the arguments for and against genetically engineered food?)

Chantelle, 23, administrator

I'm against genetically modified food. I definitely would avoid it even if it does keep longer. It can't be good for you. It hasn't been tested so nobody knows what the long – term effects will be. I would like to buy more organic food, but it is far too expensive, so for now.

I won't but it on principle.

Siobhan, 19, student

As long as food contains genetically modified ingredients is labeled, then we have the choice to decide whether or not we buy it and eat it. Personally, I'd rather

pay the extra money and buy food that I knew was organically produced and guile safe, but that's not possible for me at the moment!

Carla, 21, sandwich maker.

I think a lot of food that you buy on the streets, like hot dogs and burgers, is as dangerous as genetically modified food! I think it's a really good development for our world as it could really help the developing world countries by providing them with cheaper and more nutritious food to help them survive.

Mark, 29, barman

When I used to eat home – grown food from our farm when I was a kid. Now I live in where I work, so I don't have to buy or cook the food I eat, so I don't know what's in the food I eat. It still make any difference to me.

Michelle, 18, trainee veterinary nurse

Who knows what effects it'll have years from now? I don't think genetically modified food would help in the developing world, just because it's cheaper. These people need food to eat to save their lives, they can't afford to buy it! 11 we don't want to eat genetically modified food, then why should they have to?

Robert, 19, student

My mum cooks most of the time, so I can't really control what I eat! Battery tanning of chickens and other animals concerns me more. I don't want to eat food or use stuff that has been tested on animals they can't choose whether or not they are our guinea pigs. I try to shop in health food shops when I can. Troy, 28, worker with disabled adults

I wouldn't have a problem with eating genetically modified food, it sounds perfectly OK to me. Seeing it on a label wouldn't stop me buying the food, I guess if it's sold in supermarkets it can't be a great risk. I'm sure it's OK.

Noel, 19, biology student

Geneetically modified food must be developed safely and should be tested before it is put on the market. We should be aware of what we are eating, Personally, I

just eat the cheapest food I expect cheap supermarket own – brand foods are full of genetically engineered ingredients, but that doesn't stop me!

Task 3.

What sort of shop are they in?

- I. A Good morning.
B Hello. A large whole meal loaf, please.
A Thank you. 57p, please.
B And a half – a – clozen soft white rolls.
A Do you want the ones with sesame seeds?
B They're for hamburgers, so, yes, that'd be all right, wouldn't it?
A Yes.
B Yes, that's fine.
A Anything else?
B No, thanks. Not today.
- II. A Hello, Tom. How are you today?
B Not bad, thanks. You?
A OK. What can I do for you?
B I'd like some sprouts, Alt, please.
A I couldn't get any today. Sorry.
B Oh. Well, I'll have some beans, then.
A How many?
B A pound will do. Have you got any avocados?
A Lovely ones. When are they for?
B Tonight, please.
A Here we are. Two beauties.
B A lettuce and a cucumber, please.
A Right.
B That's it, thanks.

Task 4.

What will you do if

you want to buy some poultry;

you've run out of butter;

you want to make rissoles but your mincing machine doesn't work;

you are going to treat your family to roast chicken;

a holiday is coming and you want to buy some foodstuffs to make;

a festive dinner.

Task 5.

Choose the right answer

1. Please give me two of bread.

a) crumbs b) flakes c) lumps d) slices

2. She ... her automatic cooker to cook the meat for seven o'clock.

a) arranged b) put c) set d) timed

3. My sister likes to the table, but she doesn't like to wash dishes.

a) lay b) lie c) make up d) sit

4. I can't the sound of a knife scraping on a plate.

a) bear b) suffer c) support d) sustain

5. Be careful how you ... that jug; it will break very easily.

a) hand b) handle c) operate d) pour

6. I see we've coffee – do you mind drinking tea?

a) done without b) gone off c) run out of d) turned out

7. I had a ... of soup for lunch.

a) bowl b) dish c) glass d) saucer

8. This knife is terribly ... It won't even cut a piece of cheese.

a) blunt b) flat c) sharp d) thick

9. We shall have to use that glass as we are a cup

a) few b) less c) minus d) short

10. I couldn't open the wine as I didn't have a

a) corkscrew b) cork driver c) lever d) screwdriver

Task 6.

Read the text without the dictionary and discuss it

Why are Some Fats Solid, Some Liquid?

We all know how difficult it is to butter toast with very firm butter. The nature of the fats we eat partly results from their chemical characteristics, which are determined by their fatty - acid components. Glycerides (fats) with more short – chain or unsaturated fatty acids will be soft fats or oils and will be liquid at room temperature. We say they have a low melting point. Fats with long – chain fatty acids are hard fats and thus are solid at room temperature; they have a high melting point. Short – chain fatty acids are fairly soluble in water, unlike those with longer chains. Lipids containing mostly oleic, linoleic, and other unsaturated fatty acids will be liquid at room temperature. The oil on the surface of an orange or the oil from corn typifies this group. Fats containing mostly palmitic and stearic saturated fatty acids are solid at room temperature for example, the fat around a pork chop. Oxidation (an interaction between oxygen in air and any other chemical component) occurs more readily in unsaturated fatty acids than in saturated ones. Thus, cooked fats and oils with higher content of unsaturated fatty acids have a greater tendency to become rancid (from oxidation). Short – or medium – chain fatty acids are also easier to absorb. Similarly, given a like number of carbon atoms, polyunsaturated fats are absorbed more efficiently than saturated ones. These observations enable us to understand why ordinary fats can be solid or liquid, why some fats become rancid faster than others, and why absorption of fatty acids by our bodies is varied.

DO YOU KNOW THAT...

FIBER is the key to warding off bowel cancer, we learned in May 2003. Scientists at Cambridge University discovered that doubling a person's consumption of cereals, fruit and vegetables can nearly halve the risk of developing the disease, which kills 16,000 people a year in Britain.

TOPIC 5

TEXT 1. *MEAT*

Meat is a term for the flesh of animals used for food, especially that of cattle, sheep, lambs, and swine, as distinct from game, poultry, and fish; sometimes it is inclusive of all animal flesh. The chief constituents of meat are water, protein, and fat. Phosphorus, iron, and vitamins are also contained in meat, especially in some of the edible organs (e.g., liver). Although meat is digested more slowly than starches or sugars, it has a high food value, with more than 95 % of the protein and fat being digested; the fattier meats (e.g., pork) take somewhat longer to digest than the leaner ones. The edible parts of a carcass include lean flesh, fat flesh, and edible glands or organs, such as the heart, liver, kidneys, tongue, tripe, brains, and sweetbread. The comparative toughness of meat depends on the character of the muscle walls and connective tissue, the part of the animal from which the meat is taken, and the age and condition of the animal. Ripening meat, i.e., hanging it for a time at a temperature just above freezing (or, more recently developed technique, at a high temperature) permits enzyme action and the formation of lactic acid, which tenderizes it. Good meat may be recognized by a uniform color; a firm, elastic texture; being barely moist to the touch; and having a scarcely perceptible, clean odor. The choicer cuts should be of fine texture and well marbled with fat. Cooking meat not only softens tissues, kills parasites and microorganisms, and coagulates blood and albumen, but makes the meat

more palatable by developing its flavors or introducing new ones by means of seasonings and sauces. Meat, where available, has been a staple food since prehistoric times. The meat supply, obtained at first by using the raw flesh of animals found dead, was augmented by trapping; then, as humans developed their tools and a community life, by hunting; and finally, by the domestication of animals. Meat consumption has been commonly based on the supply, lamb and mutton being preferred in the Middle East, veal in Italy, and pork and beef in most of Europe and America. The leading producers of meat for export are Argentina.

Notes

flesh	м'ясо
lamb	ягня
poultry	свійська птиця
inclusive	що містить у собі
edible	їстівний
carcass	туша
lean	пісний
gland	залоза
texture	тканина
to coagulate	зсідатися, згущати(ся)
albumen	білок
palatable	смачний, приємний
seasoning	приправа
sauce	підлива, соус
to augment	збільшувати
To trap	ловити пастками
domestication	приручення
prohibition	заборона
to butcher	убивати худобу

hygienic

гігієнічний

ground

основа, підстава, мотив

TEXT 2. *THE SANDWICH*

It seems strange that the modest and democratic sandwich was the invention of an aristocrat.

The Earl of Sandwich, the head of the British navy, was a passionate card – player. In 1762, during a 24 hour gambling session, he got hungry, picked up a piece of beef and popped it between two slices of bread. He then carried on playing cards while eating what was to become Britain's biggest contribution to gastronomy. The word for his invention soon entered the English language. In 1762, the historian Edward Gibbon wrote about, a restaurant where "twenty or thirty of the first men in the kingdom" could be seen "supping at little tables upon a bit of cold meat, or a Sandwich". Today the sandwich is enjoyed by all classes and both sexes, not just the "first men in the kingdom". In (act, every weekday, almost every office worker in the country has one for lunch, whether plain or toasted, on traditional British sliced bread, crusty French bread, Italian ciabatta or Middle Eastern pitta, Popular fillings include tuna salad with mayonnaise, prawn cocktail with avocado, BLT (bacon, lettuce and tomato), and cheese and pickle.

Cucumber sandwiches on thin white, slightly soggy bread with the crusts cut off, are probably the most uniquely British type of sandwich. Cut into four neat triangles, their delicate flavour has made them popular since Victorian times, They have to be eaten in the right context: in the summer at garden parties, cricket matches or even wedding receptions. They are most popular type of sandwich at Wimbledon where every year 190,000 sandwiches are sold during the two— week tennis tournament.

Most exotic sandwich combinations:

Strawberry and camembert

Banana and peanut butter with alfalfa

Most delicious sandwich combinations:

Parma ham with rocket and crisp lettuce

Smoked salmon with cucumber and hard – boiled egg

Baby spinach with smoked mackerel and hard – boiled egg

Prawn with yoghurt, mint and cucumber

Cream cheese with tomato, basil and asparagus tips

Roast beef with watercress, mustard and gherkins

School children's top five:

Chocolate spread with hundreds and thousands

Peanut butter with golden syrup

Sliced banana with chocolate sauce

Cheese and strawberry jam

Task 1.

Write your own recipe for a sandwich, You can invent an unusual one if you like. Remember to include:

- ingredients
- equipment
- instructions

In groups, explain your recipe to the other people. Give the other recipes points out of ten:

9-10 – absolutely delicious!

7-8 – delicious

5-6 – tasty

3-4 – not very nice

1-2 – horrible!

Task 2.

Read two different opinions and express your own ideas on the topic "Should We Eat Meat"?

I. – Are you a vegetarian?

I used to be a vegetarian but now I'm a vegan.

- **What's the difference between a vegetarian and a vegan?**

Vegetarians don't eat meat or fish. Vegans do not use any animal products. It means that I don't eat any meat, fish, dairy products or honey.

- **Do you eat enough protein?**

People always ask me this! The answer is definitely yes. My main sources of protein are beans, soya and nuts. People often worry that vegetarians and vegans don't eat enough protein. However, a diet with too much protein can be bad too. I eat a lot of fruit and vegetables so I'm quite healthy. There's no doubt that a vegetarian diet is healthy.

- **Why did you choose to be a vegetarian and then a vegan?**

For many reasons. When I was 8, I was not happy about eating animals. My older sister was already a vegetarian so I decided to be one too. When I was 13, I found more reasons for not eating animals or using animal products. I hate the way animals suffer before they are killed. If they are exported, they might travel for 30 hours without food or water and they can't move.

- **Is cruelty to animals your main reasons for being a vegan?**

No, there are other reasons. For example, in many countries, there are people dying from hunger. They might be able to grow food to eat for themselves but their fields have grain to feed animals. It's not an economical use of the land. The animals eat a lot of grain but the starving people can't eat the animals because one field of

grain does not feed many animals. Also, I don't eat fish because they are part of a food chain it ruins the ecosystem when we eat them. .

- **What are the advantages of being a vegetarian?**

It's a lot healthier. The frequency of heart disease and cancer is less for vegetarians. I've heard that food companies put a lot of chemicals in meat. I don't think these chemicals are good for people,

- **If you go to someone's house and they offer you food that contains meat, do you eat it?**

No way. I very politely refuse and explain my reasons. People usually understand.

II. – Are you a vegetarian?

No I'm not.

- **Do you agree with what vegetarians say?.**

Not really. Killing animals might be cruel but there are a lot of other problems in the world too. Vegetarians always worry about animals but what about human suffering?

Also, I don't think that being a vegetarian solves the problem.

- **Why not?**

If everyone stops eating meat, farmers will lose jobs. Farm animals will not be able to eat and might die from hunger. I believe that some farm animals have quite a nice life before they are killed.

- **Have you ever thought about being a vegetarian?**

No. people need to enjoy what they eat and enjoy meat. I admit that I don't like eating meals that remind me of the animal. For example, when cooked fish still has the head on, I don't like it.

- **What do you enjoy eating?**

My favourite meal is roast chicken. I love it. I also like burgers with everything on them ketchup, relish, lettuce, tomato... Being a vegetarian is definitely a bad idea!

- **Why is being a vegetarian a bad idea?**

I think it's difficult to substitute meat. It's nutritious and like the taste. Humans have eaten meat for millions of years. Eating is natural. We have teeth that are specially designed for eating it.

- **Do you think vegetarians are mad?**

No, I don't think vegetarians are mad. People can choose what they want to eat. If they are healthy and happy that's good. However, I want to choose what I eat too and I want meat. It's my body! Also some vegetarians talk about cruelty to animals but they wear leather shoes. Another thing, many people stop eating meat but they start . again after a year or Iwo. This proves that they don't enjoy it and that vegetarians miss eating meat. I doubt it's fun being a vegetarian!

Task 3.

Answer the questions

1. What's your favourite kind of meat?
2. How often do you eat steak?
3. Are you a vegetarian?
4. Do you eat beef?
5. Do you prefer fish or meat?
6. Are you a great eater?
7. Do you think a vegetarian diet is better than a diet that includes meat?

Task 4.

Read and translate the poem

The Earls of Sandwich
Cried the Earls of Sandwich,
While scratching his head,
“I have an idea!”

Quick, bring me some bread.
He yelled for his baker
And called to his wife.
“Please, fetch me some butter”
And bring me a knife!
I will slap on some butter,
Some mayo and such.
Mustard and ketchup,
It doesn’t take much.
Bring me some tuna,
Some chicken and ham.
Lettuce and pickles,
And maybe some jam.”
He lined up the bread
To measure each slice,
Cutting it evenly
All neat and nice.
“And now,” said the earl,
“I will try some new.
I will stack up the slices
(Perhaps two by two).”
At last he was finished
(The bread two by two).
“Its done!” cried the Earl.
“I’m finally through.
“I know what I call it.”
He said with a whirl.
“I will name it for me.

I will call it an ear!”

Task 5.

Read the text without the dictionary and discuss it

Is Eating Meat Good for Us? Those who observe dietary trends find that many people continue to follow "meat-and-potatoes" food habits, while a growing number of people have sworn off meat in favour of vegetables, fruits, and nuts.

Is meat healthful?

We know that nutrient need varies according to size and age, but assume that your need is for 56 g of protein per day. When you eat a steak dinner, you may ingest almost 50 g of protein, virtually your entire protein need. The excess amino acids are stored as body fat, posing the potential for obesity. A steak dinner also provides 80 g of fat; close to 60 percent of the caloric content of the meals comes from fat. That is about twice the recommended level of caloric contribution from fat. Further, that fat is saturated, a type of fat with implications for heart disease. And the dinner probably lacked sufficient fiber, which aids in digestion.

In summary then, a meat-and-potatoes meal does not meet the essential definition of a balanced diet. Certainly the potential danger can be offset by other meals in the same day, or by other meals during the week, but you should understand that those potential dangers are there. Does that mean that a vegetarian diet is healthier than a meat diet?

DO YOU KNOW THAT... BACON AND EGG

Bacon and eggs (or sometimes sausage and ham) is the traditional American breakfast. It is a throwback to the colonial days when pigs were easy to keep because they could forage for themselves. Eggs for breakfast were ideal because they were at their freshest when gathered from the previous night's roosting. In colonial times Pigs and chicken were the easiest animals to transport. Although the opening of the west made beef king, the colonial mania for bacon and eggs persists even the settling of the west and the end of the frontier.

Have a laugh

A man hurries into a fast food restaurant and said: "Give me a ham sandwich."

"Yeas, sir," said the waiter, reaching the sandwich. "Will you eat it or take it with you?"

"Both," was the unexpected bit obvious reply.

TOPIC 6

TEXT 1. SAUSAGE

Sausage is food consisting of finely chopped meat mixed with seasonings and, often, other ingredients, all encased in a thin membrane. Although sausages were made by the ancient Greeks and Romans, they were usually plain and unspiced; in the Middle Ages people began to use the various spices and meats that led to the modern sausage. Many of the sausages that became famous were named for the localities where they were first made: the frankfurter in Frankfurt, Germany; the bologna in Bologna, Italy; the genoa salami in Italy. Black pudding, an ancient dish in England and Scotland, was made of oatmeal, suet, and hog's blood. White pudding was suet with toasted oatmeal. Sausages are of two types; dry and wet, according to whether the casing is filled with fresh (wet) or cooked (dry) meat. Pork sausage is an example of the wet. Dry sausages are made from fresh meats and curing substances, and then smoked (e.g., peperoni). Salami, most common in Italy and Germany, contains beef and pork and is highly seasoned. The large bologna sausage is of veal and pork and is smoked. Frankfurters, and Wienerwursts are small, smoked varieties containing lean pork and beef. Sausage is usually packed in casings made either of the cleaned and salted intestines of the slaughtered animals or of synthetic cellulose.

Notes

sausage

ковбаса, сосиска

to encase	упаковувати
membrane	плівка, оболонка
plain	простий
oatmeal	вівсянка
hog	свиня, кабан
to slaughter	убивати, різати
cellulose	клітковина, целюлоза

TEXT 2. THE HAMBURGER

The hamburger has no connection to ham. It got its name from the German town of Hamburg, which was famous for its ground steak. German immigrants to the United States introduced the "hamburger steak".

At the St. Louis World's Fair in 1904, hamburger steaks were served on buns for the first time. Hamburgers on buns were convenient and tasted good. This became the usual way of eating hamburgers.

How did the hamburger become the most popular, most typical American food? The introduction of the bun is an important part of the answer. Another important part is McDonald's, the fast — food restaurant.

The first McDonald's was opened in San Bernadino, California, in 1949. Hamburgers were the main item on its menu. People liked the restaurant's fast service. By the 1960s there were many McDonald's restaurants. McDonald's was a part of nearly every community in the United States. There were also other fast – food restaurants that sold hamburgers. McDonald's alone sold millions of hamburgers a year.

Today, of course, there are McDonald's restaurants around the world. The food they serve is considered typically American. Americans often have a hamburger for a

quick lunch or snack, But do you know that the favourite American "fast food" actually comes from many different countries?

- The hamburger is made of beef, not ham. The idea of chopping meat into very small pieces comes from Turkey.

The pickle, or pickled cucumber, comes from Eastern Europe. It is popular in Poland and Russia.

- The word ketchup comes from China. It is the Chinese name for a sauce made of pickled fish and spices. The first recipe for tomato
- Mayonnaise, sometimes called "mayo", is a yellow – white sauce made of eggs, oil, and lemon juice. It comes from Spanish island of Minorca, but its name is French. Mayonnaise is also used as a dressing for salads.
- The bun is a kind of bread. It comes from an English recipe, and the sesame seeds on top come from the Middle East. So, the American hamburger is truly international meal!

Task 1.

Answer these questions

1. What different countries does the hamburger come from?

What other things do people put on hamburgers? What do you like on a hamburger?

2. What do you need to make your favourite sandwich, snack, or dessert?

Task 2.

Make up dialogues to continue the following. Express surprise, satisfaction or encouragement.

1. "What shall I give you for supper?"

"Anything light will do."

2. "The dessert is delicious!" You have a light hand with sweets!"

3. "Again you've crushed that nasty garlic in the salad! It's bad for breath."
4. "Tom, what's the matter with you? You are just making a pretence of eating. "
5. "All your dishes are really delicious bur ever so simple!"
"You know, I hate overcooking. I like simple ingredients, simply prepared."
6. "I say you excel in cooking. Do you also believe the fastest way to a man's healt is through his stomach?"
7. "Would you like another helping?"

Task 3.

Topicsfor discussion

1. On the counter there are many kinds of meat. You are rather nonplussed by the variety of labels attached to seemingly identical sorts. The butcher is helping you to choose a nice joint of beef. (Remember that you want it not too fat.)

2. Your friends are coming to see you tonight. You naturally want to put up a decent feed for them. Discuss a possible shopping list for this get-together with your brother (sister).

Task 4.

Choose the right answer

1. Sometimes it is very difficult to get the ... out of a wine bottle.
a) cap b) cork c) lid d) plug
2. Do be careful not to ... your tea on your white dress, darling.
a) drip b) filter c) leak d) spill.
3. Let's have a cup of tea. Put the ... on.
a) cooker b) electricity c) kettle d) spill
4. Put the ... back on the biscuit tin, otherwise the biscuits will go soft.
a) cap b) fastener c) lid d) top

5. Be careful, this knife is very

a) acute b) blunt c) hard d) sharp

6. Don't, ... the jug right up, otherwise you'll spill it when you pick it up.

a) feel b) fell c) fill d) full

Task 5.

Answer the questions

1. Who is good at cooking?
2. Do you enjoy having square meals?
3. What is the difference in the procedure of frying, roasting, grilling and broiling meat?
4. What do we boil (roast, stew, fry, bake)?
5. Are you fond of inviting guests to your birthday party?
6. Where do you prefer to celebrate your birthday?
7. What should you do to succeed in slimming?

Task 6.

Read the text without the dictionary and discuss it

Burger and Fries

A burger and fries is by far the most popular type of meal bought in the US. In fact Americans buy almost 5 billion burgers a year! This popularity has been spread around the world with the growth of international "fast food" restaurant chains.

Many people say that the first burger was served at the St Louis World's Fair in 1904. The first chain of burger restaurants started with the White Castle burger in 1921, and it was a great success.

The classic burger is made from about 100 grams of minced beef which is fried or grilled, then served in a bun covered with sesame seeds. The growing popularity of vegetarianism has also led to burgers made from soya bean "meat" instead. Fries, also

called French fries, are cooked like English chips, but they are cut into thinner slices, A burger and French fries may not be the healthiest meal in the world but it is certainly one of the world's favourites.

DO YOU KNOW THAT...

HOT DOGS AT A BASEBALL GAME

In Germany the hot dog was called the frankfurter. Frankfurters were sold in the United States under the name of "dachshund sausages". These sausages became popular in New York, especially at baseball games. They were sold by men who kept them in hot —water tanks. People ate the dachshund sausages on special breads called buns. One day a cartoonist drew a cartoon of the sausage depicting a dachshund in a roll. Since he didn't know how to spell "dachshund", he wrote "Get Your Hot Dog!" as a caption under the cartoon. Thus, the American hot dog was born.

TOPIC 7

TEXT 1. *FATS AND OILS*

Fats and oils is a group of organic substances that form an important part of the diet and also are useful in many industries. The fats are usually solid, the oils generally liquid at ordinary room temperatures. Some tropical products, liquids in their sites of origin, become solids in cooler climates; in commerce these often retain the name originally given, e.g., palm oil and coconut oil. Fats and oils are derived from both plant and animal sources. Among the vegetable oils of greatest commercial importance are cottonseed, linseed, olive, palm, corn, peanut, soybean, and castor oils. The method of obtaining the oils is similar for all: the fruits or seeds after being cleaned are crushed and pressed cold to obtain the highest grade of oil and then pressed warm, yielding a grade suitable for industrial use. Sometimes solvents are used to remove the remaining oil from the crushed mass. Edible oils are those used in foods, and for these the highest grade is utilized; these must be pale in color, free from disagreeable odor and taste, and wholesome. The lower grades are suitable for making

soap and for other industrial purposes. The chemical property that makes fats solid and oils liquid is the amount of saturation in the ester. Animal fats are esters of saturated fatty acids; vegetable oils are esters of i unsaturated fatty acids. Conversion of liquid vegetable oils into solid fats is an important chemical industry. This process, sometimes called TT hardening, involves hydrogenation of the unsaturated fatty – acid portion of the oil molecule by heating the oil with hydrogen in the presence of a metal catalyst; by controlling the extent of hydrogenation, various products can be obtained. For example, controlled hydrogenation of cottonseed oil produces a solid vegetable cooking fat. Most fats become rancid upon standing; since a major factor leading to rancidity is air oxidation of double bonds, saturated fats are much more resistant to rancidity than unsaturated fats. Animal fats used in foods include butter, lard, chicken fat, and suet. Cod – liver oil and some other fish oils are used therapeutically as sources of vitamins A and D. Nutritionally fats and oils are valued as a source of energy. Because they contain less oxygen than other nutrients they oxidize more readily and release more energy. Fats are digested in the human body chiefly by the enzyme lipase (in the pancreatic juice), aided by the bile. There are several theories to explain the method of absorption of fats; favored by many is the view that they are absorbed by the epithelial cells of the lining of the small intestine in the form of the fatty acids and glycerol into which they are split by digestion and that a recombination to reform the fat occurs within the cells. Most of the fat then enters the lymphatic system through the villi in the lining of the small intestine, although some is probably absorbed directly by the blood vessels of the villi. Medical research indicates the possibility that saturated fats in the diet contribute to the incidence of arteriosclerosis; such fats may raise the blood's level of cholesterol, which is deposited in the arteries.

Notes

fat

жир, масло

to retain

зберігати

oil	олія
linseed	насіння льону
grade	ступінь, сорт, якість
solvent	розчинник
wholesome	корисний
saturation	насиченість
acid	кислота
rancidity	згірклість
oxidation	окислення
lard	смалець
bile	жовч
to deposit	відкладати(ся)
to contribute	сприяти

TEXT 2. GREASE. CAFE LIFE IN BRITAIN

Greasy spoons very rarely appear in guidebooks, but they are an essential part of life in the UK, especially for people living in the bigger cities.

In London, the capital city of the greasy spoons, there are hundreds "and hundreds, fuelling the population with bacon, egg and sausage. These small restaurants are so common and everyday life – like baked beans or phone boxes – that they are barely even noticed, but if greasy spoons were removed, the country would be on its knees. Greasy spoons cafes are so called because any cutlery that comes into contact with food on offer is immediately coated with a sticky, greasy layer of lard. It almost seems like an oily mist hangs in the air, as it fat drips from the walls. More calories can be found in a cup of tea in a good greasy spoon than in a whole meal at a nonnal restaurant.

THE SETTING

vegetarian sausages and burgers.

Greasy spoons have some devoted followers. Nothing can beat going to a real one especially on an empty stomach.

Task 1.

Extention zone

1. Read the adjectives below. Write P next to the positive ones and N next to the negative ones. What are your own expectations of food from a greasy spoon?

Underline adjectives you agree with.

satisfying

appetising

heavy

substantial

delicious

nauseating

revolting

mouth watering

comforting

2. Read the sentences below and decide which are true and which are false according to the text. Write T after the true ones and F after the false ones.

- a) Greasy spoons first became popular in the 1950s and were considered stylish and modern
- b) Greasy spoon cafes don't have to comply with any hygiene regulations.
- c) Greasy spoons are more popular in the UK than McDonald's.
- d) There are more calories in a typical English breakfast than the average person needs in a day.
- e) 49 % of British people are overweight.

Task 2.

Read, learn and act out the following conversations

- I.
- I'm thirsty. I'd love a cold drink.
 - And I'm not. I had a drink at a cafe.
 - Did you have anything to eat?
 - No, I didn't have any food. I wasn't very hungry then.
Besides, I enjoy square meals. I didn't want to spoil my appetite by having a snack in a cafe.
 - Are you hungry now?
 - Hungry as a hunter.
 - Would you care to have lunch at a restaurant?
 - With pleasure.
- II.
- It's 8 p.m. High time for supper.
 - Well, I could do with a bite. I don't eat much in the evening. Some light meal, perhaps.
 - What do you usually have for supper?
 - A cup of tea and a sandwich, or a glass of milk and a biscuit.
 - I prefer something more substantial, say, a chop or a steak and chips or cold meat with potatoes, or sausages, or omelette with tea or coffee to follow.
 - Then you should take a good stroll after supper. As an English saying goes, "After dinner sleep a while, after supper walk a mile".

Task 3.

Fit the meaning and the word

- 1 margarine A hard fat from around an animal's kidney

2	oil	B	used in cooking to cut food into extremely small pieces
3	butter	C	an oily substance in some foods
4	peanut butter	D	a store that sells food and other things used in the home
5	lard	E	an area outside where people buy and sell goods
6	suet	F	a smooth, thick liquid made from plants or animals, used in cooking or for making beauty products
7	fat	G	a place where bread and cakes are baked, or a store where they are sold
8	to fry	H	a store that sells candy and other similar sweet things
9	to mince	I	a yellow substance that is similar to butter but is made from oil, which you eat with bread or use for cooking
10	bakery	J	white fat from pigs that is used in cooking
11	market	K	to cook something in hot oil or fat
12	grocery store	L	a solid yellow food made from milk or cream that you spread on bread or use in a cooking

Task 4.

Choose the right answer

1. Be careful not to ... the tray too much or the glasses will slide off.

- a) bend b) incline c) tilt d) twist

2. Mr Clumsy tripped and sent the whole pile of metal plates ... to the ground.

- a) clattering b) pattering c) tinkling d) thudding

3. She ... the tablecloth carefully and put it away in a drawer

- a) bent b) creased c) folded d) pleated

4. There was a sharp ... and the plate broke into two pieces

- a) bang b) crack c) crash d) noise

5. Separate the eggs and then beat with a

- a) wick b) whip c) whisk d) wipe

6. These silver spoons need

- a) buttering b) painting c) polishing d) varnishing

7. Sweep the table with a cloth before you pull it away.

- a) crumbs b) dirt c) dust d) rubbish

Task 5.

React to the following

- f) What about having lunch together?
- g) Let's have lunch at that canteen.
- h) I'm not sure they serve good food there.
- i) What shall we start with? And to follow?
- j) How do you find this beefsteak?
- k) It's a little underdone, isn't it?
- l) Will you pass me the salt?
- m) Pass me that salad, please.
- n) The lunch was delicious.
- o) Will you join me for lunch?

Task 6.

Read the text without the dictionary and discuss it Fats in Our Diet: How Much Is Too Much?

Fats in our diet have occupied the attention of nutritional scientists for several years. Despite research efforts, many questions remain unanswered. Scientists know that, like carbohydrates and proteins, fats are made up of carbon, hydrogen, and oxygen.

However, fat provides more than twice as many calories per molecule because it has a lower ratio of oxygen to carbon and hydrogen. People are understandably concerned about fats and oils since most people realize that "oil and water don't mix" – and water is the primary ingredient of our bodies. The answers to that concern lie in body chemistry.

Though some foods, such as butter and oils, are most pure fat, the fats in most foods coexist with other nutrients and dietary factors such as protein, carbohydrate, vitamins, and fiber. Vegetable oils and meat are our major sources of fat. This fat may be visible, as in marbled meat, or hidden, as in cheese, nuts, and bakery products. Although fat's role in health and disease generates controversy, many nutritionists agree that we eat either too much fat or too much of the wrong type of fat.

DO YOU KNOW THAT..

NEWS FOR FAT - LOVERS

Eating fat can help to prevent strokes, according to the latest research.

At a time of a year when the temptation to tuck into fat – laden foods is at its highest, that may sound like a welcome surprise. But doctors still warn against piling more cream on the Christmas pudding. For it remains the case that fat increases the danger of a heart attack. In the new study American researchers looked at 832 men aged 45 to 65, and found that those increasing their fat intake by three per cent reduced their overall risk of a stroke by 15 per cent.

Eating slightly more of the saturated fat in meat and dairy products and monounsaturated fat, found in nut and Olive oils, was also linked to a lower risk of having ischemic stroke the most common type, caused by a blockage of a blood vessel in the brain or neck.

But there was no reduction in risk linked to eating polyunsaturated fat, found in fish and vegetable oils. The findings might seem like good news for fat – lovers but eating more fat was a risk factor for heart disease. Increasing your consumption of

fruit and vegetables is something everyone can do that improves health – as well as having a walk after dinner.

Have a laugh

- Why did the kid eat a dollar bill?
- Because it was his lunch money.

MILK AND DAIRY PRODUCTS IN THE 21 – st CENTURY

Dairying into the 21st century will largely continue with the trends seen in the past few decades, although there is always the possibility of an unlikely but disruptive event. The politics of globalization will potentially be important in freeing up global trade in dairy products. Production on the farm will become increasingly efficient, resulting in continuing price benefits to the consumer. At the same time, increasing attention will be paid by the consumer, producer, and manufacturer to safety and quality issues. Environmental concerns will increase in importance, and the issue of methane production may be important for the industry over the next two decades. It is unlikely that genetically modified milk will be introduced soon, even if public acceptance ceases to be an issue; however, the use of gene lie markers for accelerated genetic improvement of cows will have rapidly increasing importance. Despite increasing pressure from non – milk alternatives, milk and dairy will still be the best sources of nutrition for the young and for traditional dairy products. Consumer concerns will be of overriding importance for the industry, and the safety of dairy foods must become absolute. Recent advances in the chemical, physical, and information sciences and technologies will be utilized to gain greater understanding of the increasingly complex food systems and to support the consumer objectives.

KEYWORDS: Dairy; genetic modification; environment; consumer concerns; food safety

A number of distinct influences have affected the shape of world dairying as we know it over the 20th century, and it is reasonable to suppose that these will continue

in the 21st. Probably the two largest influences are not scientific or even technological at all.

The biggest influence earlier in the 20th century was the mechanization of the dairy processing aided by the decreasing cost of energy, whereas later in the century, this influence was wielded by the increasing power and preferences of the consumer, and of the retail chains on behalf of supposed consumer opinion, and the efforts of governments, also on behalf of the consumers. There have also been major advances in milk; production and processing, often in response to one or another of the two influences noted above. Major importance has been attached to clearly targeted selection and breeding of cows and their feed. The availability of relatively simple technological advances, such as refrigeration, large – scale transport by road and sea, and high – speed routine business communication, has led to larger scale manufacturing and wide ranging and complex warehousing and distribution systems, thus allowing targeted production and distribution of a large number of specialist products. In turn, this has resulted in increased globalization, technological complexity, standardized milk quality, and lower product prices. As production costs decreased, the relatively high price (in real terms) of all animal products steadily fell over the past century. Consequently, the consumption of dairy and dairy – based foods has increased, and the industry has provided consumers in most socioeconomic groups with high – quality nutritious foods. This trend is predicted to continue worldwide over the next 20 years with almost all of the growth being in the developing world.

THE PAST 50 YEARS

Looking back over the past 50 years of dairy science and technology has been an interesting experience because much of the basic science and technology that supports the current practices were known and used at the beginning of that era. Milk was known to contain milk sugar (lactose), triglycerides, and other lipids in globular structures stabilized by a protein film, small (0.1 – 0.3 μm) particles (casein micelles)

composed of a group of phosphoproteins known as caseins, and there were some globular proteins that in the aqueous "whey" fraction. During the following years the sequences of the proteins were elucidated, and the placement of the disulfide bonds was determined in the whey proteins. A number of genetically different (generally single amino – acid substitutions) milk proteins were identified and characterized. More recently, the three – dimensional structures of β – lactoglobulin, α – lactalbumin, immune globulins, lactoferrin, and serum albumin were determined using X – ray crystallography and high – resolution NMR spectroscopy. The important role of α – T lactalbumin as a modulator of lactose synthesis was established, and β – lactoglobulin was found to bind amphiphilic and hydrophobic ligands. This was explored for practical applications. Although β – lactoglobulin is now considered to belong to a large group of carrier proteins with similar structures and important biological functions, its role in milk is unclear. The protective roles of immune globulins, lactoferrin, and the peroxidase systems, probably for the neonate as well as the mammary gland, were established. The more recent nucleotide technologies enabled the sequencing of the milk protein genes and thus allowed the cloning of a range of mutant proteins. The detailed structure of the casein micelle has been debated at length, although the fundamentals, κ – casein on the outside and calcium phosphate clusters throughout the inside, have been known for at least 20 years. For both the caseins and β – lactoglobulin, the effects of genetic variants on production and processing are now well-known and partially understood. The effects of processing on the milk components and their subsequent interaction have also been a matter of enlarging the knowledge of 40 years ago. Clearly heat, pressure, and shear all affect the proteins in similar but different ways. The quantitative and probably the qualitative differences have still to be elucidated and are difficult to deal with. The basic techniques of polyacrylamide gel electrophoresis, liquid chromatography, nuclear magnetic resonance, mass spectrometry, and X – ray crystallography were all developed before 1970. The steady improvement in the accuracy, sensitivity, and

reliability of laboratory instruments together with the data storage and processing capability of modern computers has revolutionized the way science is done.

This trend will continue. A consequence of this is likely to be fewer and larger research facilities. In the product areas, a great deal of work will continue in efforts to tailor products that have predictable and invariant functionality (flavor and texture under particular conditions). There will be substantial efforts to try to substitute instrumental estimation for sensory and other subjective assessment. Over the past 50 years, the dairy industry has also changed considerably, although the basic technological processes, milk tankering, milk pasteurization, milk fat separation, evaporation and spray – drying, and casein precipitation, are all essentially the same. Continuous churning, tubular washing, microfiltration, and sterilization of products are among the widely used newer technologies that required some innovation. Modern large – scale cheese making is very different from that of 50 years ago through mechanization. Generally speaking it is not obvious that milk is being processed in a modern dairy plant: tankers arrive and discharge their contents, and at the other end, bags of products leave the factory unseen and untouched by human eye or hand and controlled all the way by computer. .

GLOBAL PERSPECTIVE

Because of the importance of dairy products in the nutrition of the population, the importance of short —life products and a farm lobby, most developed countries foster their own dairy industries. Indeed, only ~2 % of global dairy production is freely traded internationally, with another ~3 % traded under quota arrangements. Taking a global view, the economics of dairying are quite complex. In most countries, there are overriding governmental controls and guidelines. From the government point Of view, there are three important and distinct roles: (1) to protect the food supply for the population, for example, in times of pestilence, drought, or war; (2) to Protect the individual citizen from exploitation, for example, by the use of cow milk instead of sheep milk for Pecorino cheese; and (3) to control public health hazards, for

example, contracting tuberculosis from milk or listeriosis from dairy products. Governments can also intervene to protect local industries, balancing sector or regional funding and supporting external political alliances.

Codex (The Codex Alimentarius Commission of the Food and Agricultural Organization and the World Health Organization) is responsible for the international harmonization of food standards, with the objective of removing unnecessary obstacles to trade. Codex is responsible for developing a risk analysis framework for controlling dairy food safety. Emphasis is placed on the outcome, that is, safe food, rather than the mandatory use of particular processes. Its implementation will require an increased understanding of the effect of traditional and alternative processing technologies on milk – associated zoonotic pathogens and more knowledge of the factors that influence the human dose response. Codex requirements will inevitably involve additional compliance costs for nations trading dairy foods internationally. TGiven the tension between the cost efficient production of milk in some countries and the protection mechanisms of many developed countries, future developments in world trade (or not, as the case may be) are likely to strongly influence the future shape of international dairying.

MILK PRODUCTION

On the farm, there are live key issues that will drive changes in dairying over the next 50 years. These are as follows.

- Opportunities for breeding, driven by biotechnology.
- A continuing drive for efficiency as the commodity value of milk continues to decrease.
- Potential costs of greenhouse gases.
- Further development of specialized milks.
- Potential costs of animal disease eradication/control programs.

Opportunities for Breeding, Driven by Biotechnology. For the past 50 years, breeding has been based on sire proving by daughter testing and widespread artificial

insemination based on a relatively small number of sires. Over the past decade, there, has been increasing use of specific genetic markers for breeding purposes. These have included markers for the various polymorphic forms of the major milk proteins, so that the variants of these proteins are now listed in many semen catalogs. Some of these are associated with the economic value of milk for specific products [such as B – lactoglobulin B for cheese milk]. The breeding industry has also identified markers for specific genetic defects, such as bovine leukocyte adhesion deficiency (BLAD), maple syrup urine disease, deficiency of uridine monophosphate synthase (DUMPS), complex vertebral malformation (CVM), and citrullinemia, for which routine tests are now commercially available.

The tools of biotechnology, primarily being developed for the human health industry, will be used increasingly to support herd improvement through genetics.

The complete genome sequences of a number of species, including human, rat, and mouse, are now known. It has been variously estimated that it will take another 10 – 20 or even up to 50 years for the full functional implication of the human genetic sequence to be understood. Knowledge of the cow genome and its implications will not be far behind. The high degree of genetic homology between mammalian species means that genetic discoveries from the human genome can often be quite quickly applied to other species. This will, in principle, enable us to target genes for milk production and cow metabolism that can not only improve efficiency on the farm but also select for the exact type of milk the industry wants. The challenge to the dairy industry will then be to more precisely define what it wants in milk and to develop suitable testing and payment schemes to reward the dairy farmer.

The use of the tools of molecular biology to identify and manage natural variation in milk composition will accelerate the breeding process and give geneticists greater control over the production and composition of milk. The recent identification of a specific genetic polymorphism of a gene involved in milkfat synthesis that

appears to modify milk composition may be an important early example of what may be achievable.

Leaving aside genetic modification for the production of nutraceuticals in milk, it seems unlikely that transgenic modification of milk for functional or nutritional purposes will occur in the foreseeable future. There are several reasons for this.

- Consumer acceptance of genetically modified (GM) foods is still variable, throughout the world, with some countries having strict labeling requirements. Because milk is a liquid product handled in large volumes during processing, maintenance of batch identity and keeping GM milk separate is more difficult than with discrete products.

- Furthermore, milk is an animal product and strongly targeted at the health of babies and young people. This has been identified in consumer surveys as a very sensitive area (e.g., compared with the acceptability of GM fruit and vegetables), and milk will probably be one of the last foods in which genetic modification is accepted.

- The cost of producing herds of GM cows would be very high, and progress very slow unless expensive cloning and embryo transfer methods are used. This is not justified by a small premium for improved nutrition or functionality arising from genetic modification.

- More importantly, a switch to genetic modification will severely limit genetic gain, because the gene pool will be restricted to the genetics of the donor animals for the original GM parents. This segregation from the global bovine gene pool will prevent, or at best, severely limit participation in the ongoing genetic improvement of the species, currently occurring at ~2 % per annum.

- Modification to make milk more suitable for a specific product is unlikely to make it beneficial for all other products.

Pastoral Farming Economics. Traditionally, farmers have invested in their land and relied on capital growth, or at least stability, for their future. The push to attract

farmers into dairying has relied on this aspect, and much dairy land can become a poor monetary investment when dairy prices stabilize.

The trend of commodity milk to ever decrease in economic value means that dairy farming has to continually become more efficient simply to survive. Economy of scale provides an obvious way of reducing costs. In developed countries, and excepting those where the small farm unit is being maintained by subsidies for cultural and other reasons, the single – family farm is becoming economically nonviable. The trend is either for a larger farm based around a family unit, with additional labor, typically milking from 200 to 500 cows, or for farms run as a milk production business based on herd sizes of 1000-5000 cows. Future trends will undoubtedly see a decrease in single family units and migration to a larger herd format.

As farm size increases, labor to milk cows becomes an important issue. In some cases, farmhands are employed specifically to cope with milking, but, in countries where labor costs are high, this poses its own problems. One way of dealing with this is to reduce milking frequency to once a day. Work in this area (5) has indicated a substantial loss in production per cow (30 %) compared with twice daily milking; however, the loss per hectare (or acre) was less (18 %), indicating lower energy requirements for cows milked once a day. It was also noted that the Jersey breed is much more able to cope with once – a day milking, probably because of the higher milk solids concentration of Jersey milk.

A potential solution to the labor – problem may be robotic milking. Prototype milking robots have been around for a decade, and currently seven types of automatic milking systems are commercially available, with an estimated 1000 herds worldwide being milked using automated systems, the majority in The Netherlands. The high capital cost of milking robots is a deterrent to their widespread adoption, but prices will undoubtedly decrease as manufacturing volumes increase and production becomes more efficient. The impact of robotic milking on production under various

farming regimes is not yet well understood, and there is a dearth of information relating to large – scale farms.

Feed sources are another important cost on farm. They take the form of the direct cost of feed purchase in the feed lot form of farming and the cost of land, fertilizer, and supplements in pastoral farming. A number of approaches are being used to decrease the cost and increase the effectiveness of feed for dairy cows. GM plants are already having an impact on nonpastoral dairy farming and, hence, the potential to significantly reduce the cost of milk production. GM pasture plants are still in the future for the dairy farmer but may offer some real benefits:

- Pest resistance has already been engineered into many cropping species and could presumably be incorporated into pasture species. Although this may be relatively straightforward to do, the gain may be small.
- Changing pasture composition is probably the area where most gain could be made. It is well established that, for cows grazing pasture, metabolizable energy is the limiting nutritional factor. Pasture species with a higher energy content are clearly desirable.
- Drought resistance is an important factor for farming in many parts of the world, and pasture species with more deeply penetrating root systems that can withstand drought are desirable.
- Salt resistance is likely to become important in a number of areas as irrigation increases soil salinity.

Against these desiderata must be put the present public attitude against genetic modification in the food arena. Until public concerns in this area are allayed, widespread use of GM pastures is unlikely. It is noted that there is already public concern over the use of GM products in concentrates and supplements being fed to dairy cows, and some markets are requiring audit to show that cows have not consumed GM product.

Another potential way of increasing production is by modification of the reactions that occur in the rumen; for example, removal of the microorganisms that cause methane production can also be expected to improve the energetic efficiency of the cow (see below). Potential Costs of Greenhouse Gases Cattle produce substantial amounts of methane as a byproduct of rumen digestion. This is normally released by eructation, Methane is recognized as a greenhouse gas and is rated as having a global warming potential 21 times that of carbon dioxide on a 100 year time scale. It has been estimated that methane is second only to carbon dioxide and is responsible for 10 – 15 % of the greenhouse gas effect in the atmosphere. Domestic livestock account for – 25 % of all methane production, cattle being the major contributor. Most governments recognize the need to limit greenhouse gases, and some standard will probably be reached. This could have serious implications for the dairy industry, as penalties or costs of compliance could become prohibitively high. Research efforts to specifically target the removal of methanogenic organisms from the rumen could be an important contributor to the future economic viability of the industry. Because these organisms are believed to have an important role in managing the hydrogen concentration in the rumen, it may be necessary to find or create a microorganism that can transfer hydrogen into a product other than methane.

Further Development of Specialized Milks, As our detailed knowledge of the bovine genome develops, and the effects of different feeds and interventions become better understood, the potential to develop specialized milks becomes more of a possibility. The most common form of specialized milk available today is so called "organic" milk. Standards for organics vary widely, but there is a common theme of not using chemical interventions for farm management, Consumer support for organics is probably driven by concerns about safety from chemical residues and a general support for environmental issues. The future of organics is unclear, but some standard for a "clean green" dairy source is clearly desirable and a genetically engineered (GE) – free label is a perceived benefit for organic milk. Interestingly, a

bovine somatotrophin (BST) free milk has been in the U.S. market for a number of years but does not have a significant market share milks, such as the niche "Gold Top" and "Fountains Gold" Jersey and Guernsey milk products marketed in the United Kingdom; hyperimmune milks such as "Stollait" milks marketed by NZMP, which can confer passive immunity against gut infections; milk with elevated levels of conjugated linoleic acid (CLA) for cheese such as that sold by Northern Meadows in the United States; so – called "A2 milk", which is claimed to have health benefits in relation to diabetes or heart disease, although these claims are under dispute. There is rapidly growing interest in the use of probiotics and prebiotics in milk and dairy Products. Probiotics are living microorganisms that, upon ingestion in sufficient numbers, exert health effects beyond basic nutrition. Substantiated health claims include enhanced immune performance, alleviation of diarrhea, and improved lactose utilization. Prebiotics are nondigestible food ingredients including oligosaccharides and dietary fiber that are able to modify the intestinal flora in favor of health promoting bacteria. A range of possible further modifications to milk composition has been described by Boland et al. Potential Costs of Animal Disease Eradication/control Programs. A commentary on the recent foot and mouth disease (FMD) outbreak in Europe used the term "global farm" to describe the fact that the animal husbandry practice of moving animals within and between countries is also very efficient means of spreading both animal and human pathogens. Outbreaks such as FMD and bovine spongiform encephalitis (BSE) have heightened biosecurity awareness worldwide and traceability of individual animals. Government regulatory authorities play an important role in controlling the import of biological materials to ensure freedom from disease – causing organisms.

Animal diseases are also being seen in the context of animal health and welfare. Consumers will increasingly demand safe milk and dairy foods produced by healthy animals. This will lead to more pressure for programs to control or eliminate bacterial

or viral diseases. Such measures will be either a direct or an indirect cost to milk producers.

FOOD SAFETY

Pasteurization was established to ensure that milk contaminated with bacteria viruses responsible for animal diseases, particularly bovine tuberculosis, was safe for human consumption. Bovine tuberculosis and brucellosis have been subjected eradication programs in many countries. Bovine tuberculosis is difficult to control when the pathogen becomes established in wild animals, providing a reservoir infection. Brucellosis is also endemic in sheep and goats in many countries. If raw milk from these species is used for traditional cheese varieties, certified brucellosis – free herds are essential to ensure product safety.

Another disease with a worldwide distribution is Johne's disease or paratuberculosis. The mycobacteria responsible have been claimed to survive pasteurization. Recent studies using a strictly controlled commercial – type pasteurizer, however, show that this organism is effectively eliminated using the traditional pasteurization time and temperature, Pasteurization and/or other means (see above) will always be essential ensure the absence of animal and environmental pathogens from milk and milk products. Traditional methods of preservation – increased acidity, lowered water activity, and lowered redox potential – were used to preserve both butter and cheese.

With easy sterilization of products, aseptic packing, and good refrigeration, a wide range of fluid products can now be made, distributed, and sold.

Throughout the world, awareness of foodborne disease has risen in response to the high level of Publicity that such outbreaks receive. The toll exacted in human and economic terms is considerable. Notable dairy outbreaks in recent years include salmonella in ice cream (United States, 1994, 224,000 cases of illness) and staphylococcal enterotoxin in milk (Japan, 2000, 15,000 cases). contaminated soft cheeses and raw milk* are often in the news. Whereas most dairy products, processed

to modern standards of hygiene, have an excellent safety record, consumers are demanding increased surveillance and control of all foods, including dairy. The contamination of animal feed with dioxin in Belgium (1999) highlighted that consumers place the absence of toxic chemicals in their food alongside microbiological safety in importance. There will be no lessening in the demands on food producers to control risks and deliver assurances of safety. The increased costs associated with providing this assurance through effective process control will become the norm for dairy businesses in the future.

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